

Buy EUR 36.30 Price EUR 24.85 Upside 46.1 %	Value Indicators: EUR DCF: 36.29 Peer group 2024e: 41.63	Warburg ESG Risk Score: 3.2 ESG Score (MSCI based): 3.0 Balance Sheet Score: 5.0 Market Liquidity Score: 1.5	Description: Leading international manufacturer of combined heat and power (CHP) plants
	Market Snapshot: EUR m Market cap: 445.8 No. of shares (m): 17.9 EV: 437.1 Freefloat MC: 244.8 Ø Trad. Vol. (30d): 456.35 th	Shareholders: Freefloat 54.91 % Christian Grotholt, CEO 29.64 % Ludger Gausling 15.45 %	Key Figures (WRe): 2023e Beta: 1.3 Price / Book: 3.5 x Equity Ratio: 55 %

Upbeat growth prospects for pioneer in hydrogen CHP market; Initiation with Buy

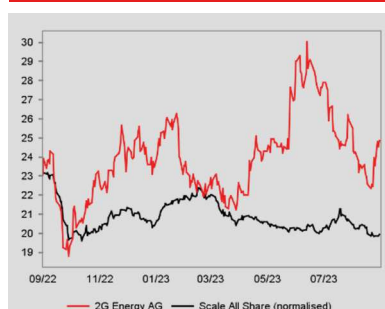
2G Energy ranks among the industry's leaders in the manufacturing of CHPs (combined heat and power plants), focussing on excellence in engineering, project development and service. By delivering competitive total cost of ownership, CHPs are today already a mature technology, allowing clients to profit from the grid-independent, low emission and on-site generation of electricity and heat. As an integral part of the energy system of the future, growth is driven by governments' plans to reach net zero, where 2G Energy's products can be used to stabilize grids, balance peak load or level demand during lull times. With the addition of large heat-pumps to the product portfolio in 2023, 2G Energy has established a further growth pillar, as CHPs and large heat pumps are natural partners in different use-cases but also in production.

Margin expansion driven by product mix and efficiency programme: An increasing revenue share from the service segment, the extended product portfolio, 2G Energy's first-mover advantage on the hydrogen market and internal measures ("lead to lean") are expected to bolster EBIT-margin generation to 10% by 2025. However, surging demand and an accelerating heat-pump business should allow for an even broader margin expansion in the years after, allowing 2G Energy to deliver a sustainable EBIT margin of >10%, well ahead of its historic average. Consensus does not fully anticipate the margin potential of 2G Energy, hinting at surprise potential which we expect to benefit the share-price development. We are positioned at the upper end of guidance for FY 2023/24 and ahead of consensus, as we expect 2G Energy to monetise the underlying growth drivers, achieve high market penetration and deliver upbeat margin growth.

Profitable renewable manufacturing play: Our peer-group analysis shows that markets seem to classify 2G Energy as a machinery manufacturing company, even though its business model is subject to the same growth drivers as for renewables companies. Compared to renewable manufacturers, 2G Energy stands out with a business model that is already profitable and excellent competitive positioning to benefit from the pathway to net zero, whilst trading at a multiple discount to renewables peers. Hence, we deem 2G Energy to be an underrated renewables-play with a broad valuation potential arising from multiple expansion.

Different valuation scenarios hint at attractive upside: We have computed different P&L scenarios to illustrate moderate and accelerated growth for hydrogen CHPs and large heat-pumps. The DCF-based price-targets derived from each scenario show attractive upside of 48% (EUR 36.40) in our base case and >100% (EUR 50.10) in our accelerated case, hinting at a current undervaluation of the share. Currently, our price target is based on the base-case scenario. As soon as the new heat-pump business becomes tangible and the hydrogen CHP market accelerates, we will opt for our accelerated case as the main valuation approach, reflecting the attractiveness of both market segments.

Based on the price target of EUR 36.40, the upbeat growth prospects of the company, its excellent positioning in the market and prescient extension of its product portfolio, **we initiate the coverage of 2G Energy with a Buy rating.**

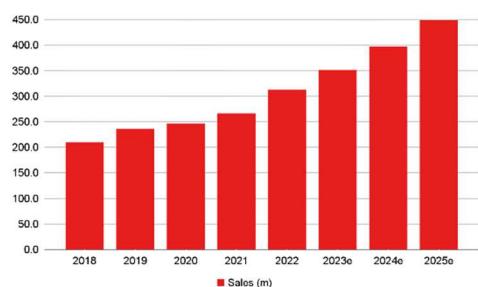


Rel. Performance vs Scale All	
1 month:	-0.3 %
6 months:	19.2 %
Year to date:	8.2 %
Trailing 12 months:	20.2 %

Company events:	

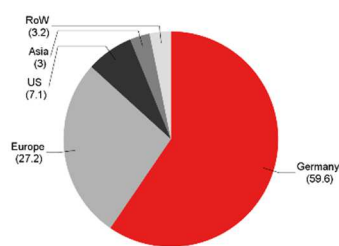
FY End: 31.12. in EUR m	CAGR (22-25e)	2019	2020	2021	2022	2023e	2024e	2025e
Sales	12.8 %	236.4	246.7	266.3	312.6	351.7	397.8	448.9
Change Sales yoy		12.7 %	4.4 %	8.0 %	17.4 %	12.5 %	13.1 %	12.8 %
Gross profit margin		33.6 %	35.2 %	36.7 %	36.7 %	37.6 %	39.5 %	40.5 %
EBITDA	23.8 %	19.4	20.3	22.0	28.7	35.3	44.2	54.4
Margin		8.2 %	8.2 %	8.3 %	9.2 %	10.0 %	11.1 %	12.1 %
EBIT	26.1 %	15.6	16.6	18.0	24.0	29.8	38.3	48.1
Margin		6.6 %	6.7 %	6.8 %	7.7 %	8.5 %	9.6 %	10.7 %
Net income	26.7 %	10.3	12.0	12.6	16.4	20.5	26.5	33.3
EPS	26.7 %	2.33	2.70	2.85	0.91	1.14	1.47	1.85
EPS adj.	26.7 %	2.33	2.70	2.85	0.91	1.14	1.47	1.85
DPS	10.7 %	0.45	0.45	0.50	0.14	0.15	0.18	0.19
Dividend Yield		5.2 %	2.9 %	2.1 %	0.6 %	0.6 %	0.7 %	0.8 %
FCFPS		-0.59	1.57	0.91	-0.25	0.23	0.61	0.79
FCF / Market cap		-6.8 %	10.3 %	3.8 %	-1.0 %	0.9 %	2.4 %	3.2 %
EV / Sales		0.2 x	0.3 x	0.3 x	1.4 x	1.2 x	1.1 x	0.9 x
EV / EBITDA		2.0 x	3.1 x	4.2 x	15.4 x	12.4 x	9.7 x	7.6 x
EV / EBIT		2.4 x	3.7 x	5.1 x	18.4 x	14.7 x	11.2 x	8.6 x
P / E		3.7 x	5.7 x	8.4 x	27.5 x	21.8 x	16.9 x	13.3 x
P / E adj.		3.7 x	5.7 x	8.4 x	27.5 x	21.8 x	16.9 x	13.3 x
FCF Potential Yield		37.6 %	25.4 %	18.4 %	4.9 %	6.0 %	7.7 %	9.7 %
Net Debt		-0.1	-5.6	-14.6	-7.1	-8.7	-16.9	-27.9
ROCE (NOPAT)		17.1 %	17.1 %	16.7 %	18.4 %	19.0 %	21.3 %	23.5 %
Guidance:		Sales: EUR 310-350m; EBIT-margin: 6.5-8.5%						

Sales development
in EUR m



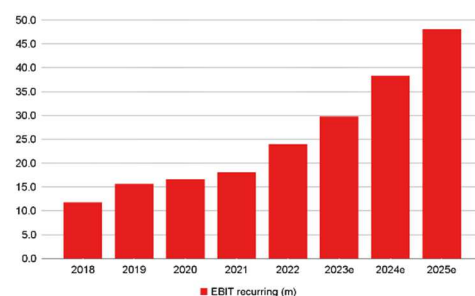
Source: Warburg Research

Sales by regions
2022; in %



Source: Warburg Research

EBIT development
in EUR m



Source: Warburg Research

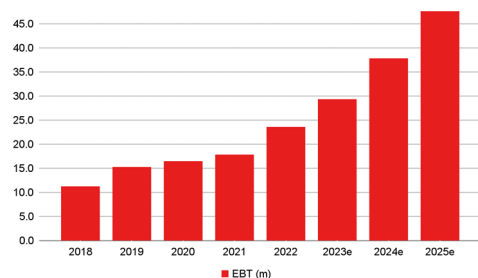
Company Background

- Established in 1995, 2G Energy released its first CHP in 1996, followed by the first biogas application in 1999
- Prior to its IPO in 2007, 2G already expanded its local footprint and entered international markets with the shipping of a CHP to Japan
- After the IPO, several international subsidiaries were formed to push the further international expansion
- In 2009, natural gas CHPs were introduced to the market, establishing a key pillar for future growth. In addition, the international expansion gained traction in the US and European countries.
- After pioneering the digitization of CHPs with its unique platform in 2016, the first hydrogen CHP was introduced in 2018.

Competitive Quality

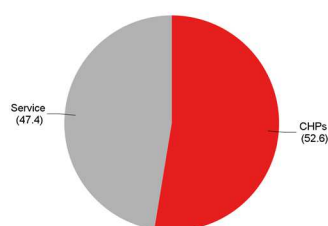
- Founded in 1995, 2G Energy quickly positioned as technology leader for biogas CHPs in Europe. Innovative designs, best-in-class performance and quality standards improved 2G's positioning.
- Offering a fitting solution for different client groups, 2G Energy stands out from its peer-group with its extensive product portfolio.
- Combining high quality products with an extensive service offering, 2G seeks to deliver best-in-class total cost of ownership for varying use-cases.
- Further product developments and an early move into the hydrogen CHP and large heat pump market provides for an additional competitive edge.
- Covering all integral parts of the value chain, 2G Energy is perfectly equipped to defend its market position and access growth.

EBT development
in EUR m



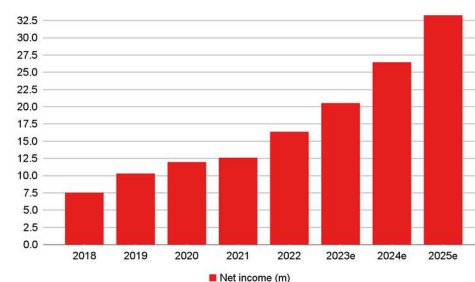
Source: Warburg Research

Sales by segments
2022; in %



Source: Warburg Research

Net income development
in EUR m



Source: Warburg Research

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Summary of Investment Case

Investment triggers

- The products of 2G Energy are an essential part of the energy transition as they are able to deliver peak and baseload power with reduced carbon emissions compared to conventional power generation from fossil fuels.
- As a first mover, 2G Energy has expanded its product portfolio with hydrogen CHPs, which will benefit from the development of a European hydrogen infrastructure. CHPs can be used to generate both electricity and heat.
- A natural partner for the CHP is the large heat-pump, which will play an important role in the reduction of GHG emissions from heating/buildings. 2G Energy entered the large heat-pump market in 2023, benefiting from the surging demand.

Valuation

- As the main valuation indicator, we use a DCF model which is based on our base-case scenario for the P&L, hinting at a fair value per share of EUR 36.40.
- If we apply our accelerated scenario to the DCF, reflecting additional opportunities from hydrogen CHPs and large heat-pumps, the fair value per share would be EUR 50.10 per share.
- Peer-group multiples derived from other renewable manufacturing companies also hint at upside of 50%-70%, reflecting the broad growth opportunities of the sector.

Growth

- Regulatory support, the pathway towards net zero and the ability of CHPs to deliver heat and electricity during lull periods triggers accelerating demand for CHPs with the development of a renewable energy supply.
- Additional growth drivers are tapping into the hydrogen CHP market as well as adding large heat-pumps to the product portfolio.
- Already today, CHPs offer a mature technology for clients seeking to reduce carbon emissions with an appropriate ROI.

Competitive quality

- 2G Energy is positioned as a technology and quality leader in the market by showing extensive value-chain coverage. The in-house R&D, broad service network and project management allows for a high market penetration and close customer relationship.
- Best-in-class TCO (total cost of ownership) combined with a broad product offering, covering a wide range of needs, makes 2G Energy products the best choice in its market segment.
- Proving its technological leadership and engineering capability, 2G Energy is the sole supplier of hydrogen CHPs in the market, which should boost its competitive edge and allow for extensive growth.

Warburg versus consensus

- We position slightly ahead of consensus for FY 2023 and at the upper end of guidance. In particular our margin forecast (EBIT), implies a faster margin expansion, as we expect the product mix and efficiency measures to result in a better margin generation.
- In the years after, we expect a faster top-line growth than consensus and expect 2G Energy to reach an EBIT margin of >10% by 2025, driven by the new product segments and a larger service share in revenues.

Company Overview

2G Energy

Operative business segments	Sale of CHP systems	Service		
	2G Energy is a specialized manufacturer of CHP systems, which offers solutions for different fuel types, output categories and project types. The offered product range includes systems with a capacity of 20kW-4,500kW, suitable for a vast scope of application.	Maintenance of installed plants 2G's customer support is available 24/7 as well as their in-person service for installed plants. High quality, operational safety and efficiency of the plants is guaranteed.	Digital monitoring solutions 2G is offering the I.R.I.S. system that is able to detect and report irregularities before they occur. The digital toolbox, "my 2-g.com", is an all-in-one solution to help clients and partners with their CHP system.	
Suppliers / Cooperation partners / Participations	<div>LIEBHERR TOYOTA PRODEVAL HJS MOTOREN HIGHLAND WEST ENERGY Envitec Biogas CUSTOM POWER GENERATION FILOTIPO avesco CAT naerenergi mtu JENBACHER centrica SENERTEC White Harvest LEMA Biogas Holland Fuji Electric ENVIMAN AEA CHP eurogate AB Energy Deutschland ZEPPELIN Power Systems CAT agrikomp</div>			
Competitors	<div>JENBACHER TEDOM SCHNELL mtu Elektro Hagl ETW ENERGIETECHNIK AB Energy Deutschland ZEPPELIN Power Systems CAT agrikomp</div>			
Value chain				
<div><div>R&D and product design</div><div>Supplier selection & partnerships</div><div>Production of parts and pre-products</div><div>Refinement</div><div>Assembling/ Quality management</div><div>Service and maintenance</div><div>Digital monitoring and data management</div><div>Project planning</div><div>Delivery and installation</div><div>Supply partnerships</div></div>				
Operative figures (mEUR)				
Company	Sales	EBITDA	EBIT	Free cash-flow
	<div><div>247266313352398449</div><div>2020202120222023e2024e2025e</div></div>	<div><div>202229354454</div><div>2020202120222023e2024e2025e</div></div>	<div><div>171824303848</div><div>2020202120222023e2024e2025e</div></div>	<div><div>74-461114</div><div>2020202120222023e2024e2025e</div></div>
Segments	Sales by segment	EBITDA-margin	EBIT-margin	ROCE
	<div><div></div><div>2020202120222023e2024e2025e</div></div>	<div><div>8.2%8.3%9.2%10.0%11.1%12.1%</div><div>2020202120222023e2024e2025e</div></div>	<div><div>6.7%6.8%7.7%8.5%9.7%10.8%</div><div>2020202120222023e2024e2025e</div></div>	<div><div>17.1%16.7%18.4%19.2%21.7%23.8%</div><div>2020202120222023e2024e2025e</div></div>
Portfolio				
Balance sheet (2022)	Sales by region (2022)	Product portfolio (kW output)	Shareholder structure	
<div><div>Equity ratio51.3%</div><div>Interest bearing debt3.0%</div><div>Intangible assets2.4%</div><div>Tangible assets12.7%</div><div>WC/Sales30.2%</div></div>	<div><div>Germany59.6%</div><div>Europe27.2%</div><div>US7.1%</div><div>Asia3.0%</div><div>RoW3.2%</div></div>	<div><div></div></div>	<div><div></div></div>	
S.W.O.T. Analysis		Core markets (Countries with 2G presence either directly or via partnership)		
Strengths	Weaknesses	<div></div>		
<div><div>• Leading CHP supplier with diversified product portfolio (20 kW - 4500 kW)</div><div>• Service network creates an additional stable source of revenue</div><div>• Significant energy savings and reduced GHG emissions</div><div>• Cost savings by reducing energy expenses and improving overall energy utilization</div><div>• Energy reliability by providing on-site power generation, reducing dependency on the grid</div></div>	<div><div>• Global distribution and service network, but market presence is limited in several regions</div><div>• Significantly larger and better capitalized competitors in the market</div><div>• Implementation constraints due to technology limitations or compatibility issues with existing equipment</div><div>• Regulatory frameworks for CHPs vary across regions</div></div>			
Opportunities	Threats			
<div><div>• Shutdown of coal and nuclear power plants, presents opportunities for gas fired CHPs</div><div>• Politics, renewable energy targets, and energy efficiency incentives support the adoption of CHP systems</div><div>• Upgrade to hydrogen powered systems to enhance overall energy sustainability</div></div>	<div><div>• Rising costs make it difficult to achieve significant improvements in margins</div><div>• Competition from other energy technologies (solar, wind power and energy storage solutions)</div><div>• Grid integration may pose technical challenges in terms of stability and power quality</div><div>• Shifts in energy policies, regulatory environments, and advancements in energy storage and renewable technologies</div></div>			
Unterstützt von Bing				

Competitive Quality

- 2G Energy is a quality and technology leader in the CHP segment, striving to deliver the best lifecycle management for CHPs
- Total cost of ownership proves how attractive CHPs are as a mature technology in the renewable energy space
- The broad product range, best-in-class service network and early positioning in the hydrogen sector provides for a competitive edge compared to peers.
- The value chain coverage includes all integral parts to sustain 2G Energy’s market position. Furthermore, excellence in development and implementation has already paid off

Comprehensive CHP solutions for a growing market

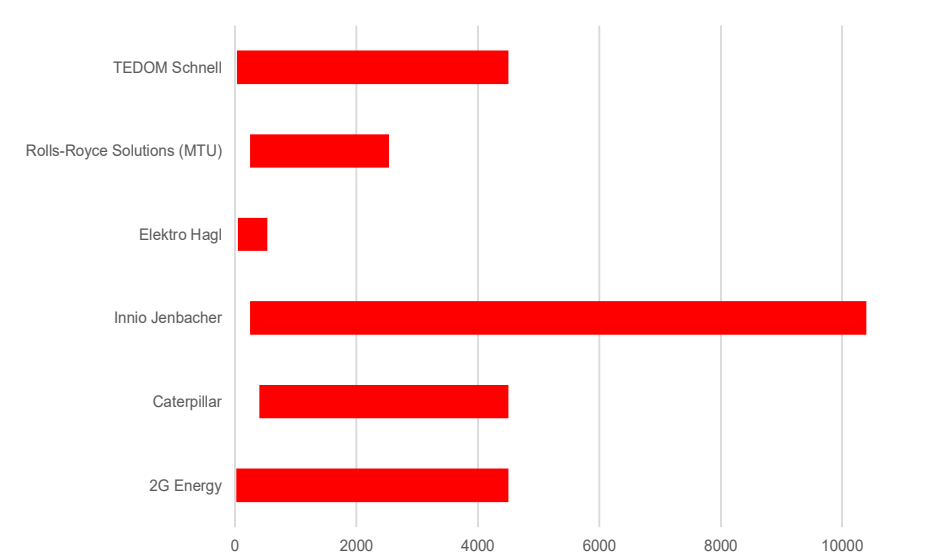
2G Energy is one of the leading international CHP (“Combined Heat and Power Plant”) manufacturers. Revenue is generated from two different segments, the sale of CHP plants and the associated provision of extensive services to customers. 2G’s main competitors are Caterpillar, Innio Jenbacher, Elektro Hagl, Rolls-Royce Solutions (former MTU Onsite Energy) and TEDOM Schnell. The industry for cogeneration systems can be described as a niche market but we expect there will be strong growth potential in the coming years with the transition from conventional fossil fuels to more sustainable fuels. We expect 2G Energy to solidify its market position by sustaining its technology leadership position with the early development of H2-ready solutions and extension of its product portfolio with large heat-pumps.

Broad product diversification ensures market access

Diversified product portfolio and performance for every need

2G Energy is offering a diversified CHP product range for different use-cases. Performance varies between 20 and 4,500 kW and 2G’s cogeneration units are fuelled by either natural gas, biogas, LNG or hydrogen. As one of the industry’s technology leaders, 2G’s high performance and pioneering CHP plants (H2) are in use around the world, offering its clients suitable solutions for their specific needs.

Output capacity of 2G compared to its peers in kW



Source: Warburg Research

Compared to larger companies in the market, 2G focuses on the market segment with smaller outputs of up to 500 kW. While it also offers a CHP unit with a capacity of 4,500 kW, four of its five products are in this smaller output category. Larger competitors partly offer units with larger output capacity or a more diverse product portfolio but the key to

Keen focus on specific market segments allows for excellence

success in this market is not the number of different products on offer or the highest possible output capacity, but the lowest cost of ownership ("TCO").

The TCO though, is subject to different input factors such as the reference price for energy on the market. A reference calculation for an agenitor 408 ct80 with only 3,500 operating hours p.a. shows an implied ROI of the CHP of 7.5% based on moderate assumptions regarding the electricity and gas price. However, if prices for electricity and gas surge, as in 2022, the ROI of the CHP also increases and breakeven is reached at only 2,500-3,000 operating hours p.a.

Exemplary ROI calculation of a CHP

<i>Sample calculation not accounting for subsidies, optimization, financing and administrative costs</i>		Scenario I	Scenario II	Scenario III	Scenario IV
Gasprice	ct/kWh	2.50	5.00	7.50	10.00
Electricity price	ct/kWh	7.50	13.75	18.75	22.50
Spark spread		3.00	2.75	2.50	2.25
Value of thermal energy	EUR/hour	11.75	23.50	35.24	46.99
Value of electrical energy	EUR/hour	27.00	49.50	67.50	81.00
Fuel consumption	EUR/hour	-23.50	-47.01	-70.51	-94.02
Maintenance cost	EUR/hour	-4.60	-4.60	-4.60	-4.60
Depreciation cost (60,000hrs of operation)	EUR/hour	-8.33	-8.33	-8.33	-8.33
Savings per hour	EUR/hour	2.31	13.06	19.30	21.04
Savings anual (3,500 hrs p.a.)	EUR p.a.	8,096.00	45,698.00	67,549.00	73,651.00
ROI		7.50%	15.00%	19.30%	20.60%

Source: 2G Energy, Warburg Research

- CHPs are already profitable at about 3,500 operating hours p.a. In times of high price volatility or surging electricity prices, CHPs can be used to cover peak load with an attractive ROI
- If increasing costs for CO2 emissions or grid fees are added to the calculation, the profitability of CHPs goes up, as CHPs are independent of the grid and stand out with low carbon emissions.

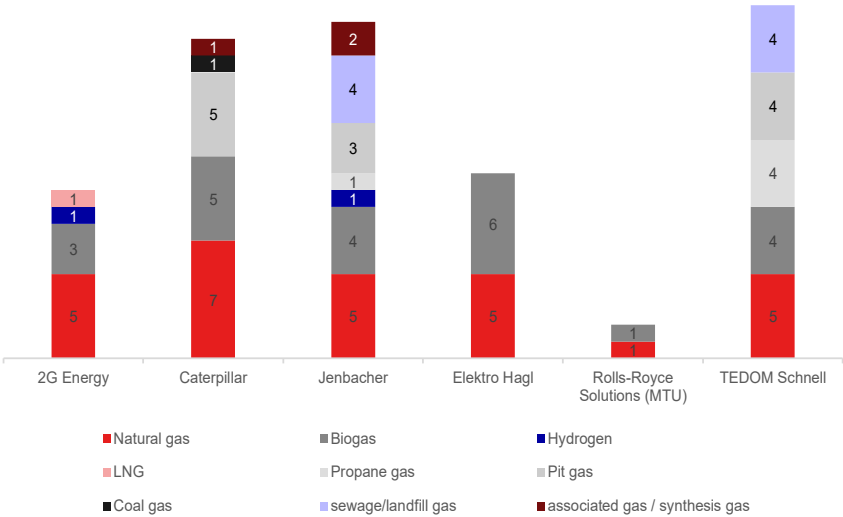
In addition to the TCO, customers especially value reliability and performance, as reliability leads to less downtime while the latter increases possible cost savings. Key to prevailing in this market is therefore the focus on technological efficiency and a strong after-sales service. 2G is strong in both of these aspects and thus differentiates itself from the competition. In contrast to competitors who merely assemble all the individual parts – 2G has a higher vertical range of manufacture. In addition to the control system and the engine optimization, components such as gas and air mixers are installed individually. The necessary and important know-how has been acquired by 2G in the course of its now almost 30 years of activity in this market. This results in:

- Low total cost of ownership (TCO) regarding the cost per produced kWh, making CHPs an economically reasonable solution for clients with very short payback times.
- Highest efficiency: the efficiency of 2G's fuel-optimized engines is higher than that of competitors' conventional CHP plants.
- Excellent after-sales service: a 24-hour service with the remote diagnostics system I.R.I.S. and easy access to any part of the cogeneration plant during in-person maintenance enables 2G to provide one of the fastest and most reliable service-availability in the industry.
- Leading in plant engineering when it comes to special solutions e.g. in the field of waste heat utilization.
- H2-ready solution for lower emissions and a more sustainable future

Besides performance and after-sales service, the fuel choice is more important today than ever. Relying on conventional fossil fuels will increase costs. Natural gas, which is now

included in the EU taxonomy, plays an important role in the transition period to more sustainable fuels like hydrogen. The development towards hydrogen-fuelled cogeneration systems is not only desired by clients to reduce emissions but is also supported by governments and respective regulations. 2G is already offering a H2-ready solution for one of its products to run on 100% hydrogen (agenitor product line which makes up 35% of CHP sales plus avus1000plus line (13%) resulting in a potential H2 coverage of nearly 50% of CHP sales):

Fuel types of 2G compared to its peers



Source: Warburg Research

This bar chart illustrates the number of products of each competitor and the various fuels that can be used for each. For 2G, it means that all five products can be fuelled with natural gas, three of five also with biogas, one system with LNG and one system with hydrogen. Similar to 2G, one of Jenbacher’s engines is also available as a pure H2 engine, which can be operated exclusively with hydrogen. Caterpillar is launching a project for a hydrogen-fuelled CHP system but is not yet offering it in the portfolio. MTU and TEDOM are both offering engines with a hydrogen blending of up to 20-25%. However, 2G Energy is the sole CHP manufacturer, already offering a market-ready hydrogen CHP. All peers are still in the pilot phase and have not yet installed any H2 CHPs, whilst 2G Energy has delivered about 20 hydrogen CHP units and has received firm orders for further installations. This underlines 2G’s establishment in the market and its leading position within it.

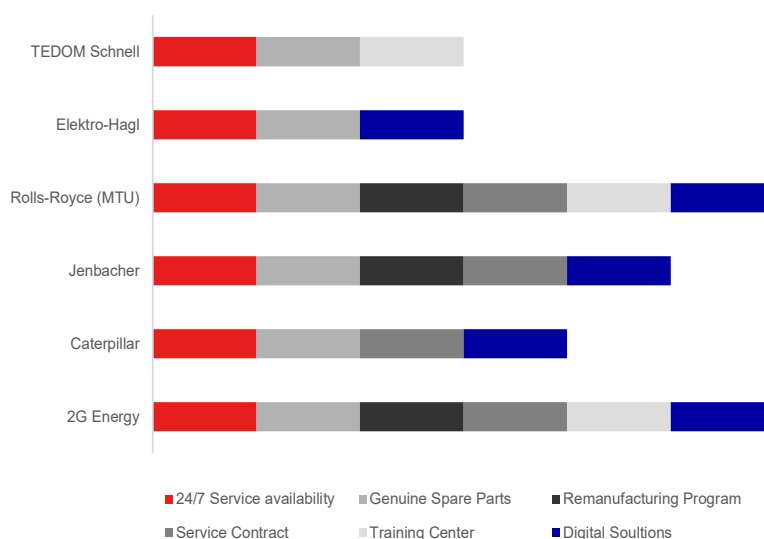
2G Energy – Engineering at its best

2G stands out as a deep-dive service provider in the CHP market, offering a comprehensive range of services that sets it apart from the competition. As a full-service provider, it prioritizes customer support and after-sales service to provide not only high-quality engines but also high-quality service and availability. Consequently, 2G’s systems have low downtimes, which leads to highly efficient performance over the entire life cycle of the CHP. 2G is not only offering professional maintenance 24/7 using only genuine spare parts, it also offers various in-depth customer services, including a remanufacturing programme, a training centre as well as digital solutions created in-house for even smoother operation. The following chart illustrates the most important services of 2G and its competition.

Extensive product offering for all use-cases

Early adoption of market trends is ensured by in-house development

Services of 2G compared to its peers



Source: Warburg Research

High-quality service network improves customer loyalty

Compared to its direct peers, 2G has the most comprehensive service offering. Even though the competition is also offering important services e.g. 24/7 availability and genuine spare parts etc. 2G still manages to convince in those areas by providing maintenance and repair of equipment also from other manufacturers. This improves customer relationships as well as loyalty. Another aspect that differentiates 2G from its peers is the development of its own training centre, which is dedicated to passing on cogeneration knowledge and efficient operation techniques to partners and customers, promoting overall industry expertise, gathered by 2G over the last 30 years of successful business operation. 2G's remanufacturing programme demonstrates its commitment to the circular-economy principle and a more sustainable business model.

These distinctive offerings from 2G showcase its commitment to innovation, sustainability and customer-centred support, making it a standout choice in the CHP market, setting higher standards for the competition to meet. Hence, 2G is supplying various customer groups in the public as well as private sector with its CHPs for different areas of usage, from the food industry, hospitals and nursing homes, to noise- sensitive areas such as hotels and educational facilities to amusement parks and swimming pools to industrial clients, SMEs, municipal utilities and biogas producers.

Digital solutions complement the service offering

The world is digital and so is 2G

2G has adjusted its business model to the digitalized world, but the competition is also offering digital solutions. 2G offers a comprehensive range of digital services on its platform my.2-g.com. This platform enables customers to efficiently perform various tasks such as ordering spare parts, managing documents, and setting up interfaces with other plants. The user-friendly and centralized digital platform simplifies operations and enhances overall system management, providing convenience and flexibility to clients. Additionally, 2G uses an advanced system for predictive maintenance. The intelligent fault prediction service (I.R.I.S.) continuously monitors plants and detects irregularities before they even occur. This leads to an even further decrease in downtimes of 2G's CHP systems, which leads to fewer interruptions in operations and to lower overall lifetime costs. With the I.R.I.S. system, 2G is able to remotely fix around 70% of occurring issues directly from the central office in Heek. This decreases on-site personnel demand which reduces costs and 2G can better deploy its experts when necessary. Similar digital solutions are offered by competitors of 2G, especially the larger competitors. Such offerings also include online parts stores and remote system analysis for faster reactions and error correction. However, 2G clearly outperforms its smaller competitors, some of whom do not offer digital services. While most of 2G's peers focus on specific technology

solutions or support services, 2G is offering a wide spectrum and covering a very broad range of needs that a customer might have, all digitalized.

Minimizing downtimes maximises clients' return

Optimizing CHP performance

CHP systems stand out with their high availability and exceptionally high efficiency. In some cases, more than 92% of the fuel can be converted into heat and electricity. To optimize CHP performance, the total cost of ownership of the system is a decisive factor. The electrical efficiency of 2G's fuel-optimized engines is around 2% higher than conventional CHP units. This outstanding efficiency reduces TCO for customers, resulting in substantial savings in the long term. In addition to the technical superiority of its products, 2G is characterized by excellent project management. This enables clients to tailor the integration of 2G's CHP plants into their energy infrastructure and ensures smooth and effective implementation.

Creating synergies with certified partners

2G is creating and using synergies to enable it to offer its customers the best possible service and experience. Synergies are created by combining 2G's in-house services with certified partnerships in markets where there are a low number of installed units. Hence, 2G's broad network of highly trained professionals ensures fast on-site visits and maintenance for smooth plant operation. These certified partners benefit from 2G's market position, innovative strength and product quality, while 2G benefits from the partners' market knowledge and customer proximity. 2G uses different partner models that can be individually adapted to the potential partners' business model and resources, such as Tipster, Sales Partner, Service Partner, Service Provider or 2G stations.

To ensure that successful partnerships last, 2G relies on open communication, timely information about new products and developments, as well as cross-regional marketing activities. In this way, 2G contributes to the lasting success of its partners and supports them in mastering their tasks in sales and service. Those synergies create value-add through cooperation and further increase customer satisfaction, which leads to a strong and sustainable positioning of 2G and its partners in the international markets for CHP plants.

Building customer loyalty

2G achieves strong customer loyalty, mostly by providing top-quality service, is thus consolidating its position as trusted partner in the de-centralized energy generation sector. 2G solely uses original 2G spare parts or components from renowned manufacturers to ensure operational reliability, efficiency and quality of the equipment. By using original parts, 2G minimizes downtime and ensures that customers' fleets are continuously operating at the highest level with the fewest interruptions possible. Consequently, this leads to reduced lifetime costs by avoiding downtime and expensive repairs.

The high-quality spare parts offered by 2G are not only tailored to 2G's engines but also cover a wide range of competitor engines series, including MAN, Liebherr, Scania, Mitsubishi and Jenbacher. The parts are optimally matched to the individual CHP unit, ensuring maximum operational reliability and efficiency. By offering professional maintenance and repair services for other manufacturers' equipment as well, 2G demonstrates its high level of expertise and the trustworthiness of 2G's service quality. To ultimately underline 2G's commitment to building long-term and trusting relationships with its clients, 2G is offering the best possible price for original spare parts, including regular special offers and promotions.

Tailormade: Customized solutions for specific demands

For clients planning to integrate a CHP plant to their energy management system, 2G Energy offers a broad consulting service, seeking the best application for the client. Within the project management, all relevant boxes are ticked to ensure the system complies with the exact use-case of the client. Usually, 2G Energy plans the installation together with

Partnership approach to international service offering

High quality is rewarded by clients

Tailormade solutions for any CHP use-case

clients, produces the plant and installs the system on site. This allows 2G Energy to access different client groups and allows for a diversified customer portfolio:

- CHPs can be installed as part of a larger energy management system, using the produced electricity and heat to meet demands in manufacturing processes.
- Process heat in the chemical or food industry can be supplied by CHPs directly on site.
- Critical infrastructure such as hospitals or nursing facilities can use CHPs as reliable and cost-efficient source of energy.
- Large event locations and public buildings with occasionally high energy needs profit from the short ramp-up times of CHPs and the combined heating and electricity generation. This becomes particularly important if peak demand of the location arises in times of high energy prices. CHPs can be used to ensure a reliable calculation basis for energy costs.
- Utilities and grid operators can use CHPs as part of their peak- and base-load infrastructure or when building hydrogen clusters.
- Biogas plants are still a key market for 2G Energy, providing a suitable solution for efficient utilization.

Within 2G Energy's extensive product range, CHPs can either be installed directly in the building, fully customizable to the existing infrastructure, or in containerized solutions. Further specifications, such as noise control, cooling units on the roof of the container and air inlets and outlets complement the project development services and allow for an individual solution for each use-case and client.

Covering integral parts of the value-chain...

Value-chain coverage capitalizes on core competence

The production of CHPs by 2G Energy is performed as an assembly business, limiting the vertical integration of the company with regard to the products used in the CHP. However, to ensure high quality and availability of parts, 2G Energy has entered into close partnerships for the supply of critical parts of the engine.

With the exception of the products used, 2G Energy shows extensive value-chain coverage, which we deem to be crucial to defending its technological leadership:

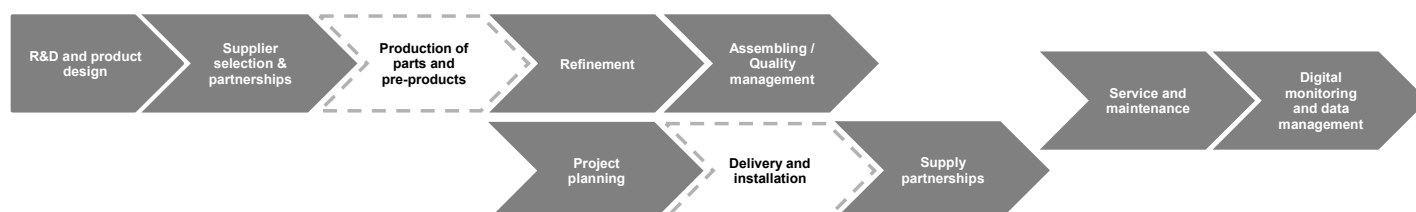
- **Product design and R&D:** All products are developed in-house, including the specific requirements of the parts used. With Liebherr, 2G Energy has developed individual engines for some of its CHPs, which are customized to deliver the maximum performance and perfectly fit all other parts.
- **Sourcing:** The sourcing strategy of 2G Energy is based on building long-term partnerships with high-quality suppliers, internationally and locally.
- **Refinement:** Some parts are delivered as unfinished parts, for example the hydrogen engine by Liebherr, and are refined by 2G Energy.
- **Project development and sales:** To comply with any client needs, individual solutions are offered by sales and project development, suited to the clients' specific use-cases and requirements.
- **Production:** To ensure high quality and in-time delivery, 2G Energy produces the CHPs, delivers the plant to the site and installs the application. In each step, high quality standards and extensive product testing ensure the highest quality possible.
- **After-sales and service:** A widespread service network of in-house technicians and trained service partners offer clients the best-in-class lifetime management. Maintenance and repairs are performed with original spare parts while around-

...positions 2G as technology leader

the-clock availability limits downtimes of the plant, ensuring maximum performance for the user.

- **Digital tools and data collection:** 2G Energy has digitized the data management and maintenance of CHPs, allowing for precise service and early detection of malfunctions.

Value-chain coverage by 2G Energy



Source: Warburg Research

Pioneering the CHP market with new product lines

Demonstrating leadership as technological pioneer

When 2G Energy was founded back in 1995, the narrow focus on one product and engineering excellence positioned 2G Energy as a quality and technology leader in the nascent CHP market. A close relationship with clients and striving to deliver the best performance on the market, resulted in several inventions and the development of new CHP generations. As the market for biogas CHPs started to struggle under insufficient regulatory support, 2G Energy started to extend its natural gas and LNG-offering to compensate for the narrowing biogas market growth.

Further developments such as containerized solutions, digital monitoring systems and engine optimizations set further milestones, allowing 2G Energy to take advantage of a fast-changing market environment and to unlock growth opportunities.

Innovative product design allows for new partnerships

The same is true for hydrogen CHPs, where 2G Energy developed the first CHP and reached market majority prior to its peers. A result has been the partnership with Centrica, a UK-based utility. In the past, Centrica produced CHPs itself but it did not manage to develop a hydrogen CHP that could compete with that of 2G Energy. Centrica closed down its own production in the UK and entered a partnership with 2G Energy for hydrogen CHPs, and the first tangible orders have already been placed.

Going forward, 2G Energy could enter further similar partnerships when it comes to the design, development and implementation of complex hydrogen clusters, bringing its extensive product know-how, project management experience and engineering capabilities to the table.

Compared to its peers, 2G Energy has also gained a substantial competitive edge in the hydrogen CHP market. With 20 hydrogen units already sold, 2G Energy is clearly ahead of its peers, who are still in the prototype stage or pilot series. Another indication for the technology leadership of 2G Energy in hydrogen is the attention of large-scale clients, using 2G's CHPs for their own applications. Siemens Energy for example added a 2G Energy hydrogen CHP to its electrolyser for its presentation at the World Expo in Dubai, clearly underpinning the edge 2G Energy has gained thanks to its own R&D performance.

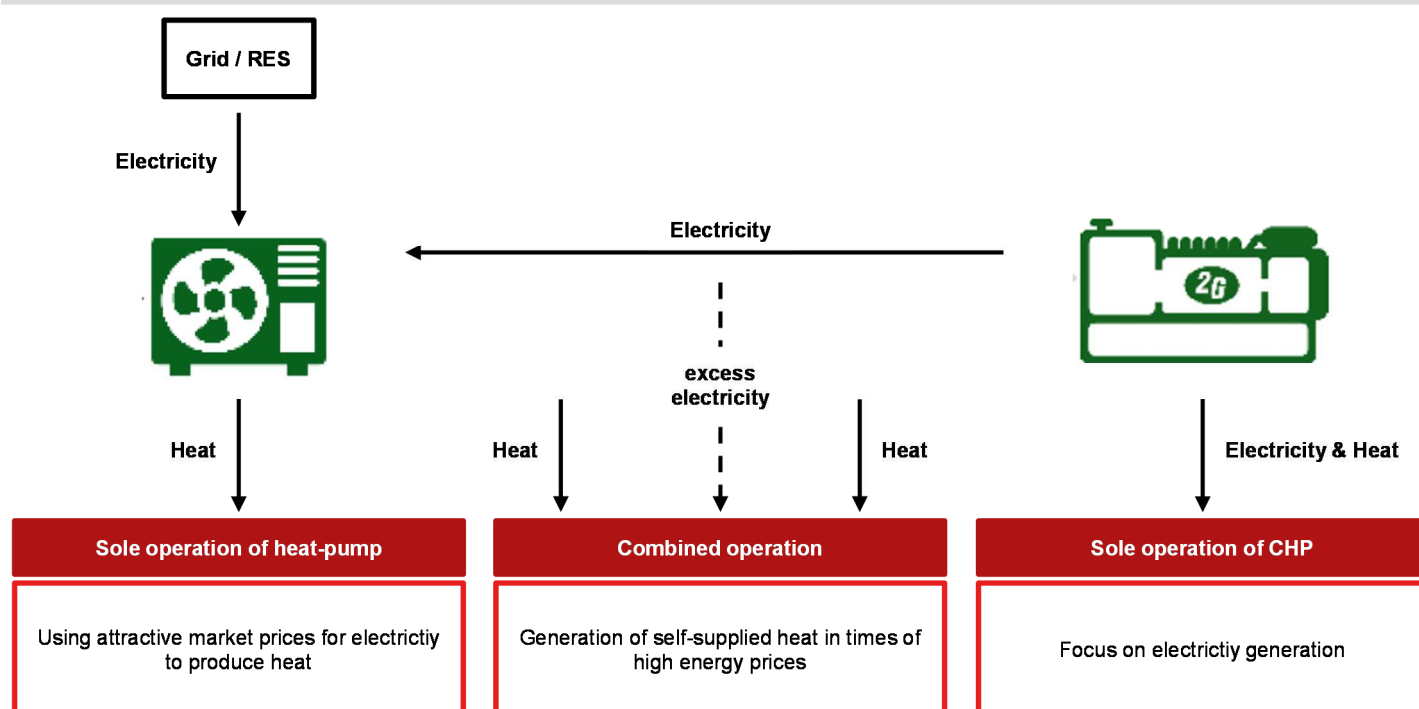
The best of both worlds – combination of heat-pumps and CHPs

For 2G Energy, the addition of large heat-pumps to its product portfolio is a somewhat natural expansion of its existing product focus due to a vast overlap in procurement, already existing access to relevant customer groups and experience gained in the combined installation of CHPs and heat-pumps. On customer demand, 2G Energy has already installed a combined solution, by combining CHPs with another sub-system using the same control unit, which has been a regular use-case for clients.

For the assembly of large heat-pumps, several components such as the container, heat exchanger, pump, valves and other small components are congruent to CHPs but synergies in project development, customer access, sales and service are also an integral part of the product roll-out. Key is the integration of both engines in one, smart control-unit, which can manage the combined operation.

In Q3/23, 2G Energy announced the acquisition of a small, specialized manufacturer for heat-pumps in the Netherlands, which has already a profound experience of about 15 years. Key driver of the acquisition has been the experience (more than 200 references) in successful project implementation, which should allow 2G Energy to deliver proof of concept to its clients. The assembling of heat pumps will be transferred to the headquarters in Heek and the installed fleet will be included in 2G Energy's service unit to reach a maximum of quality and economies of scale.

Use-case for combined CHP / heat-pump operation



Source: 2G Energy, Warburg Research

- **Sole operation of heat-pump:** If power from the grid is cheaper than electricity and heat produced by the CHP, the heat-pump operates stand-alone.
- **Combined operation:** In times of high power-prices and extensive need for heat ("Dunkelflaute"), the CHP supplies the electricity for the operation of the heat-pump.
- **Sole CHP operation:** Covering peak-load electricity, the CHP operates stand-alone with a prime focus on cheap electricity production.

The control unit needs to manage the different use-cases dynamically, dependent on power prices and the client's energy needs to ensure the cost-efficient operation of both units. 2G Energy already offers a capable solution for the combined operation and has access to the relevant client groups, which should allow the new product line to achieve high market penetration. Hence, offering both products is not solely an extension of the product range, but also an additional growth driver for CHPs as part of a complex energy-management system.

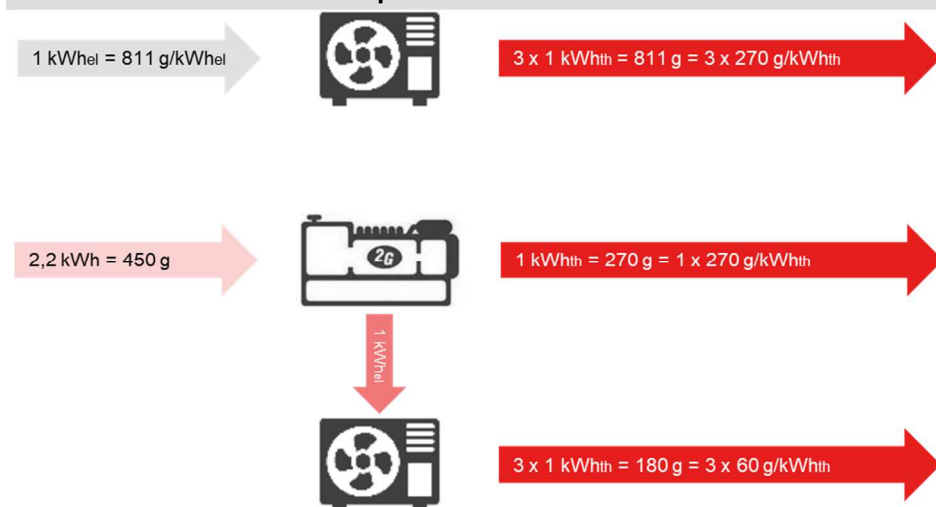
Innovative product design allows for new partnerships

To ensure smooth operation, heat-pumps can be integrated into the existing service offering of 2G Energy, which we deem to be an important decision-making factor for

clients, seeking a one-stop solution for their energy needs. For 2G Energy in turn, the extension of its service offering should benefit the scaling of its existing service network and spare-parts management, which we expect to become visible on the margin side. The same is true for project management, where 2G Energy is already managing the complex integration of CHP systems for different use-cases. The addition of heat-pumps combined with the extensive experience of 2G Energy should be an important selling point, underlining 2G Energy's core competencies.

However, high market penetration should be enabled not only by the technical and economic interaction of CHPs and heat-pumps but also by the reduction of GHG emissions. Compared to the operation of heat-pumps with electricity from the grid during winter times, where any additional electricity demand will be covered by fossil sources, the combined operation allows for the reduction of CO₂ emissions of up to 60%, even if the CHP is operated with natural gas.

CO₂ emission of combined operation



Source: Statista, Warburg Research

Theoretically, the CO₂ emissions could even be reduced to zero if the CHP is operated with green hydrogen, making the combined system more competitive as emission costs (CO₂ certificates) become more expensive.

Analysis of Return on Capital

- The balance sheet is dominated by working capital, which reflects the business model of 2G Energy.
- Characterized by a high equity ratio and low financial gearing, 2G Energy has a solid balance sheet.
- Capex requirements are marginal due to the low capital intensity of the assembly business.
- However, working capital is key for FCF generation, which is set to increase, backed by increasing EBIT margins.
- ROCE analysis shows returns well ahead of the capital costs and proves the appeal of the business model to investors.

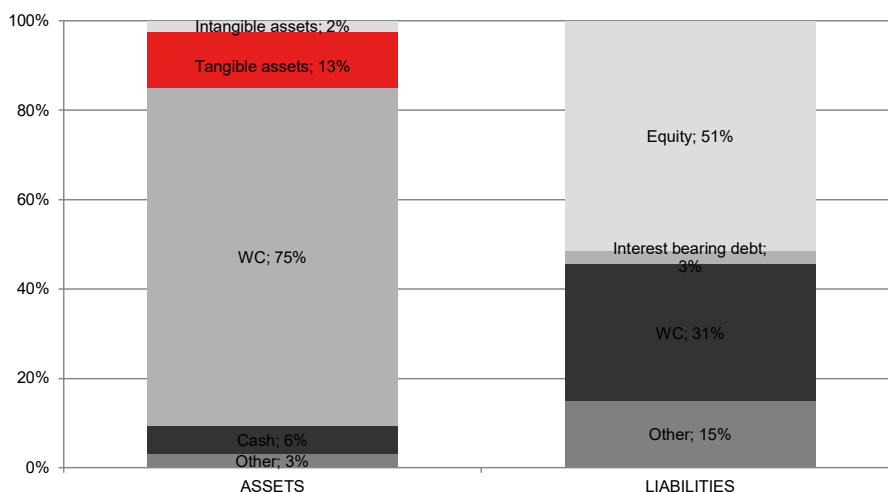
Balance-sheet structure

The balance sheet of 2G Energy reflects the company's business model, the assembly of CHPs. As most of the parts needed are delivered by suppliers, no heavy machinery and equipment is needed, apart from the work stations, production halls and spare-parts warehouse. Hence, tangible assets account for only 13% of the balance sheet, accompanied by 2% of intangible assets. The majority of assets is working capital, though its share depends on the number of unfinished CHPs on the reporting date (unfinished goods; inventories).

A similar structure can be found on the liability side, which is dominated by a comfortable equity ratio (51% in 2022), followed by working capital (31%) and a minor debt position (3%).

Balance sheet is dominated by working capital

Balance-sheet structure (FY 2022)



Source: 2G Energy, Warburg Research

Solid balance-sheet structure due to high equity ratio of >50%

In general, 2G Energy shows a very solid balance-sheet structure due to its high equity ratio and very low leverage. However, working-capital management plays a crucial role when it comes to free cash flow and returns generation, as capex requirements are very limited in 2G Energy's business model.

Working-capital management

The high working capital ratio of 2G Energy is natural for its business model. 2G Energy focuses on the development and subsequent assembly and servicing of CHPs, which requires high inventories for pre-products and spare parts. In addition, unfinished CHPs on the reporting date additionally boost inventories (EUR 66.7m of unfinished goods in 2022), especially as the largest payments are triggered with the dispatch of the CHP.

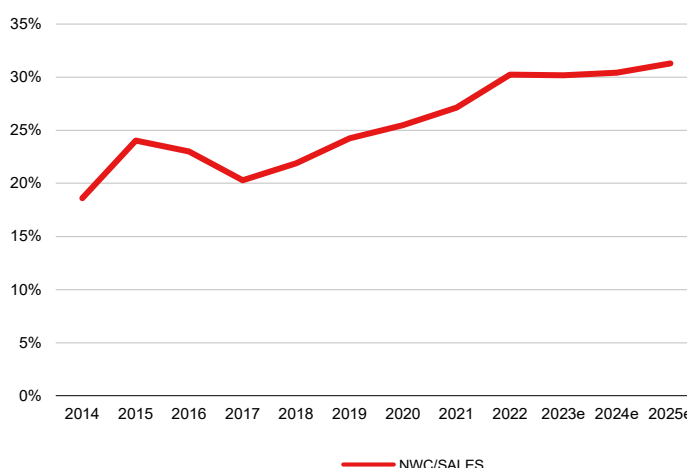
**Working capital is expected to increase
with new product lines**

However, risks associated to the construction of CHPs and the build-up of working capital, can be regarded as low. 2G Energy only starts construction of CHPs after a client has placed a firm order and order cancellations only occur in exceptional cases (insolvency, site closures). Only a negligible proportion of orders are cancelled in very early stage (3-5%) or pre-planning period (3-5%). Hence, all CHPs shown as inventories will be delivered in the next reporting period.

On the German market, a down-payment structure of 30%-60%-10% (order-delivery-acceptance) is common, whilst other regions like the US or Asia tend to have more back-end loaded payment terms. Hence, 2G Energy has to pre-finance about 70% of the production costs, especially as its imputed payment period for liabilities (10.1 days in 2022) is shorter than the period for accounts receivable (67 days in 2022).

In addition, a growing number of serviced CHPs, extended product portfolio and targeted delivery capability require additional inventories, though the comfortable equity position allows for plenty of headroom.

For our forecast (all scenarios), we expect the working capital ratio to slightly increase to 34%, reflecting an increasing proportion of international sales (less down-payment), growing service business (spare parts) and establishment of new product lines (hydrogen, large heat-pumps).

Development of NWC/sales


Source: 2G Energy, Warburg Research

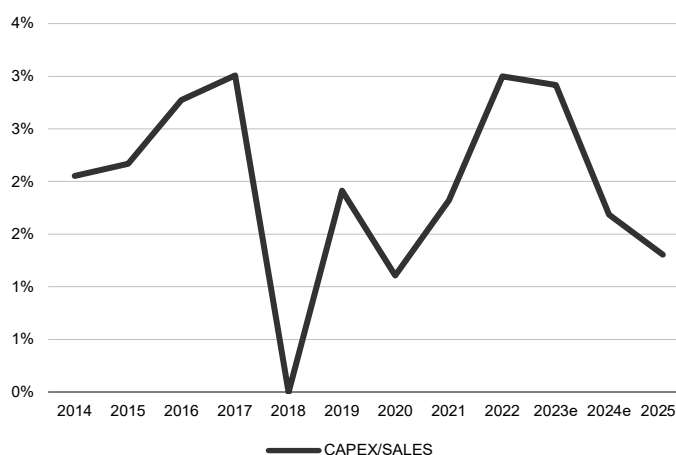
However, uncertainties with regard to unfinished goods on the reporting date might result in greater fluctuation in the working-capital ratio than assumed by us. In 2022, unfinished goods increased by EUR 25.7m, which was far higher than in previous years, hinting at a possible reduction in inventories in 2023, when the stocked CHPs will be delivered. Another possible explanation could be supply-chain disruptions and inflationary tendencies, prompting 2G Energy to build up stocks of pre-products to enable it to process its order book.

Low intensity of investment is reflected in low capex

Capex requirements remain on low levels

The business model of 2G Energy does not require major investment in machinery and equipment, which becomes visible in a low proportion of tangible assets on the balance sheet and minor capex ratio. Apart from investments in buildings and some smaller acquisitions, the largest capex position is “other equipment”, which we regard as maintenance capex in equipment for the production of CHPs.

CAPEX/sales ratio



Source: 2G Energy, Warburg Research

In our forecast, we do not assume major capex and keep the investment ratio stable at around 1.5%. However, some positions are a result of the extended product portfolio and therefore part of our forecast:

Capex forecast reflects new product lines and extended service

- Since we are assuming an increase in the proportion of service sales, the capex/sales ratio should slightly decline as investments are not yet needed in the service segment.
- In 2022, 2G Energy bought additional property at its headquarters in Heek to secure space for additional production facilities, even though the current capacity is not yet fully utilized.
- We assume the additional buildings will require capex of EUR 4m, split between FY 2023 and 2024.
- In Q3/2023, 2G Energy announced the acquisition of a small, specialized large heat-pump manufacturer in the Netherlands (WRe: EUR 3.75m).
- In our accelerated forecast, we assume capex will increase in FY 2024-2026 to 3% of sales, reflecting the additional product line for large heat-pumps and associated investment in tools and working stations.
- At some point, 2G Energy will need to expand its spares warehouse to back its growing service unit. To include the additional investment in our forecast, we applied a higher capex ratio to the transitional period than the historical average.

In addition, smaller acquisitions of service providers or specialized, local CHP manufacturers could be executed in coming years to strengthen 2G Energy's footprint in foreign countries. Investment volumes should be negligible though (WRe: EUR 0.2-1.5m), in particular as the management does not follow a dedicated consolidation or M&A strategy.

In addition, smaller acquisitions might be on the agenda, though investment volumes should be negligible (WRe: EUR 0.2-1.5m). Possible targets could be (I) specialized niche-market players or start-ups for hydrogen components (II) international sales and service partners which are facing a generation change or allow 2G Energy to strengthen its local

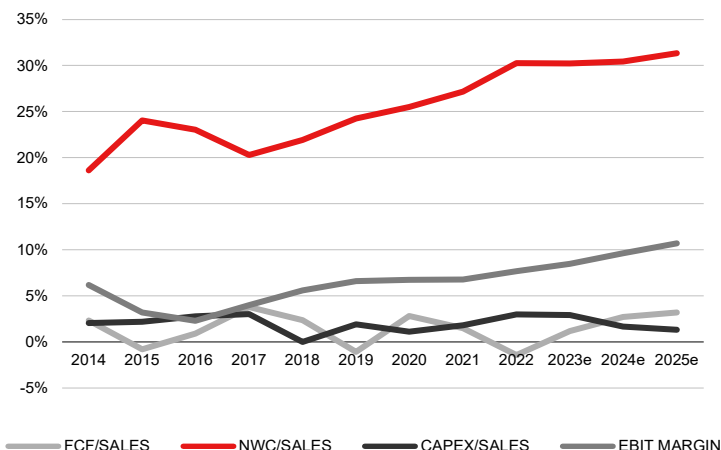
footprint (III) manufacturers or suppliers of large heat-pumps. However, the management does not follow a dedicated consolidation or M&A strategy.

FCF is driven by working capital and operating leverage

FCF generation driven by revenue growth and operating leverage

The main driver of FCF generation is working capital movements and the operating leverage on growth, or the development of 2G Energy's EBIT margin. As described above, capex plays a minor role, even though 2G Energy's FCF generation turned negative in years with a high WC build-up and higher investment than usual.

Development of FCF and its main drivers



Source: 2G Energy, Warburg Research

Expansion of EBIT margin triggers increase in FCF

Our forecast assumes capex will remain stable at around 1.5% of sales and that working capital will increase slightly to 34% (+4% compared to FY 2022). Hence, gains in FCF generation are driven by operating leverage, allowing 2G Energy to increase its EBIT margin with growing sales. The key drivers behind the assumed EBIT-margin expansion in our forecast are explained in detail in our financial forecast:

- The “Lead to Lean” programme and the transition to line-production for small CHPs
- Increasing proportion of service sales, which carry higher margins
- Price increases following the surge in input costs in 2022
- New product lines and 2G's first-mover advantage for large heat-pumps should allow for a high pricing power (accelerated case).
- Balance-sheet dynamics – depreciation ratio should decline slightly, following the capex outlook
- Scaling of overhead costs

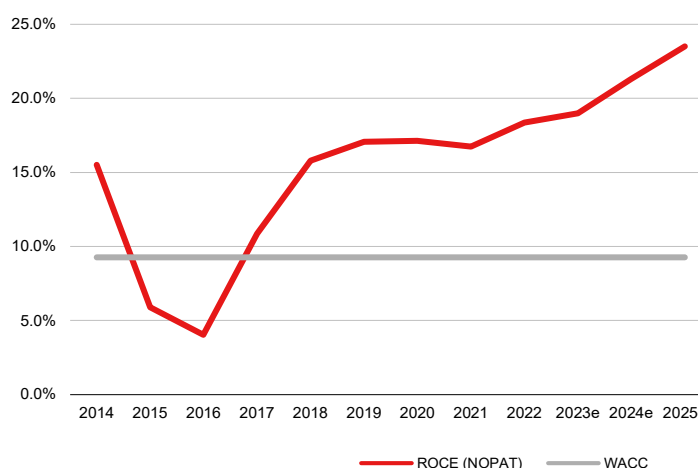
As a result, margin gains lead to growing FCF generation, benefitting 2G Energy's cash position and equity ratio. While occasional fluctuations in the working-capital ratio might reduce FCF generation, as described above the excellent growth prospects and efficiency measures already implemented on the margin side should result in increasing FCF generation, even if there is a disproportionate increase in working capital.

2G Energy generates returns well ahead of its capital costs

Attractive ROCE profile for equity investors

Historically, 2G Energy delivered an attractive ROCE profile, except for the years 2015/16, where a sharp decline in biogas CHP sales and regulatory changes left their mark on EBIT generation. However, since then, 2G Energy has expanded its local footprint and product offering to diversify its income streams.

In addition, the sustainable improvement of its margin generation boosted ROCE generation, peaking in an upbeat return of 18.4% in FY 2022.

ROCE generation


Source: 2G Energy, Warburg Research

We calculate the capital costs (WACC) at 9.27%, which 2G Energy has managed to surpass since FY 2017.

Strong ROCE profile proves the appeal of 2G's business model

In our forecast, we expect average capital employed to increase as a result of the growing FCF generation and subsequent expansion of equity. However, the margin expansion on EBIT level more than compensates for the higher CE, resulting in further ROCE growth, well above the calculated cost of capital.

Similar to FCF generation, fluctuations in the WC ratio would also affect ROCE generation, though we expect the positive trend of 2G Energy's returns profile to be sustainable based on the analysed key drivers behind growth and margins.

Growth

- 2G Energy is well positioned to profit from the phase-out of nuclear and coal power plants and the transformation towards net zero.
- CHPs are able to supply both peak and baseload power, making it an integral part of the energy network of the future.
- Offering an already available and cost-efficient solution, CHPs can be used to stabilize grids in times when RES supply falls short of power demand.
- The hydrogen infrastructure, which should play an integral part in future clean energy supply, is already anticipated by 2G with a leading product offering.
- Large heat-pumps are facing tremendous market growth and 2G Energy as an early adopter can benefit from the new growth opportunities.

Pathway to net zero offers extensive growth opportunities

Decarbonization and the path towards climate neutrality are essential strategies in addressing climate change. The current relevance and importance of the topic is underlined by the various goals and targets that were set in the last couple of years, for example with the Paris Agreement, the Sustainable Development Goals and the European Green Deal.

The popular buzzword, ESG (Environment, Social and Governance) and sustainability goes beyond cost-efficiency as the sole decision-making factor. Organisations and companies recognise that integrating ESG considerations leads to long-term value creation, risk management and regulatory compliance, attracts investors and unlocks innovation and opportunities. Cost-efficiency is not any less important but it is balanced by these broader factors to ensure sustainable and responsible business practices.

2G Energy, as a leading supplier of CHP systems, profits from this development, as CHP systems are known for their high energy efficiency by generating electricity and heat simultaneously from a single fuel source and thereby reaching efficiency levels of more than 90%. Besides the fact that CHP systems provide flexibility and independence from the power grid by generating power and heat directly on site, CHP systems also profit from the gradual shutdown of coal and nuclear-powered plants, as they are primarily fuelled with gas, which works as a bridge in the transition period until other renewable energy sources become more broadly established. 2G is also pioneering so-called “H2-ready” systems by offering a CHP system working with 100% sustainable hydrogen and it is also able to convert LNG-fuelled systems into hydrogen-fuelled systems. Therefore, 2G is well-positioned to participate in and profit from the path towards climate neutrality.

CHPs offer an efficient and low-emission alternative

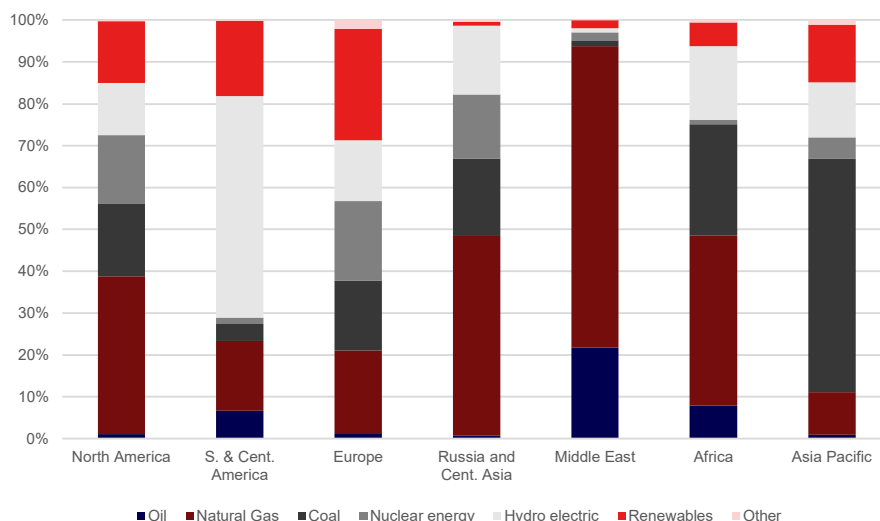
Bridging the gap during the phase-out of conventional power plants...

With the Paris Agreement, almost 200 countries made a commitment to contribute to limiting global warming to 1.5 degrees Celsius, to reduce greenhouse gas emissions and to provide financial and technological support to developing nations. Additionally, the European Green Deal is a policy framework to achieve climate neutrality by 2050 by transforming the EU's economy, industries, and energy systems to reduce greenhouse gas emissions. Germany has ambitious climate targets, based on the Paris Agreement, that include a reduction in greenhouse gas emissions of at least 65% by 2030 compared to 1990 levels and to achieve carbon-neutrality by 2045.

Looking at worldwide power generation, measured in TWh, oil-based generation has shrunk to a minimum in most regions of the world, whereas coal and gas are still dominant sources. Renewable power generation is expanding, particularly in Europe, but also in the US and APAC.

Phase-out of coal and nuclear offers plenty of growth

Power generation by fuel and region in 2022 in TWh



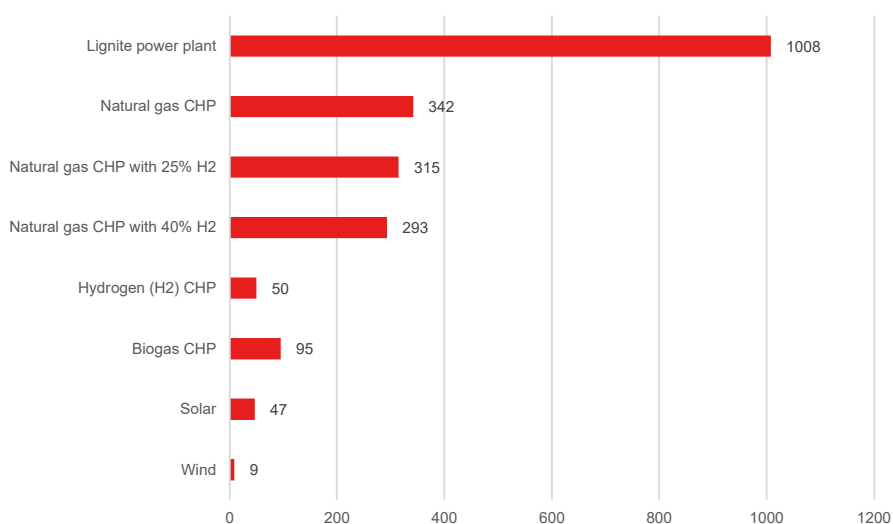
Source: EI – Statistical Review of World Energy 2023, Warburg Research

Since coal-driven power plants will mostly be shut down in the coming years, there will be a gap that needs to be filled. Many countries will be dependent on gas, especially those nations without widespread expansion of renewable energy sources such as wind or solar energy.

Bridging the gap with gas-fired CHPs...

CHP systems have the potential to play a big role in that transition period as they are fuelled mostly by gas. 2G's CHP systems work with natural gas, LNG, biogas and hydrogen. Therefore, 2G is well prepared to take a leading position in that transition period. Compared to other gas-fired plants, CHP systems have the advantage of very low GHG emissions.

GHG emissions of different types of electricity generation in g CO₂ eq/kWh



Source: 2G Energy AG, Warburg Research

- Compared to coal-fired power plants, CHPs offer a carbon emission savings potential of about 40-60%.
- With an increasing share of H₂ used in the CHP, emissions can be reduced to close those of PV.
- Biogas CHPs predominately emit methane rather than CO₂, reducing GHG emissions by about 90% compared to coal power plants.

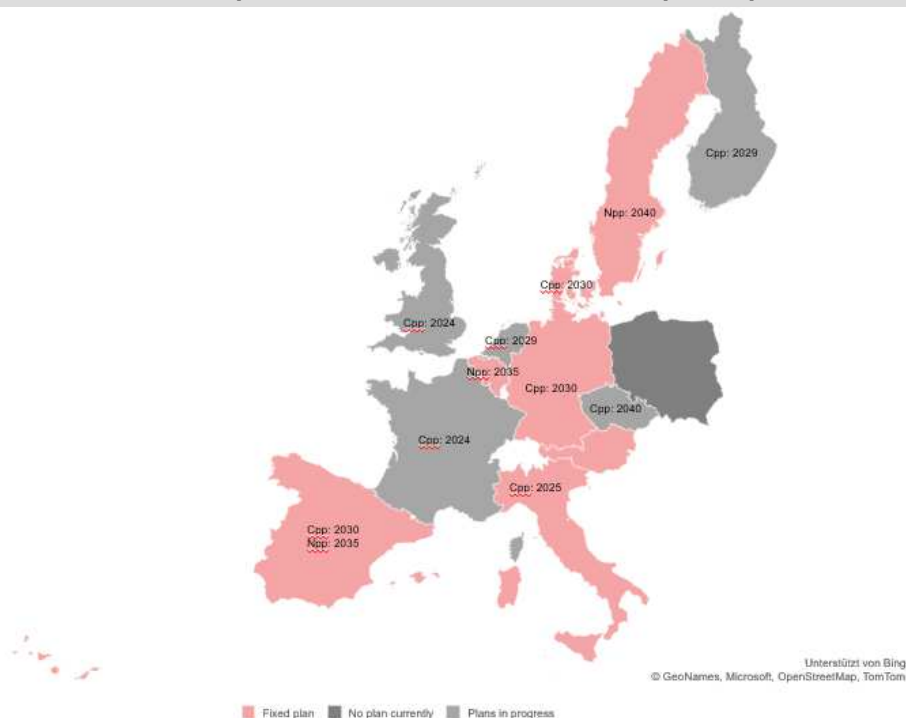
...saving up to 60% GHG emissions

- Since CHPs use natural gas or LNG more efficiently, GHG emissions are also lower than gas-fired plants. However, the reduction is dependent on the type of plant used as a comparison (CCGT, OCGT).

The cogeneration of electrical and thermal energy makes CHP technology more efficient and much more climate compatible than conventional energy production methods, achieving efficiencies of 90% and more while saving at least 25% of primary energy in a resource-conserving manner.

Twelve European countries have already decided to shut down coal-fired plants and, while nuclear power has been recognized as a renewable energy source according to the EU taxonomy, some countries are also phasing out nuclear power, such as Germany, which shut down the last plant in spring 2023.

National shutdown plans for nuclear and coal-driven power plants



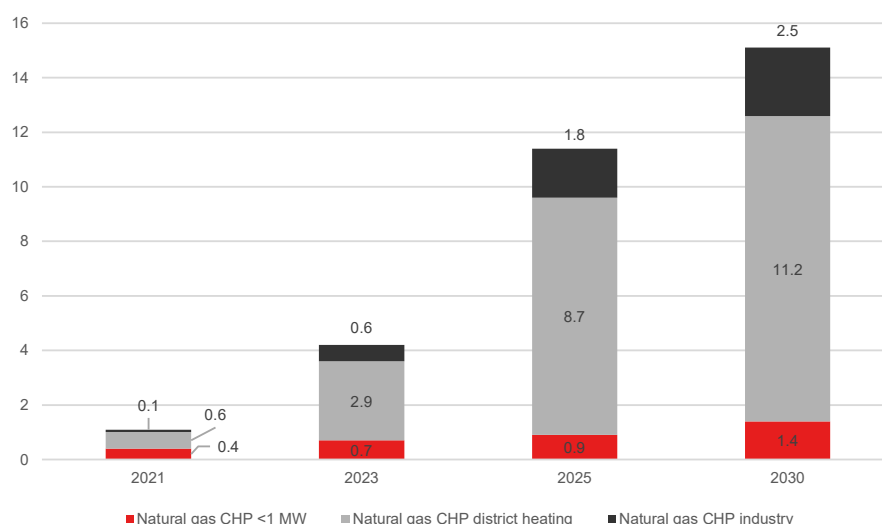
Source: Encavis AG, Warburg Research

Flexibility of CHPs is key during the transition period

To bridge the gap until sufficient energy is produced from renewable sources, gas-fired plants will be needed as a bridge technology with 2G Energy offering a flexible solution to its clients. In its core market Germany, about 20% of the primary energy consumption will need to be covered by sources other than PV, wind, hydro and biomass by 2030. Furthermore, energy consumption is expected to grow, making natural gas an important cornerstone of the national energy roadmap.

Until 2025, the capacity of natural gas and other non-renewable energy sources is expected to increase to about 33GW by 2025 and approx. 35GW by 2030. Plans of the Federal Ministry of Economics and Climate Protection aim to add about 14GW in CHP capacity until 2030 (compared to 2022), offering plenty of growth opportunity for 2G Energy.

Addition of gas-fired CHP plants in Germany in GW



Source: Federal Ministry of Economics and Climate Protection,

The main addition of CHPs refers to district heating and industrial applications, though the market for small-sized CHPs (<1MW) is also set to experience major growth. Basically, 2G Energy has a suitable product offering for all of the three baskets, though heating and small-sized CHPs should make the largest contribution to 2G Energy's growth.

In Germany, CHPs can be used in district heating (combination of a large number of units) and local heating (combination of roads, smaller industrial areas). However, only 14% of households are currently connected to district heating and the further expansion is cost-intensive and requires long planning and construction periods. In contrast, local heating networks (combination of CHP and heat-pump) can be established in only three to five months and are usually more suitable to the existing estate development. Hence, the more tangible market in the near future should be local heating, using the combined benefits of CHPs and large heat-pumps with 2G Energy offering the one-stop solution for such projects.

CHPs are suitable to bridge the power gap arising from coal and nuclear shutdown in Germany based on their short payback time and ability to deliver peak-load power.

The shutdown of nuclear power plants in Germany in 2023 and the planned roadmap to exit coal poses an increasing risk to grid stability, especially in light of rising energy demand. To fill the emerging gap, renewable capacities are intended to be increased substantially, but until sufficient storage options are operational, grid operators face the threat of insufficient supply, which has been dubbed the "Dunkelflaute" in Germany and literally translates as the "darkness-lull" (longer period with insufficient supply from PV and wind, which cannot be offset by other RES, short-term storage or load management by grid operators).

- The absence of irradiation and wind limits energy contribution from renewable sources. Calculations show that, during such an event, only 2% of the installed wind capacity would feed into the grid.
- To keep grids stable and level supply and demand, plants with a low ramp-up time, such as gas power plants or CHPs, are needed to fill the gap.
- Some of the energy needed might be imported from other countries. However, since most countries with which Germany is able to exchange energy are also boosting their renewables share, availability might be very limited or even impossible.

As the renewable energy transition evolves, smart grids, storage solutions (battery, hydrogen) and extended intercontinental exchange grids should limit stability risks to the

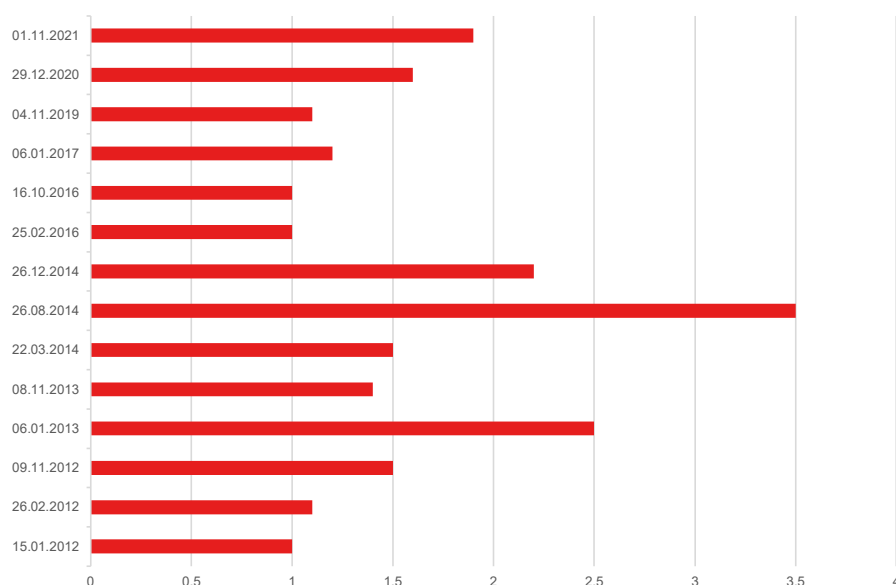
Regulators aim to increase CHP capacity significantly

The "Dunkelflaute" can be solved with CHPs

grid, though the installed capacity as well as grid development will take years to be built. In Germany, transmission grids need to be built to transport power from the east/north (available PV and wind power) to the west/south (industrial zones) though the planning procedures are very sluggish and the plans are not expected to be realised in the near future. In contrast, the existing gas pipelines can be transformed for the transportation of hydrogen, making H₂ available faster in the industrial west/south of Germany. This should emerge as an additional growth driver for hydrogen CHPs, as an alternative to PV and wind power, in regions which are not connected to the transmission grid soon enough but which have access to the former gas grid.

Lull-periods ("Dunkelflauten") lasting for weeks can occur several times a year. The following diagram shows the longest "Dunkelflauten" in Germany between 2012 and 2021:

Longest "Dunkelflauten" in Germany since 2012 in weeks



Source: Agora Energiewende, Warburg Research

Looking beyond 2030, up to 95% of total energy demand would have to be covered by back-up systems to ensure a stable power grid and power supply.

CHPs can be used as counterparts for such situations and mitigate its effects as they provide de-centralized peak and base-load power. Consequently, CHP plants offer the following advantages:

- Continuous power generation since they are fuelled with natural gas, biogas or hydrogen and therefore operate independently of solar and wind conditions (base-load power).
- Peak-load balancing in times of excess power demand or surging power prices, caused by insufficient supply from PV and wind.
- As CHP plants are often installed in de-centralized units, they contribute to grid stability by balancing loads in the local power grid and thereby preventing congestion.
- CHPs ramp up in only a few minutes. Hence, they can be operated flexibly to balance a short-term surplus in demand (peak-load).
- The payback time of CHPs is only 5-10 years. In addition, some of 2G Energy's plants can be converted into hydrogen plants, making them a suitable solution until sufficient large-scale storage units have been built.
- In times of high price volatility, or short periods of very high power prices, CHPs are already profitable at only 2,000-3,000 operating hours a year. Since the

development of RES capacities is expected to increase volatility on power markets, CHPs increase its competitiveness further (total cost of ownership).

- Dunkelflauten often arise as cold Dunkelflauten, referring to periods where a lack of RES energy supply is accompanied by low temperatures and the need for heating. As CHPs can be used for both electricity and heating, they provide the best solution in such a scenario.

...and profiting from the transition to hydrogen thereafter

Growth prospects for 2G Energy should last beyond the transition period, when the share of gas is expected to diminish in favour of hydrogen. All CHPs newly delivered by 2G Energy with an output from 100kW to 1MW can be converted to operate with hydrogen as part of the regular maintenance service. The cost of the conversion amounts to 10 to 15% of the new purchase value. If the conversion is executed after 30,000 hours in operation (half of the life-time of the engine), the costs for the hydrogen conversion are below 1 EURct/kWh produced for the remaining 30,000 hours in operation. Therefore, gas-fired CHP systems from 2G represent a secure investment in climate-neutral energy supply as they take advantage of the gas-focused transition phase but can then be converted into 100% hydrogen-based systems, as soon as the hydrogen expansion has progressed far enough.

In general, hydrogen can be produced in various ways, which differ in carbon emission and production costs:

- **Grey hydrogen:** Steam methane reforming to produce hydrogen from natural gas or coal. This technology is currently dominant, accounting for around 96% of H₂ production. While being cost-effective, this process generates significant CO₂ emissions and is therefore referred to as “grey hydrogen”.
- **Blue hydrogen:** The gas or coal-based H₂ production is called “blue hydrogen” if CO₂ is not released into the air but rather stored in combination with a carbon capture and storage (CCS) facility. Basically, blue hydrogen is grey hydrogen plus CCS (“carbon capture and storage”).
- **Green hydrogen:** “Green hydrogen”, on the contrary, is more expensive as it is produced in a climate-neutral way, e.g. by electrolysis using electricity from renewable sources.
- **Red hydrogen:** Similar to the production of green hydrogen, red hydrogen uses electricity from nuclear power plants to produce H₂. In some European countries, this way of production is favoured since nuclear power is already available and regarded as climate-neutral. In the near future, small modular reactors should deliver the needed power more securely and cost-efficiently.

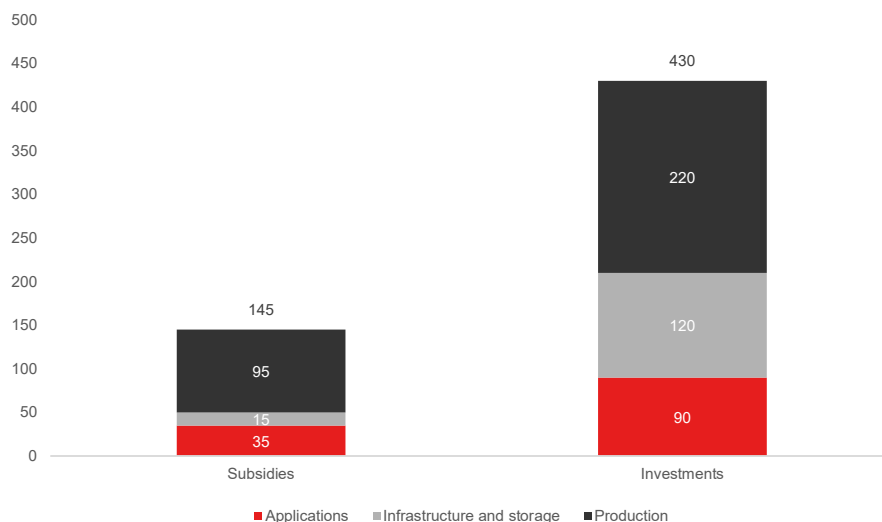
For the transition phase, the EU hydrogen strategy relies on blue hydrogen, as production is based on natural gas and is therefore cheaper. Germany, on the other hand, is aiming to pioneer green hydrogen technology and, with its national hydrogen strategy, is aiming to become and remain a market leader in hydrogen technology. With the EEG, the German government is already promoting innovative concepts to combine renewable energies with local hydrogen-based electricity storage. Combined with the CHP Act, Germany is paving the way for sustainable CHP systems powered by hydrogen, with 2G Energy being one of the main beneficiaries.

Problematic so far is the weak expansion of the H₂ grid. Internationally, only around 5000 km of hydrogen pipelines are already built, mainly in the US (2600 km), Belgium (600 km) and Germany (400 km). This number seems very small compared to the 3 million km of natural gas pipelines. Injecting hydrogen into the gas grid could significantly reduce the upfront investment costs of H₂ projects. Nevertheless, the hydrogen expansion requires huge amounts of investment, and the EU is promoting the hydrogen-based energy supply with subsidies.

2G Energy addresses the hydrogen market as an early adopter

In order to replace carbon-intensive sources and establish a storable intermediate product which can also be used in industrial processes, governments presented ambitious plans for the development of a hydrogen infrastructure. Most prominent is the European hydrogen strategy, which aims to deploy major investments in hydrogen applications, infrastructure and production:

Huge investment in hydrogen infrastructure planned until 2030 (EURbn)



Source: Handelsblatt, Warburg Research

The EUR 145bn subsidy package includes direct subsidies and loans for companies investing in hydrogen systems. Total investments of EUR 430bn are required for a construction of a hydrogen system in Europe and should be deployed in three phases:

Hydrogen development is backed by subsidies

- The first phase comprises the scale-up of manufacturing of large electrolyzers with a capacity of up to 100 MW, the decarbonisation of existing hydrogen installations and facilitating the take-up of hydrogen in end-use applications. To achieve quick implementation, policy actions include transport infrastructure planning as well as reducing the complexity of regulatory frameworks to ensure a well-functioning hydrogen market.
- In a second phase, planned for 2024-2030, infrastructure will be increasingly deployed, starting with local networks, remote areas or local hydrogen clusters, where hydrogen is intended to be used for renewable energy balancing as well as in industry and transport applications or for residential and commercial heating.
- In the last phase beyond 2030, renewable hydrogen technologies would reach maturity with large-scale deployment and accordingly, expected demand.

In the first two phases, the strategic objective for 2024 is at least 6 GW of renewable hydrogen electrolyzers producing one million tonnes of renewable hydrogen, increasing to 40 GW in 2030 with an output of 10 million tonnes of H₂. Converted in power units, the planned capacities would be equal to 33TWh (2024), respectively 330TWh (2030) of hydrogen produced in the EU. Depending on which scenario is applied, this would represent a share of 7-12% of the gross energy consumption of the EU (2022: 3,315 TWh).

An additional niche-market for hydrogen CHPs is polluted H₂, which cannot be used by fuel cells, but will come up with the ramp-up of the hydrogen infrastructure. This "waste hydrogen" will be exclusively available for CHPs, representing a large niche-market and additional sales potential for CHPs. Even if the favoured technology for the utilization of hydrogen, which is not yet certain, is fuel cells, the bespoke niche market offers plenty of growth potential for CHPs, making them an integral part of the future hydrogen industry.

Rising carbon emission costs make CHPs more competitive...

Increasing carbon emission costs increase competitiveness of CHPs

An integral part of the pathway to net zero is the adequate pricing of carbon emissions to force emitters to switch to renewable sources, provide incentives for clean technologies and increase the competitiveness of renewable energy sources. In Europe, the European Emission Trading Scheme for carbon pricing was already introduced in 2005, but as fewer carbon emission certificates are issued over time and more sectors are added to the trading scheme, the price per metric ton CO₂ has increased by about 260% in the last three years.

EU Emission Trading System (EU-ETS) carbon pricing in EUR/metric ton



Source: EMBER, Warburg Research

...as they produce low-emission energy

On European level, the building (heating) and transportation sector will be added to the carbon emission trading scheme in 2027. Germany established a national emission trading scheme for those sectors in 2021 with a fixed price of EUR 25 per ton CO₂ but the price will be gradually increased to EUR 55 by 2025 and then be determined in an auction with a price corridor of EUR 55-65.

The higher the costs for carbon emissions, the more competitive CHP systems become due to its high fuel efficiency and comparably low carbon emissions.

Regulatory overview

Several international regulatory frameworks include CHP systems, providing policies and incentives for the installation of CHP solutions. On EU level, there is no dedicated support scheme, as energy policies and support mechanisms are issued for each member state.

In Germany, which is the most mature and largest market for CHPs, the relevant regulatory framework is the Renewable Energies Act (EEG), respectively the Combined Heat and Power Act (KWKG). As a new regulatory framework, the German heating law ("Gebäudeenergiegesetz") might also include support mechanisms for CHPs used for heating, though the law has not yet been passed by parliament (expected 09/2023).

However, the existing framework is already setting incentives for CHPs, based on its ability to provide both base and peak-load power. In combination with the described expansion targets for wind and PV and its shortcomings for grid stability and supply reliability, CHPs are favoured as bridge technology for gas and LNG and the development of a German hydrogen infrastructure.

- The CHP levy subsidizes electricity generation by CHPs with a surcharge paid to operators by the grid operator. Based on the current KWKG (2022), the levy is 0.378 EURct/kWh.

- An additional CHP bonus is paid to highly efficient systems, varying with the percentage of “innovative heat in the reference heat” and can reach up to 7 EURct per kWh for a 50% share of innovative heat.
- Biogas CHPs qualify for a flexibility premium of EUR 65 per kW installed capacity per year.
- Excess electricity produced by a CHP can be sold on electricity markets.

New gas-fired CHPs with a capacity of more than 10MW approved after June 30, 2023, must be convertible to operate exclusively with hydrogen as of January 2028. The costs for the conversion may not exceed 10% of the costs of a possible new construction of the CHP with the same capacity (hypothetical costs of construction). Smaller CHPs are not part of the conversion rule yet, though 2G Energy is already prepared for a possible future integration by selling its CHPs hydrogen-ready.

CHPs to play a vital role in the energy system of the future

In a de-centralized energy supply system, energy is generated, stored and distributed from smaller, localized sources rather than centralized at a few large power plants. Hence, energy production is closer to the direct consumer, which has several advantages:

- Increased energy resilience
- Reduced transmission losses
- Greater security of supply as customers don't have to share supply or rely on relatively few, large and remote power stations
- Integrating various energy sources into a flexible energy mix empowers communities and businesses to become more self-sufficient

Consequently, such an approach can play a significant role in the transition to a more clean, efficient and climate-friendly system.

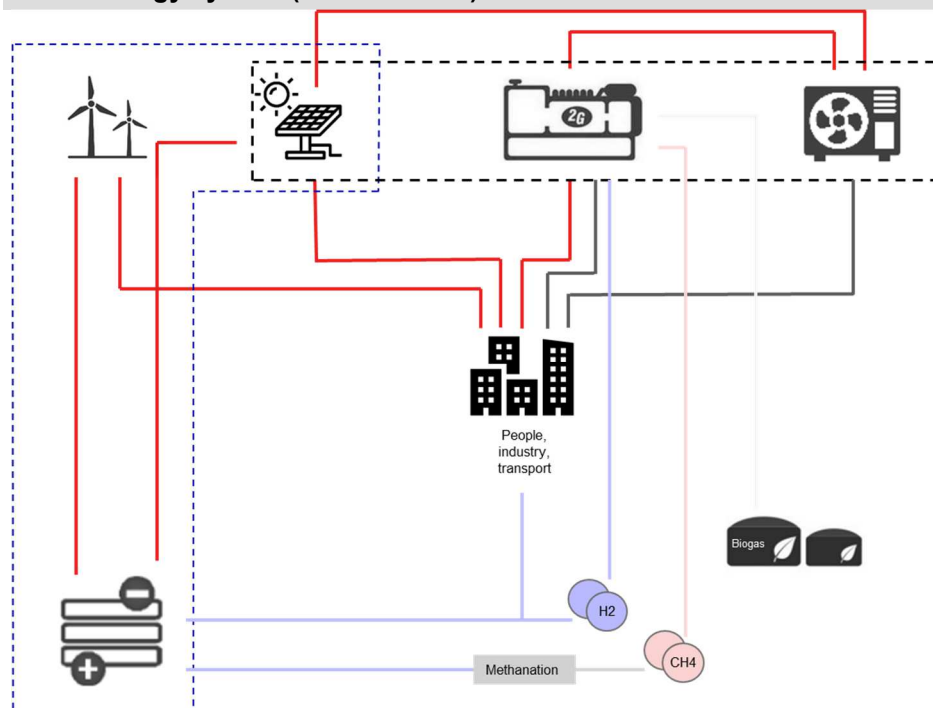
Grid-independence can be achieved by adding CHPs

The shutdown of nuclear and coal-fired power plants is progressing and the German government is targeting an increase in the renewable energy share of electricity consumption from around 45% today to 80% by 2030. The electricity grids, however, are not yet equipped for the increased power demand from consumers e.g. for electric cars or heat-pumps. About 14,000 km of high voltage power lines are necessary for the energy transition. However, until now permission procedures for only 470 km have been finalised.

By installing CHPs, power is generated directly on-site, independent of the grid infrastructure. With more SMEs and households developing an on-site supply for electricity and heat, the pressure on distribution grids can be reduced.

As CHPs can be used in combination with other renewable sources to build a closed, independent energy system, they should play an important role in the energy system of the future.

Future energy system (decentralized)



Source: 2G Energy, Warburg Research

CHPs fit into the energy system of the future

However, decentralized energy systems can also be grid-connected. Energy-intensive clients will remain dependent on energy supply from grids. The grid connection though, can be used both ways, to cover demand or to feed in surplus power and turn energy assets into revenue-generating assets.

Outside of 2G Energy's core markets, CHPs can be a solution for regions with a weak grid infrastructure or limited access to distribution grids. For example, islands in the Caribbean Sea are currently shifting their energy supply away from oil & fuel by building LNG terminals and renewable capacities. In some parts of the US, grid instability is already an issue as local grids are often subject to longer outages. Given its high connectivity, output variety and use-types, additional demand for CHPs could arise from these countries, offering suitable and cost-efficient solutions to cover local demand.

Looking ahead: Large-scale heat-pumps

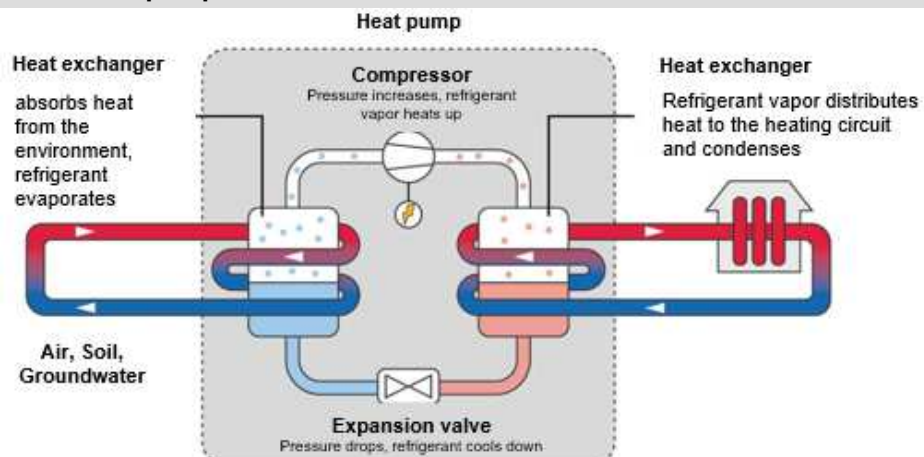
Large heat-pumps should establish a further growth pillar

2G Energy has announced its entry to the market for large-scale heat-pumps to diversify its product portfolio and benefit from the promising growth opportunities. From a technical point of view, heat-pumps and CHPs have many parts in common, allowing 2G Energy to scale its existing production with the new product line. First orders are expected to be delivered in 2024 with a subsequent dynamic order intake. If successful, industrial heat-pumps could become a further growth pillar for 2G Energy, which we reflect in our accelerated market scenario.

Heat-pumps are a sustainable way to generate heat for domestic use, as they do not emit any carbon dioxide. There are three different types that are commonly used in residential buildings: air-to-water, water-to-water and brine-to-water. The latter extracts heat from the ground, the air-to-water variant uses the heat of the ambient air, whereas the water-water pump uses groundwater heat. Heat generation in the pump follows three different steps. In a first step, energy is extracted from the environment, depending on the type of pump, from soil, air or groundwater. Fans draw in the outside air or pipes extract water. In a second step, the heat-pump converts the extracted heat into steam by combining it with a refrigerant, that evaporates at low temperature. In a compressor, the steam is compressed and thus becomes hot. This heat is then transferred to a heating circuit in a third step. A heat distribution and storage system stores the energy temporarily or distributes it directly into the building.

Large heat-pumps can additionally utilize heat from other sources (rivers, sewage, cooling water from industrial applications), using a water-water cycle. In contrast to the residential use, the large heat-pump must not be located close to the origin source (warm water) which can be an important factor for noise protection.

How a heat-pump works



Source: Warburg Research

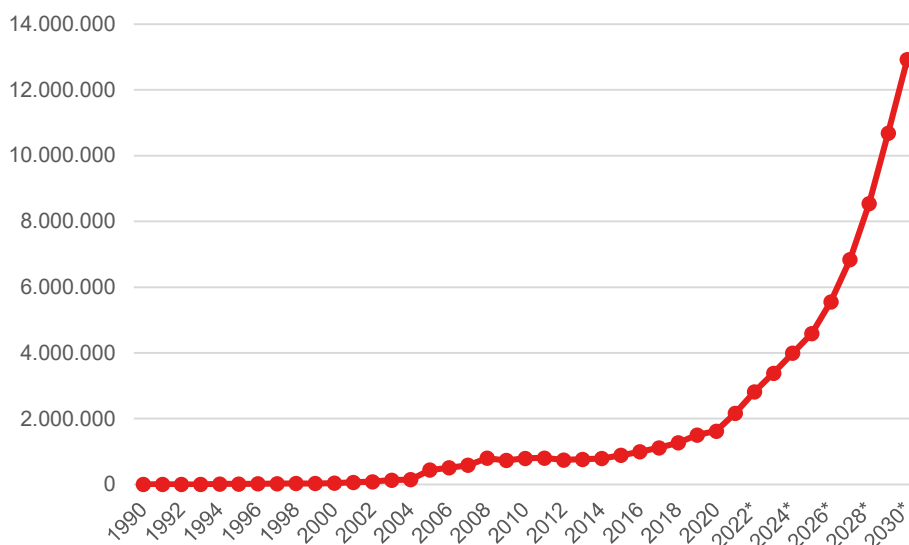
Large-scale heat-pumps start at around 100kW and can reach outputs of several MW. They are specially designed to meet the needs of larger buildings and smaller or larger networks. There is no difference in operation compared to a conventional heat-pump for domestic use, but large-scale heat-pumps are specifically adapted for use in demanding environments to ensure high reliability and maximum efficiency. Small-scale heat-pumps can be produced in series, whereas large-scale pumps from around two MW are all custom-built products that are designed by the manufacturer to meet the specific needs of the project. Heat-pumps can be used as pure solutions or as an integration into an existing local or district heating network, for example in conjunction with CHP units or renewable heat generators. An interconnection between a heat-pump and a CHP system can be a thermal integration, an electrical synergy or the heat-pump works as a complementary heat source in addition to a CHP system.

Overall, heat-pumps and CHP systems are capable of providing independent energy-efficient heating for buildings and processes. The main difference between those two technologies is that heat-pumps solely produce heat, whereas CHP systems generate both heat and electricity by using gas or hydrogen, which results to some extent in a different application range.

Nowadays, about 80% of the energy used for heating and hot water is provided by fossil fuels. To reduce GHG emissions of the building sector, renewable energy needs to be supplied, accompanied by efficiency and energy-saving measures. In the new German heating law ("Gebäudeenergiegesetz"), which is currently being negotiated, the German regulator promotes the installation of energy-efficient heating technologies. The regulatory change as well as very high fuel costs triggered a boom for small, air-based heat-pumps in Germany, though the more efficient solution would be a local heating network or district heating solution as part of a large-scale system.

Large-scale heat-pumps could easily meet Germany's entire heat demand for buildings and industrial processes up to 200 degrees. The potential for heat from geothermal energy, water, waste heat and mine water are 1,500 terawatts. Nationwide demand is around 1,000 TW.

To date, the potential for large-scale heat-pumps in Germany has remained largely untapped. At the beginning of 2023, only 30 large-scale systems with a total output of around 60 MW were in operation in Germany. Small-scale heat-pumps in contrast experienced a huge increase in demand.

Expected development of the German heat-pump market (total number)

Source: Statista, Warburg Research

According to the German government, from 2024 onwards, 500,000 new heat-pumps are to be installed per year in Germany. Additionally, at least 30 large-scale heat-pump projects with a total capacity of around 600 MW are already under construction or in planning. However, in order to provide at least 70% of district heating in Germany with such systems by 2045, an average of 4 GW of new large-scale heat-pump capacity would have to be added annually until 2045. Based on the typical power distribution of previous systems, this would correspond to around 340 to 410 large heat-pumps annually, offering 2G Energy extensive growth opportunities.

Financials

- We have calculated three scenarios for the P&L based on different growth drivers with regard to the implementation of the EU hydrogen strategy and roadmap to net zero
- 2G Energy has implemented several measures to improve profitability, which we expect to surpass 10% on EBIT level by 2025
- The newly established large heat-pump segment may trigger an additional acceleration of sales and margin generation

To differentiate the impact of the different growth drivers behind 2G Energy's business model we have calculated three scenarios for the P&L development:

Three different scenarios apply to different growth opportunities

1. **Base case:** Our key assumptions are an accelerating CHP and service business with a moderate increase in the segments' margin contributions, leading to a peak EBIT margin of 13%. The main growth drivers are the efforts to achieve net zero in the US and EU with 2G profiting from the respective subsidy programmes, the roll-out of the European hydrogen strategy and a prospering market for natural gas CHPs.
2. **Accelerated case:** 2G Energy largely profits from regulators' aims to -promote renewable energy supply in the EU and the US. Compared to our base case, we expect the hydrogen market and the natural gas CHP market to grow faster and turn into a seller's market, allowing 2G Energy to reach a peak EBIT margin of 15%. In addition, the accelerated case includes sales and margin contribution from the newly established business segment for large heat-pumps.
3. **Downward case:** Supply-chain headwinds and increasing personnel and material costs continue to burden 2G Energy. A sluggish roll-out of the EU and US governments' plans to fight climate change delays growth and diminishes the top-line development. Demand for CHPs increases slowly and competitors push into the market, resulting in pricing headwinds. Peak EBIT margin of 9% is solely driven by a higher share of service revenues in total sales.

P&L and model structure

Prior to describing our forecast and model assumptions, we give a short overview of our assumptions regarding the company's segment and cost split, which we use to calculate our estimates:

We calculate our estimates along 2G Energy's segment reporting (CHPs & Service), making assumptions about growth in the respective countries. However, in contrast to 2G Energy, which only provides a top-line split on segment level, we apply a breakdown on EBITDA level by making the following assumptions:

- **Material costs:** We assume "goods and materials" to solely occur in the CHP segment and "purchased services" to be part of the Service segment. With this split, we expect to overestimate the cost burden of the CHP segment, as goods and materials should also play a role in Services as spare parts. Purchased services could also be part of the CHP segment, especially when it comes to complex projects with larger CHPs, though the net effect should be positive for the CHP segment.
- **Personnel expenses:** We split personnel expenses pro rata, using the stated headcount for the respective segments. Overhead costs are calculated separately. Similar to the material cost split, we deem the share of personnel costs to tend to be too high in CHP production, but expect both to be a systematic error, making the approach usable as a calculation basis.

Imputed segment split and EBITDA contribution

mEUR	2018	2019	2020	2021	2022
CHP Sales	131.80	147.00	153.40	150.70	164.50
+/- change in inventories	11.37	-10.28	7.48	2.58	26.21
Total sales	143.17	136.72	160.88	153.28	190.71
- goods and materials	120.23	118.37	134.03	136.53	176.58
Gross profit	22.94	18.35	26.85	16.74	14.13
margin %	17.4%	12.5%	17.5%	11.1%	8.6%
- personnel expenses	14.45	15.51	17.72	19.47	23.26
CHP EBITDA	8.48	2.84	9.13	-2.73	-9.13
margin %	6.4%	1.9%	5.9%	-1.8%	-5.6%
Service Sales	78.00	89.40	93.30	115.70	148.20
- purchased services	28.51	28.39	33.23	34.73	47.55
Gross profit	49.49	61.01	60.07	80.97	100.65
margin %	63.4%	68.2%	64.4%	70.0%	67.9%
- personnel expenses	12.85	14.38	16.19	18.73	21.48
Services EBITDA	36.64	46.63	43.88	62.24	79.17
margin %	47.0%	52.2%	47.0%	53.8%	53.4%
Gross EBITDA	45.12	49.47	53.01	59.52	70.04
- overhead personnel	8.00	9.07	10.36	11.16	12.29
- other operating expenses	23.19	23.05	24.63	29.74	35.26
+ other operating income	1.76	2.02	2.26	3.43	6.25
Group EBITDA	15.69	19.36	20.28	22.04	28.74
margin %	7.48%	8.19%	8.22%	8.27%	9.19%
Headcount split					
CHP	262	260	289	314	354
Procurement, Warehouse	159	165	182	193	216
Project management	63	59	63	72	82
R&D	28	24	30	30	31
Quality management	12	12	14	19	25
Service	233	241	264	302	327
Service	233	241	264	302	327
Overhead	145	152	169	180	187
Administration	84	87	99	106	110
Distribution & Marketing	61	65	70	74	77

Source: 2G Energy, Warburg Research

The mentioned systematic error becomes visible in the segments' gross profit and EBITDA contributions. We expect the CHP segment to deliver a sustainable EBITDA margin of a low to mid-single-digit percent and a range of 42-47% in the Service segment, as observed at other companies with a similar service offering. However, the negative EBITDA margin in the CHP segment for the years 2021/22 should reflect reality as the Covid pandemic and Ukraine war caused major upheavals in 2G Energy's core markets, supply chain and cost structure.

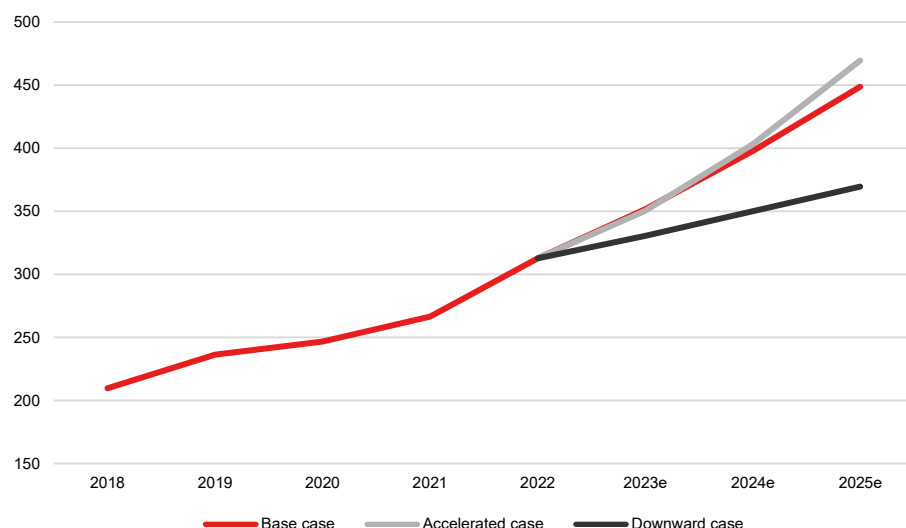
Even considering a blurred cost split, the main margin contributor in 2G Energy's business model is the after-market business, whilst the primary sale of CHP plants delivers a positive but modest contribution margin. As this is a typical margin cluster which can also be seen in other machinery and equipment assembling companies, we deem our calculation approach to be practicable.

For the calculation of depreciation costs and the financial result, we use the asset analysis and financial debt overview as provided in the company's reports.

Various growth drivers hint at vast top-line potential

The top-line forecast we apply to our model is based on several growth drivers, which we expect to boost demand for CHP systems in the period from 2023-2035, imbedded in the European and US energy transition and roadmap to net zero. Our three scenarios for 2G Energy's P&L vary with regard to the pace of top-line growth and margin expansion with the accelerated case gaining additional traction from large heat-pumps.

Top-line development in different scenarios (EURm)



Source: 2G Energy, Warburg Research

Double-digit growth rates can be expected

In its domestic market Germany, 2G Energy's CHP sales (2022: EUR 82.8m) have slowed down in recent years, reflecting a steady decline in the sale of biogas plants but the sale of an increasing number of natural gas CHPs. Hydrogen CHPs are new to the market (sales of EUR 0.3m in 2020), but are expected to show the highest growth rates in coming years due to the roll-out of the national hydrogen strategy. We expect the growth in natural gas and hydrogen to outpace the decline in biogas plants in 2023/24, leading to low single-digit growth in CHP sales.

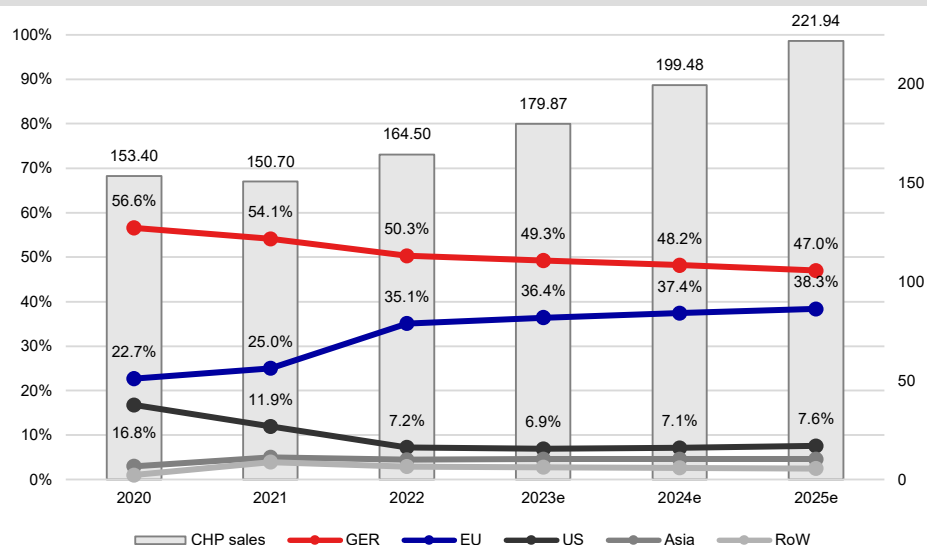
The remaining European market (EUR 57.7m in 2022) is dominated by natural gas CHPs but should show an increasing proportion of hydrogen CHPs with the cooperation with Centrica in the UK. Natural gas CHPs offer a cheap, low-emission and easy to implement solution for base- and peak-load electricity generation, which we believe will become an important bridge technology until a larger battery or hydrogen storage infrastructure has been established. As soon as the transition is implemented, natural gas CHPs can be modified for hydrogen fuel and hydrogen CHP sales should become the main driver of growth, keeping growth rates in the high single-digit to low double-digit area.

For the US market (EUR 12.5m in 2022), the IRA ("Inflation Reduction Act") should become the most important growth driver, targeting the development of a national clean energy infrastructure backed by subsidies. We assume growth rates will pick up significantly in 2024/25 (WRe: >10% p.a.), but due to the low basis (US CHP sales accounted for 7% of CHP sales in 2022), Germany and Europe remain the largest markets. However, we deem the US market to bear the highest surprise potential in our forecast due to the high momentum expected for 2024-2030. If 2G Energy manages to achieve high market penetration and expand its partner and service network, growth rates might exceed our assumptions.

For the remaining markets (Asia and RoW; EUR 12.1m in 2022), we apply moderate growth rates to CHP sales, as we expect sales to be dominated by large single orders, resulting in fluctuating growth rates.

Germany and Europe remain the core markets

Regional CHP sales split (base-case scenario)



Source: 2G Energy, Warburg Research

To our accelerated and downward case, we apply differing assumptions regarding growth in the CHP segment:

- **Accelerated case:** Higher growth rates in the US, Europe and Germany due to steeper growth in hydrogen CHPs. In addition, we expect large heat-pumps to generate first sales as of FY 2024 (EUR 0.8m, which is equivalent to 2-3 units) and grow at double-digit rates in the next two years. An important catalyst is the German heating law, forcing householders and SMEs to install climate-friendly heating solutions with broad regulatory support (subsidies).
- **Downward case:** CHP sales evolve more slowly in 2G Energy's core markets as support schemes are delayed. The roll-out of the European hydrogen cluster is curbed by a slowing economy and poor investment propensity, leading to significantly lower sales of hydrogen CHPs. Market penetration in the US evolves sluggishly and local competition picks up significantly.

Service sales tend towards parity

Downstream to the sale of CHP units, the service segment generates revenues with maintenance services and spare parts. Usually, 2G Energy concludes service contracts with the sale of its CHP units, for either full- or part maintenance, performed by the in-house service unit or by a certified partner. However, in the P&L, the contracted revenues are booked with the rendering of the respective service and the corresponding expenses.

During the life-time of a CHP, different necessary maintenance services arise, triggering dissimilar revenues in the P&L. The largest service revenues occur between 30,000 and 60,000 hours in operation, resulting in a decoupling of CHP and service revenues. Most older biogas CHPs have a comparably high yearly runtime (8,000 hrs/yr), whilst other CHPs are used more flexibly (3,000-5,000 hrs/yr), triggering the booking of the main service revenues as soon as after four years or only after 10 years.

For our forecast, we have analysed the historic development of the installed fleet and made the following assumptions:

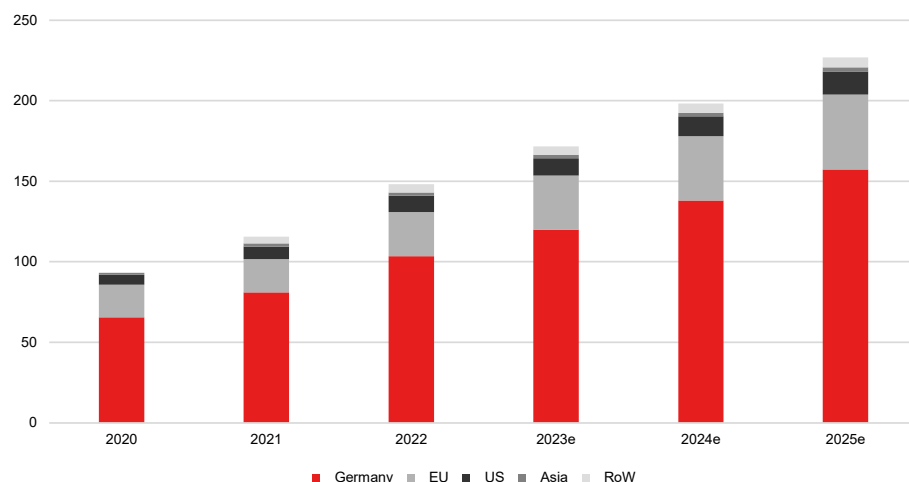
- Biogas CHPs in Germany are characterized by a high yearly runtime, whilst natural gas CHPs are predominately used in the heating period (October-February).
- We assume customers will become more professional regarding the management of CHPs, resulting in a more targeted exploitation of the CHP in the context of a complex energy management system.

Service contract structure should pave the way to parity

- Use-cases will change in the near future as CHPs can be used flexibly as base-load or peak-load energy generation units. In times of highly volatile power prices provoked by an increasing share of PV and wind in the electricity mix, we expect CHPs to be deployed predominately in periods of high electricity prices.

Given the calculated age of the installed fleet, we expect a disproportionate rise in service revenues in Germany and Europe, where the oldest fleet is in operation. For newly installed CHPs, in particular in the US and UK but also in Germany and Europe, we assume more flexible usage, resulting in a declining growth rate for service sales. Both effects should overlap in the next three years, leading to a steep increase in service revenues until 2025, but flatter development afterwards.

Regional revenue development of the service segment (base case, EURm)

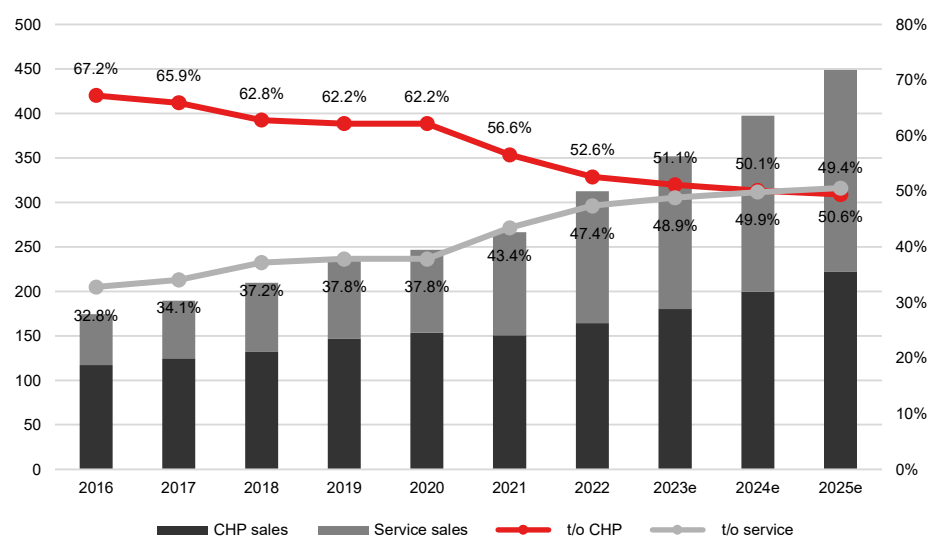


Source: 2G Energy, Warburg Research

In our accelerated and downward cases, the same basic assumptions are adopted as for CHP sales, resulting in higher and lower growth rates respectively.

The segment's contribution to revenues in recent years illustrates the inequitable booking of service contracts, resulting in an increasing proportion of service revenues in total sales. We expect this trend to continue until parity is reached in 2025, though the proportion of CHP revenues slowly increases afterwards due to the assumptions described with regard to the customer base.

Segment revenue split (base case)



Source: 2G Energy, Warburg Research

In our accelerated scenario, parity is already reached in 2024, but the steeper growth rates of new CHPs result in a declining proportion of service revenues afterwards. For the downward case, the development is reversed, as CHP sales slowdown and already concluded service contracts come to maturity.

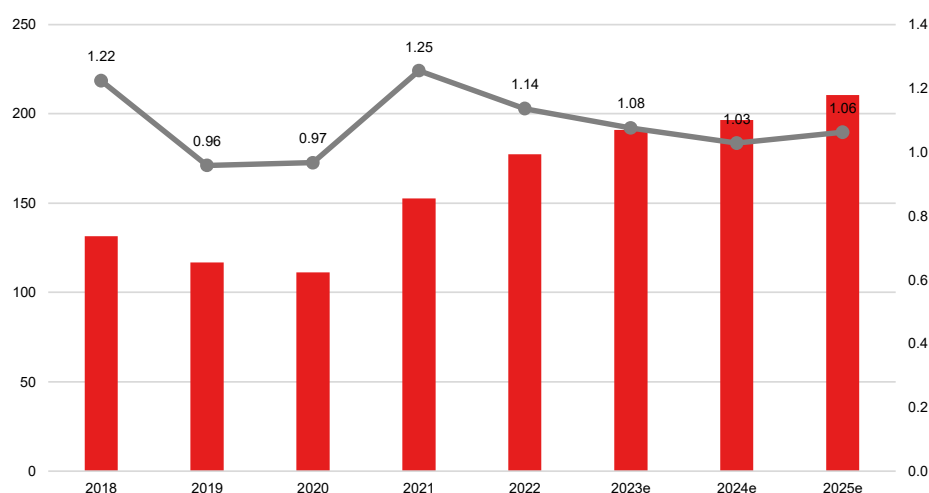
Order intake in 2023 should be restrained by regulation delay

Order intake might be misleading in 2023

The order book of 2G Energy has a latency of 6-18 months, depending on the ordered CHP. Small units, produced in line-production, can be ordered and delivered within one fiscal year, whilst larger, complex solutions usually have a longer latency due to its production time and complexity in project development. In the past, 2G Energy usually had a book-to-bill ratio >1 (book-to-bill is calculated as order intake to CHP sales), except for the years 2019 & 2020, though CHP sales still showed an increase. Hence, the order book development and the book-to-bill ratio are only a limited indication of growth, as both figures are dependent on the lead-time of CHPs included in the order intake.

In our forecast, we expect the book-to-bill ratio to decline close to one in 2024 but increase again afterwards. The main reason for the decline is the overdue regulatory decision regarding the German heating law. We expect clients in 2G Energy's domestic market to put investment decisions on hold until the law has been passed. As a result, order intake in 2023 should be back-end loaded and some orders might be even postponed to 2024. However, in 2024 we expect order intake to pick up again, in particular from the US.

Order intake and book-to-bill ratio (base case)



Source: Warburg Research

Compared to our sales forecast, the order book shows slower evolution as we expect the switch to line production for small CHPs ("lead to lean") to support the yearly output but only be partially visible in the order intake. Hence, the order book momentum or yearly order intake, lags behind the sales development, as the reduction in throughput times results in a faster execution of the order book.

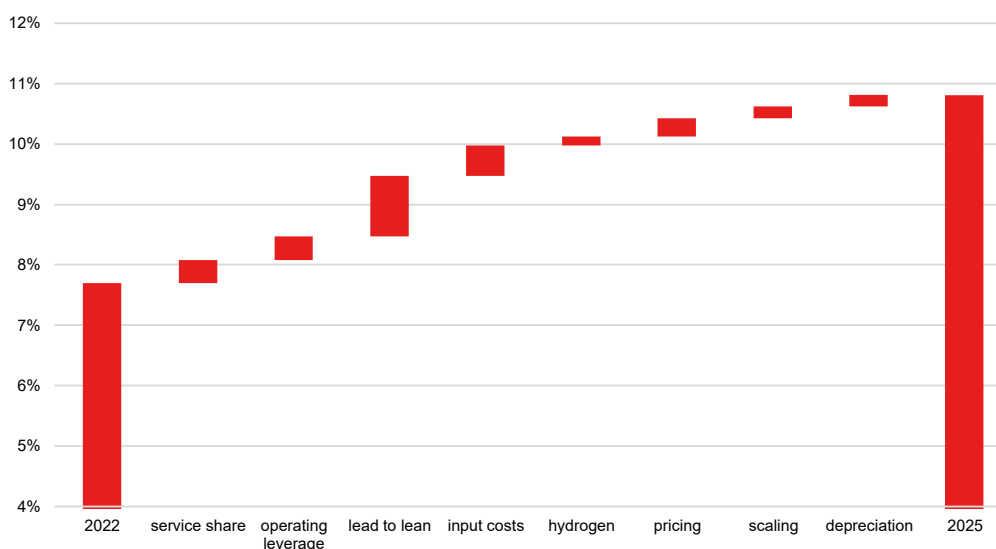
Margin expansion ahead

We identify different margin drivers, derived from our expectations regarding 2G Energy's addressable market, competitive positioning and internal efficiency measures:

EBIT margin should grow towards 10% by 2025

- 2G Energy is currently implementing its "lead to lean" efficiency programme, which is targeting to utilize economies of scale in procurement, optimisation of the throughput in its production and to establish line production at its headquarters in Heek. The measures are expected to add about 2% (WRe: 2.2%) to the EBIT margin until 2023, though the majority of margin gains should have been already made in FY 2022.
- We apply a moderate operating leverage (EBITDA level) to the growing sales in the CHP and service segment. However, the majority of margin gains in the CHP segment is already part of the margin gain via the lead-to-lean programme, but we expect further gains in FY 2024/25.
- Supply-chain upheavals and surging material costs burdened margin generation in 2021/22. We assume the market will stabilize on higher levels and 2G Energy will be able to pass on higher input costs with a time-lag of approx. 9-12 months. As a result, the EBIT margin should pick up slightly, reflecting the higher prices for CHPs as of FY 2023.
- We expect CHP and service sales to tend towards parity, which results in a natural increase in the group's EBIT margin, since the service segment delivers higher margins than CHP production. However, the effect is only marginal in the range of 0.1%-0.25%.
- Depreciation costs are expected to rise, reflecting further investments in property and equipment. Though relative to sales, the depreciation ratio is set to decrease, assuming a depreciation period of 10-12 years.
- 2G Energy's pricing power for hydrogen applications should be high in 2023-25, reflecting its first-mover advantage. Hence, we expect hydrogen CHPs to carry a higher EBIT margin, leading to a slight margin-increase in the CHP segment.
- Overhead costs have increased slightly in the last three years, which we expect to be a result of the build-up of a more powerful administration and sales force. In our forecast we assume the existing overhead structure will scale up adding about 0.2% to 2G Energy's EBIT margin

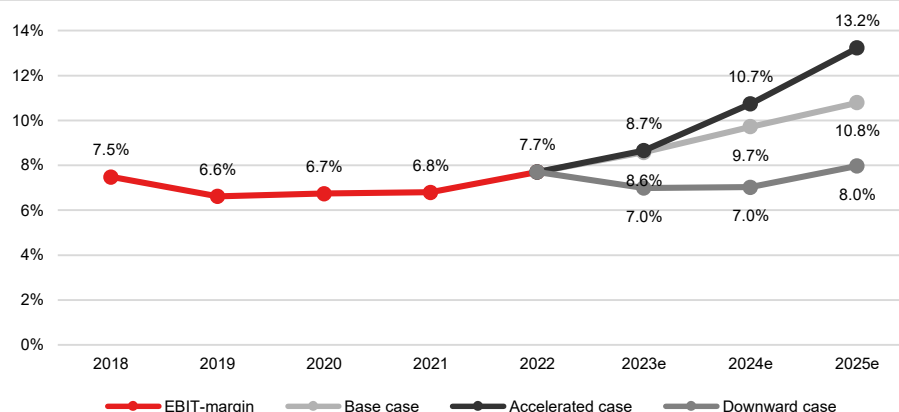
EBIT bridge 2022-2025e (base case)



Source: 2G Energy, Warburg Research

In our accelerated and downward cases, the described effects become more or less effective, in particular regarding the passing-on of input costs, pricing power, share of hydrogen CHPs and operating leverage. For our accelerated case, we assume large heat-pumps to carry a lower margin in the first years of production (2024/25) but to achieve a margin similar to hydrogen CHPs in the years after.

Development of the EBIT margin in different scenarios



Source: 2G Energy, Warburg Research

Warburg vs. consensus and guidance policy

Warburg vs. consensus

Our estimates (base-case scenario) are positioned slightly above consensus estimates, which includes four brokers (WRe estimates not yet included):

Warburg vs. consensus estimates (median)

Year	Consensus			Warburg Research			Guidance			Deviation (WRe vs. Consensus)		
	2023	2024	2025	2023	2024	2025	2023	2024	2025	2023	2024	2025
Sales	350.00	374.50	423.20	351.70	397.81	448.92	310-350	350-390	400	0.5%	6.2%	6.1%
Gross profit	124.20	139.60	156.35	132.17	157.01	181.66				6.4%	12.5%	16.2%
margin %	35.49%	37.28%	36.94%	37.58%	39.47%	40.47%						
EBITDA	30.80	37.30	48.00	35.26	44.20	54.39				14.5%	18.5%	13.3%
margin %	8.80%	9.96%	11.34%	10.03%	11.11%	12.12%						
EBIT	25.70	31.80	42.20	30.17	38.68	48.46				17.4%	21.6%	14.8%
margin %	7.34%	8.49%	9.97%	8.58%	9.72%	10.80%	6.5-8.5%	8.5-10%	8.5-10%			

Source: FactSet, Warburg Research

Whilst the top-line deviation is negligible, we expect a faster margin expansion, and our expectations are at the upper end of the company's EBIT guidance (2023: 6.5-8.5%; 2024: 8.5%-10%). Main reasons for our positive outlook are:

- We expect 2G Energy's "Lead to Lean" programme to trigger efficiencies in material procurement. Together with an increasing proportion of Services in total sales, the gross margin should pick up.
- The change from manufacturing to line-production for smaller CHPs and a more efficient utilization of production capacities, which is also part of the "Lead to Lean" programme, allows for a high operating leverage on EBITDA level.
- As outlined by the management, the measures implemented do not require material capex. Hence, the impact on EBIT is not diluted by increasing depreciation.
- We assume a strong increase in demand for CHP systems in Germany, the EU and the US from 2024 onwards. In particular SMEs are forced to apply climate-neutral energy solutions, why we expect the market to tend towards a seller's

Our estimates are slightly ahead of consensus

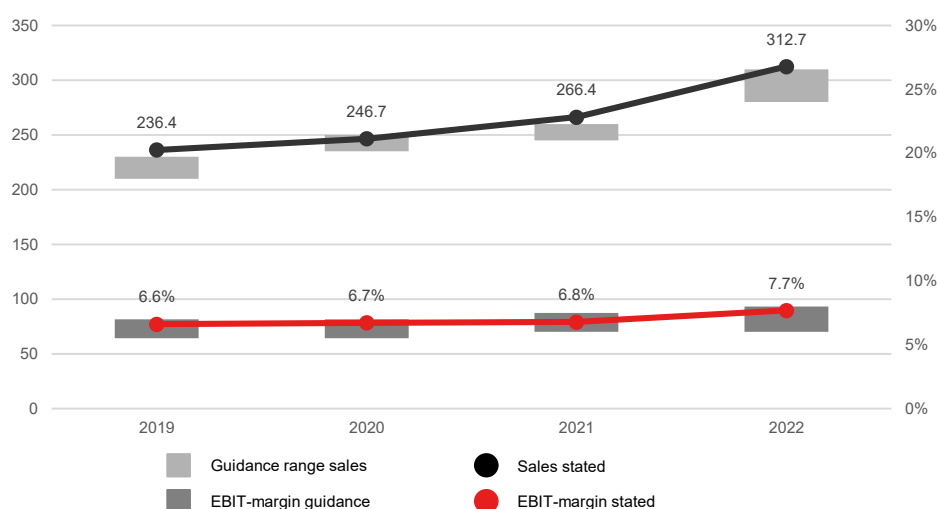
market. 2G Energy should therefore be able to increase prices in favour of its margin generation.

- For H2-based CHP systems, we expect 2G Energy to profit from its first-mover advantage in terms of a high market share and favourable margins. However, what we do not include in our assumptions are higher service revenues arising from the conversion of existing CHP plants into H2 plants ("H2-ready installations").

Guidance policy

The guidance of 2G Energy consists of a sales and EBIT-margin range, reflecting uncertainties with regard to project execution, order intake and input costs. However, our analysis of historic guidance ranges and realized figures shows a cautious guidance policy as final figures have always been close to or even slightly above the upper guidance threshold:

Guidance vs. reported figures (historic)



Source: 2G Energy, Warburg Research

Based on the historic guidance behaviour, in particular in challenging times like 2020/21 (Covid) or 2022 (Ukraine war), we deem our positioning for 2023/24 at the upper guidance range and above consensus as viable. For FY 2024, we could even anticipate an upwards guidance revision by 2G Energy, depending on the pace of the European hydrogen strategy and final outcome of the German heating regulation (expected for 09/2023).

Guidance vs. reported figures / estimates

mEUR	2019	2020	2021	2022	2023e	2024e
Guidance						
Sales high	230	250	260	310	350	390
Sales low	210	235	245	280	310	350
EBIT-margin high	7.0%	7.0%	7.5%	8.0%	8.5%	10.0%
EBIT-margin low	5.5%	5.5%	6.0%	6.0%	6.5%	8.5%
Reported						
Sales	236.4	246.7	266.4	312.7		
EBIT-margin	6.6%	6.7%	6.8%	7.7%		
Deviation to mid-point						
Sales	7.45%	1.73%	5.50%	6.00%		
EBIT-margin	0.4%	0.5%	0.0%	0.7%		
Expected						
Sales - WRe					351.70	397.81
Sales - cons.					350.00	374.50
EBIT-margin WRe					8.58%	9.72%
EBIT-margin cons.					7.34%	8.49%

Source: 2G Energy, Warburg Research

Valuation

- We apply different valuation approaches, including different DCF and peer-group valuations.
- Except for the downward-case scenario, all approaches hint at an undervaluation of the share with an upside of >50%.
- Our price target of EUR 36.40 per share is derived from the DCF valuation based on our base-case scenario.
- However, we expect important milestones to trigger a higher price target and 2G Energy to be recognized as part of the renewable value chain, leading to a multiple expansion.

Different valuation approaches hint at a current undervaluation

Overview

To determine the fair value per share for 2G Energy, we have explored different valuation approaches (DCF, peer-group) and applied three different growth scenarios, to understand which scenario markets are currently applying to the share (reverse DCF).

Except for our downward case valuation, all approaches hint at a current undervaluation of the share with an upside of >40%.

Overview of fair values, derived from different approaches

2G Energy	Fair value per share	up- / downside	implied EBIT-margin	terminal growth
DCF-valuation	in EUR / share	in % to current price	(sustainable, long-term)	
Base case	36.37	48.5%	11.0%	3.0%
Accelerated case	50.14	104.7%	13.0%	3.0%
Downward case	18.14	-26.0%	9.0%	2.5%
Peer-group valuation				
	2024e multiple			
EV/EBIT	41.83	70.7%		
P/E	42.38	73.0%		
Reverse DCF	24.40	-0.4%	8.2%	3.0%

Source: Warburg Research

Our PT, derived from our base case, is EUR 36.50 per share

Our target price (**EUR 36.40**) for 2G Energy is derived from the DCF valuation of the base-case scenario. However, we expect 2G Energy to show further upside potential beyond our main valuation approach, as the company is expected to largely profit from the energy transition and its bright growth prospects. Further, we believe markets are assigning 2G Energy to an unsuitable peer-group. As the majority of 2G Energy's future top-line and margin growth is bolstered by the same drivers as for other renewable manufacturing companies, we allocate 2G Energy to the renewables peer-group, which trades at higher multiples.

DCF valuation

We apply a DCF model as the main valuation approach for 2G Energy to derive the fair value per share. Equal to our financial forecast, we have calculated three different market scenarios, which result in different target prices. In addition, we have also computed a reverse DCF-model, to understand which valuation metrics are reflected in the current share price.

In each approach, we apply the same capital costs, tax rate and working-capital requirements:

- The average tax rate in our model is set at 30%, which is in line with historic data. We do not expect 2G Energy to generate any tax-relevant losses, resulting in losses carried-forward or to profit from tax incentives, even though those might be part of a subsidy programme in Germany, Europe or the US.

A beta of 1.26 reflects the cyclicality of the business model

**We calculate capital costs (WACC) at
9.27%**

- We apply a beta of 1.26, reflecting the cyclical business model of 2G Energy. In addition, we apply higher factors for liquidity and transparency, as the average trading volume of the share, or its market capitalization, is still comparably low and financial reports are only produced every six months.
- Assuming a risk-free rate of 2.75% and a market return of 8.25%, we calculate cost of equity at 9.68%.
- For the calculation of WACC, we assume a cost of debt of 8% and a target debt ratio of 10%, resulting in WACC of 9.27%.
- Historically, the working capital ratio increased towards 30% in 2022. In our model, we assume the WC ratio to increase further to 34% and then decline again to 32%. This development is a result of the new product lines in the portfolio (hydrogen), which we expect to trigger a broader warehousing of spare parts. In addition, we assume 2G Energy will accept longer payment periods and back-end loaded payment terms in the US and Asia for its CHP sales.

Base case

Our base-case scenario reflects a growth scenario which is based on the European energy transition, implementation of the German and international hydrogen strategy and moderate market growth in the US backed by the IRA. We expect growth rates to increase until 2026, remain on high levels until 2030 and then slowly decline towards our terminal growth rate of 3%. The applied scenario is embedded in the same timeframe as targeted by regulators, characterized by an accelerated growth in 2024-2028, where we expect the energy transition to peak in terms of investments in energy infrastructure.

Our base case assumes moderate growth and margin targets

The EBIT-margin development follows along the same lines, peaking at 13% in 2028 and reaching a sustainable level of 11% afterwards. Initially, accelerated growth and the described efficiency measures should boost the EBIT margin to 10-11% until 2025. For the years after, we expect demand for hydrogen CHPs to become the main driver, and we expect 2G Energy to cash in on its first-mover advantage. In addition, demand for such installations should surpass production capacities, which should give 2G Energy favourable pricing power. However, as capacities as well as competition should increase with surging market volumes, we model a decline in the EBIT margin back to 11%

Capex requirements include maintenance capex for equipment and tools and expansion investments to increase output. As described in our ROCE chapter, 2G bought further property in 2022 to be able to build additional factory halls, which is included in our capex forecast. To reflect further investments in spare parts warehouses and factory halls, we assume a slight increase in the investment ratio to 1.5% from previous levels of 1.3%.

DCF-model base case

	Detailed forecast period			Transitional period										Term. Value
Figures in EUR m	2023e	2024e	2025e	2026e	2027e	2028e	2029e	2030e	2031e	2032e	2033e	2034e	2035e	
Sales	351.7	397.8	448.9	511.8	578.3	647.7	718.9	790.8	862.0	931.0	986.8	1,026.3	1,057.1	3.0 %
Sales change	12.5 %	13.1 %	12.8 %	14.0 %	13.0 %	12.0 %	11.0 %	10.0 %	9.0 %	8.0 %	6.0 %	4.0 %	3.0 %	
EBIT	30.0	38.5	48.3	61.4	72.3	84.2	89.9	94.9	103.4	102.4	108.6	112.9	116.3	
EBIT-margin	8.5 %	9.7 %	10.8 %	12.0 %	12.5 %	13.0 %	12.5 %	12.0 %	12.0 %	11.0 %	11.0 %	11.0 %	11.0 %	
Tax rate (EBT)	30.0 %	30.1 %	30.1 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	
NOPAT	21.0	26.9	33.7	43.0	50.6	58.9	62.9	66.4	72.4	71.7	76.0	79.0	81.4	
Depreciation	5.3	5.7	6.1	7.2	8.7	9.7	10.8	11.9	12.9	14.0	14.8	15.4	15.9	
in % of Sales	1.5 %	1.4 %	1.4 %	1.4 %	1.5 %	1.5 %	1.5 %	1.5 %	1.5 %	1.5 %	1.5 %	1.5 %	1.5 %	
Change in provisions	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Change in liquidity from														
- Working Capital	11.7	14.8	19.5	23.2	27.1	29.4	17.0	15.8	22.8	22.1	17.9	12.6	9.9	
- Capex	8.5	6.7	5.9	6.7	8.1	9.7	10.8	11.9	12.9	14.0	14.8	15.4	15.9	
Capex in % of Sales	2.4 %	1.7 %	1.3 %	1.3 %	1.4 %	1.5 %	1.5 %	1.5 %	1.5 %	1.5 %	1.5 %	1.5 %	1.5 %	
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Free Cash Flow (WACC-model)	6.1	11.1	14.5	20.3	24.1	29.6	45.9	50.6	49.6	49.6	58.1	66.4	71.5	
PV of FCF	5.9	10.0	11.9	15.2	16.5	18.6	26.4	26.6	23.9	21.8	23.4	24.5	24.1	396.5
share of PVs	4.3 %			34.3 %										61.4 %

Model parameter				Valuation (m)			
Derivation of WACC:		Derivation of Beta:		Present values until 2035e		248.8	
Debt ratio	10.0 %	Financial Strength	1.20	Terminal Value		396.5	
Cost of debt	8.0 %	Liquidity	1.30	Financial liabilities		6.3	
Market return	8.3 %	Cyclicality	1.60	Pension liabilities		0.0	
Risk free rate	2.8 %	Transparency	1.20	Hybrid capital		0.0	
Risk premium	5.5 %	Others	1.00	Minority interest		0.0	
Cost of equity	9.7 %			Market val. of investments		0.0	
WACC	9.27 %	Beta	1.26	Liquidity		13.5	
				Equity Value		652.5	
						No. of shares (m)	17.9
						Value per share (EUR)	36.37

Sensitivity Value per share (EUR)

Terminal Growth									Delta EBIT-margin						
Beta	(WACC)	2.25 %	2.50 %	2.75 %	3.00 %	3.25 %	3.50 %	3.75 %	-1.50 pp	-1.00 pp	-0.50 pp	0.0	0.50 pp	1.00 pp	1.50 pp
1.46	(10.3 %)	28.84	29.33	29.86	30.43	31.04	31.69	32.39	25.00	26.81	28.62	30.43	32.24	34.05	35.86
1.36	(9.8 %)	31.24	31.84	32.48	33.17	33.91	34.72	35.58	27.30	29.26	31.22	33.17	35.13	37.09	39.04
1.31	(9.5 %)	32.58	33.24	33.95	34.71	35.53	36.43	37.39	28.59	30.63	32.67	34.71	36.75	38.79	40.82
1.26	(9.3 %)	34.01	34.74	35.53	36.37	37.29	38.29	39.38	29.99	32.12	34.25	36.37	38.50	40.63	42.75
1.21	(9.0 %)	35.56	36.37	37.24	38.18	39.21	40.33	41.55	31.52	33.74	35.96	38.18	40.40	42.63	44.85
1.16	(8.8 %)	37.23	38.13	39.10	40.15	41.30	42.56	43.95	33.17	35.50	37.83	40.15	42.48	44.80	47.13
1.06	(8.3 %)	41.01	42.13	43.34	44.68	46.14	47.76	49.56	36.98	39.55	42.11	44.68	47.24	49.80	52.37

Source: Warburg Research

The accelerated case includes all possible opportunities ahead

Accelerated case

The accelerated case shows steeper top-line growth, driven by the same forces as our base case but includes an accelerating large heat-pump business. Peak growth is already reached in FY 2025 and remains on high levels until 2031 before declining towards our terminal growth rate of 3%. Compared to our base-case scenario, approximately 1.0% of additional growth is generated by higher prices for CHPs, reflecting sustainable competitiveness of 2G Energy and its establishment as technology leader for hydrogen CHPs.

Gains on the pricing side, 2G Energy's first mover advantage in the hydrogen market and surge in demand for CHPs and heat-pumps allow for a broader EBIT-margin expansion to 15% in 2028 and a subsequent decline to a sustainable level of 13%.

Capex requirements are estimated higher in the range of 1.6%-3.0% of sales, due to a faster ramp-up of production capacities for CHPs and heat-pumps. In addition, we assume 2G Energy will expand its warehousing capacities and service network faster to be able to service heat-pumps in the same quality as CHPs.

DCF-model accelerated case

Figures in EUR m	Detailed forecast period			Transitional period										Term. Value
	2023e	2024e	2025e	2026e	2027e	2028e	2029e	2030e	2031e	2032e	2033e	2034e	2035e	
Sales	350.4	403.1	469.5	540.0	618.3	704.8	800.0	904.0	1,003.4	1,093.7	1,170.3	1,228.8	1,265.7	
Sales change	12.1 %	15.0 %	16.5 %	15.0 %	14.5 %	14.0 %	13.5 %	13.0 %	11.0 %	9.0 %	7.0 %	5.0 %	3.0 %	3.0 %
EBIT	30.1	43.1	61.9	75.6	89.7	105.7	116.0	126.6	135.5	142.2	152.1	159.7	164.5	
EBIT-margin	8.6 %	10.7 %	13.2 %	14.0 %	14.5 %	15.0 %	14.5 %	14.0 %	13.5 %	13.0 %	13.0 %	13.0 %	13.0 %	
Tax rate (EBT)	29.7 %	29.8 %	29.9 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	
NOPAT	21.2	30.3	43.4	52.9	62.8	74.0	81.2	88.6	94.8	99.5	106.5	111.8	115.2	
Depreciation	5.4	6.4	7.6	9.3	10.6	12.1	13.7	15.5	16.1	17.5	18.7	19.7	20.3	
in % of Sales	1.5 %	1.6 %	1.6 %	1.7 %	1.7 %	1.7 %	1.7 %	1.7 %	1.6 %	1.6 %	1.6 %	1.6 %	1.6 %	
Change in provisions	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Change in liquidity from														
- Working Capital	11.3	16.8	24.3	25.8	31.2	35.6	24.4	25.3	31.8	28.9	24.5	18.7	11.8	
- Capex	8.8	12.1	14.1	10.8	11.1	11.3	12.8	14.5	16.1	17.5	18.7	19.7	20.3	
Capex in % of Sales	2.5 %	3.0 %	3.0 %	2.0 %	1.8 %	1.6 %	1.6 %	1.6 %	1.6 %	1.6 %	1.6 %	1.6 %	1.6 %	
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Free Cash Flow (WACC-model)	6.5	7.8	12.6	25.6	31.0	39.2	57.8	64.4	63.0	70.6	82.0	93.1	103.4	
PV of FCF	6.4	7.0	10.3	19.2	21.3	24.6	33.2	33.8	30.3	31.1	33.0	34.3	34.9	573.0
share of PVs	2.6 %			33.1 %										64.2 %

Model parameter

Derivation of WACC:		Derivation of Beta:	
Debt ratio	10.0 %	Financial Strength	1.20
Cost of debt	8.0 %	Liquidity	1.30
Market return	8.3 %	Cyclicality	1.60
Risk free rate	2.8 %	Transparency	1.20
Risk premium	5.5 %	Others	1.00
Cost of equity	9.7 %		
WACC	9.27 %	Beta	1.26

Valuation (m)

Present values until 2035e	319.4		
Terminal Value	573.0		
Financial liabilities	6.3		
Pension liabilities	0.0		
Hybrid capital	0.0		
Minority interest	0.0		
Market val. of investments	0.0		
Liquidity	13.5		
Equity Value	899.6	No. of shares (m)	17.9
		Value per share (EUR)	50.14

Sensitivity Value per share (EUR)

Beta	(WACC)	Terminal Growth							Delta EBIT-margin						
		2.25 %	2.50 %	2.75 %	3.00 %	3.25 %	3.50 %	3.75 %	-1.50 pp	-1.00 pp	-0.50 pp	0.0	0.50 pp	1.00 pp	1.50 pp
1.46	(10.3 %)	39.34	40.06	40.82	41.64	42.52	43.46	44.48	35.38	37.47	39.56	41.64	43.73	45.82	47.91
1.36	(9.8 %)	42.77	43.64	44.57	45.56	46.63	47.79	49.05	38.78	41.04	43.30	45.56	47.82	50.09	52.35
1.31	(9.5 %)	44.68	45.63	46.66	47.76	48.95	50.24	51.64	40.68	43.04	45.40	47.76	50.12	52.48	54.84
1.26	(9.3 %)	46.73	47.78	48.92	50.14	51.47	52.91	54.48	42.75	45.21	47.68	50.14	52.61	55.07	57.53
1.21	(9.0 %)	48.94	50.11	51.37	52.73	54.21	55.83	57.60	45.00	47.58	50.15	52.73	55.31	57.89	60.47
1.16	(8.8 %)	51.33	52.63	54.03	55.56	57.22	59.04	61.04	47.45	50.15	52.85	55.56	58.26	60.96	63.66
1.06	(8.3 %)	56.75	58.36	60.12	62.04	64.16	66.50	69.10	53.09	56.07	59.06	62.04	65.03	68.02	71.00

Source: Warburg Research

Adverse regulation and economic headwinds are part of the scenario

Downward case

In our downward case, we apply a reduced growth scenario, especially for the hydrogen CHP market, which evolves more slowly and is characterized by a sluggish regulatory support. The remaining CHP business is burdened by an economic slowdown and a less ambitious energy transition. Peak growth is reached in FY 2027 (7.0%), with a subsequent decline to 2.5%.

2G Energy's EBIT margin slowly evolves towards 9%, solely driven by an increasing proportion of service revenues. Even though the CHP segment is still growing, operating leverage tends towards zero as higher input costs cannot be passed on to clients.

As in our base-case scenario, capex is slightly lower, reflecting maintenance capex and smaller production extensions. However, prices for equipment are also expected to increase, leading to a higher share of maintenance capex in overall capex.

DCF-model downward case

Figures in EUR m	Detailed forecast period			Transitional period										Term. Value
	2023e	2024e	2025e	2026e	2027e	2028e	2029e	2030e	2031e	2032e	2033e	2034e	2035e	
Sales	330.5	350.1	369.7	391.9	417.4	446.6	475.6	504.2	531.9	561.1	589.2	612.8	631.1	2.5 %
Sales change	5.7 %	5.9 %	5.6 %	6.0 %	6.5 %	7.0 %	6.5 %	6.0 %	5.5 %	5.5 %	5.0 %	4.0 %	3.0 %	
EBIT	22.9	24.4	29.3	33.3	37.6	40.2	42.8	45.4	47.9	50.5	53.0	55.1	56.8	
EBIT-margin	6.9 %	7.0 %	7.9 %	8.5 %	9.0 %	9.0 %	9.0 %	9.0 %	9.0 %	9.0 %	9.0 %	9.0 %	9.0 %	
Tax rate (EBT)	29.7 %	29.8 %	29.9 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	
NOPAT	16.1	17.1	20.5	23.3	26.3	28.1	30.0	31.8	33.5	35.4	37.1	38.6	39.8	
Depreciation	5.3	5.7	6.1	5.5	5.8	6.3	6.7	7.1	7.4	7.9	8.2	8.6	8.8	
in % of Sales	1.6 %	1.6 %	1.7 %	1.4 %	1.4 %	1.4 %	1.4 %	1.4 %	1.4 %	1.4 %	1.4 %	1.4 %	1.4 %	
Change in provisions	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Change in liquidity from														
- Working Capital	5.3	6.7	9.2	9.7	12.3	14.1	5.1	4.4	8.9	9.4	9.0	7.5	5.9	
- Capex	8.5	6.7	5.9	5.5	5.8	6.3	6.7	7.1	7.4	7.9	8.2	8.6	8.8	
Capex in % of Sales	2.6 %	1.9 %	1.6 %	1.4 %	1.4 %	1.4 %	1.4 %	1.4 %	1.4 %	1.4 %	1.4 %	1.4 %	1.4 %	
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Free Cash Flow (WACC-model)	7.6	9.5	11.6	13.6	14.0	14.0	24.9	27.4	24.6	26.0	28.1	31.1	33.9	
PV of FCF	7.5	8.5	9.5	10.2	9.6	8.8	14.3	14.4	11.9	11.4	11.3	11.5	11.4	178.0
share of PVs	8.0 %			36.1 %										55.9 %

Model parameter

Derivation of WACC:		Derivation of Beta:	
Debt ratio	10.0 %	Financial Strength	1.20
Cost of debt	8.0 %	Liquidity	1.30
Market return	8.3 %	Cyclicality	1.60
Risk free rate	2.8 %	Transparency	1.20
Risk premium	5.5 %	Others	1.00
Cost of equity	9.7 %		
WACC	9.27 %	Beta	1.26

Valuation (m)

Present values until 2035e	140.2	
Terminal Value	178.0	
Financial liabilities	6.3	
Pension liabilities	0.0	
Hybrid capital	0.0	
Minority interest	0.0	
Market val. of investments	0.0	
Liquidity	13.5	
Equity Value	325.4	
		No. of shares (m)
		17.9
		Value per share (EUR)
		18.14

Sensitivity Value per share (EUR)

Beta	(WACC)	Terminal Growth							Delta EBIT-margin						
		1.75 %	2.00 %	2.25 %	2.50 %	2.75 %	3.00 %	3.25 %	-1.50 pp	-1.00 pp	-0.50 pp	0.0	0.50 pp	1.00 pp	1.50 pp
1.46	(10.3 %)	14.81	15.02	15.25	15.49	15.75	16.02	16.31	12.06	13.21	14.35	15.49	16.63	17.77	18.92
1.36	(9.8 %)	15.90	16.16	16.43	16.72	17.03	17.36	17.72	13.05	14.27	15.49	16.72	17.94	19.16	20.39
1.31	(9.5 %)	16.50	16.78	17.08	17.40	17.74	18.11	18.51	13.60	14.86	16.13	17.40	18.67	19.94	21.20
1.26	(9.3 %)	17.15	17.45	17.78	18.14	18.52	18.93	19.37	14.19	15.50	16.82	18.14	19.45	20.77	22.08
1.21	(9.0 %)	17.84	18.18	18.54	18.93	19.35	19.81	20.31	14.83	16.19	17.56	18.93	20.30	21.66	23.03
1.16	(8.8 %)	18.58	18.95	19.36	19.79	20.26	20.77	21.33	15.52	16.94	18.37	19.79	21.21	22.64	24.06
1.06	(8.3 %)	20.24	20.70	21.20	21.74	22.33	22.98	23.69	17.09	18.64	20.19	21.74	23.29	24.84	26.39

Source: Warburg Research

Reverse DCF

In addition to our valuation scenarios, we have calculated a reverse DCF to figure out which sustainable EBIT margin is priced in on current share price levels. All other assumptions regarding the detailed planning period, growth, capex, working capital and model parameters are the same as in our base-case scenario.

Further, we have examined which risk factors (WACC) need to be applied to our base-case scenario to justify the current share price.

On current levels, an EBIT margin of 8.2% is priced in

If we only change the sustainable EBIT margin in our model, an EBIT margin of 8.2% is assumed (transitional period and terminal value), to reach a fair value equal to a share price of EUR 24.50. Hence, markets do not seem to expect 2G Energy to be able to reach the targeted EBIT margin of 10% (guidance for 2024/25) and are also sceptical regarding the sustainability of margin generation.

With regard to risk factors, a WACC of 11.67% (cost of equity of 12.35%) is needed to reach a share price of EUR 24.50 in our base-case scenario.

Reverse DCF model

Figures in EUR m	Detailed forecast period			Transitional period										Term. Value
	2023e	2024e	2025e	2026e	2027e	2028e	2029e	2030e	2031e	2032e	2033e	2034e	2035e	
Sales	351.7	397.8	448.9	511.8	578.3	647.7	718.9	790.8	862.0	931.0	986.8	1,026.3	1,057.1	3.0 %
Sales change	12.5 %	13.1 %	12.8 %	14.0 %	13.0 %	12.0 %	11.0 %	10.0 %	9.0 %	8.0 %	6.0 %	4.0 %	3.0 %	
EBIT	30.2	38.7	48.5	41.7	47.1	52.7	58.5	64.4	70.2	75.8	80.3	83.5	86.0	
EBIT-margin	8.6 %	9.7 %	10.8 %	8.1 %	8.1 %	8.1 %	8.1 %	8.1 %	8.1 %	8.1 %	8.1 %	8.1 %	8.1 %	
Tax rate (EBT)	30.0 %	30.1 %	30.1 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	
NOPAT	21.1	27.1	33.9	29.2	33.0	36.9	41.0	45.1	49.1	53.0	56.2	58.5	60.2	
Depreciation	5.1	5.5	5.9	7.2	8.7	9.7	10.8	11.9	12.9	14.0	14.8	15.4	15.9	
in % of Sales	1.4 %	1.4 %	1.3 %	1.4 %	1.5 %	1.5 %	1.5 %	1.5 %	1.5 %	1.5 %	1.5 %	1.5 %	1.5 %	
Change in provisions	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Change in liquidity from														
- Working Capital	11.7	14.8	19.5	23.2	27.1	29.4	17.0	15.8	22.8	22.1	17.9	12.6	9.9	
- Capex	6.5	6.7	5.9	6.7	8.1	9.7	10.8	11.9	12.9	14.0	14.8	15.4	15.9	
Capex in % of Sales	1.8 %	1.7 %	1.3 %	1.3 %	1.4 %	1.5 %	1.5 %	1.5 %	1.5 %	1.5 %	1.5 %	1.5 %	1.5 %	
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Free Cash Flow (WACC-model)	8.0	11.1	14.4	6.4	6.5	7.5	23.9	29.2	26.3	31.0	38.4	45.8	50.4	
PV of FCF	7.8	9.9	11.8	4.8	4.4	4.7	13.7	15.4	12.7	13.6	15.5	16.9	17.0	279.2
share of PVs	6.9 %			27.8 %										65.3 %

Model parameter

Derivation of WACC:		Derivation of Beta:	
Debt ratio	10.0 %	Financial Strength	1.20
Cost of debt	8.0 %	Liquidity	1.30
Market return	8.3 %	Cyclicality	1.60
Risk free rate	2.8 %	Transparency	1.20
Risk premium	5.5 %	Others	1.00
Cost of equity	9.7 %		
WACC	9.27 %	Beta	1.26

Valuation (m)

Present values until 2035e	148.4	No. of shares (m)	17.9
Terminal Value	279.2		
Financial liabilities	6.3		
Pension liabilities	0.0		
Hybrid capital	0.0		
Minority interest	0.0		
Market val. of investments	0.0		
Liquidity	13.5		
Equity Value	434.8		
		Value per share	24.24
		(EUR)	

Sensitivity Value per share (EUR)

Terminal Growth									Delta EBIT-margin						
Beta	(WACC)	2.25 %	2.50 %	2.75 %	3.00 %	3.25 %	3.50 %	3.75 %	-1.50 pp	-1.00 pp	-0.50 pp	0.0	0.50 pp	1.00 pp	1.50 pp
1.46	(10.3 %)	19.03	19.38	19.75	20.15	20.58	21.04	21.53	14.72	16.53	18.34	20.15	21.96	23.77	25.58
1.36	(9.8 %)	20.67	21.10	21.55	22.03	22.55	23.12	23.73	16.16	18.12	20.08	22.03	23.99	25.95	27.90
1.31	(9.5 %)	21.59	22.05	22.55	23.09	23.67	24.30	24.98	16.98	19.01	21.05	23.09	25.13	27.17	29.20
1.26	(9.3 %)	22.57	23.09	23.64	24.24	24.88	25.58	26.35	17.86	19.98	22.11	24.24	26.36	28.49	30.62
1.21	(9.0 %)	23.64	24.21	24.82	25.48	26.21	26.99	27.86	18.82	21.04	23.26	25.48	27.71	29.93	32.15
1.16	(8.8 %)	24.79	25.42	26.10	26.85	27.66	28.54	29.52	19.87	22.19	24.52	26.85	29.17	31.50	33.82
1.06	(8.3 %)	27.40	28.18	29.04	29.98	31.01	32.15	33.41	22.28	24.85	27.41	29.98	32.54	35.11	37.67

Source: Warburg Research

We examine different peer-group baskets for the multiple analysis

Peer-group valuation

To verify our DCF-based price target and provide an overview of valuation multiples, we have taken a look at different peer-group baskets. As there are no publicly-listed peers for 2G Energy's business model, we have composed three different peer groups:

- (I) **Renewables peers:** 2G Energy can be regarded as part of the renewables market. Its hydrogen CHP, in particular, provides an emission-free energy source. As peers, we have selected parts & manufacturing companies for wind turbines, inverters, fuel cells and power plants, which are also characterized by a low-to-moderate vertical integration.
- (II) **Manufacturing peers:** This peer group consists of manufacturing companies with a similar vertical integration (assembly) and machinery / service split in the P&L.
- (III) **Hydrogen peers:** With its hydrogen CHP, 2G Energy is positioned as part of the new hydrogen value chain, allowing the company to profit from the steep growth expected for the hydrogen infrastructure. However, most peers in this basket are not yet profitable on EBITDA level, limiting the derivation of valuation multiples.

Peer-group I: Renewables basket

Company	LC	Price	MC	EV	P / E			EV / Sales			EV / EBITDA			EV / EBIT		
		in LC	in LC m	in LC m	23e	24e	25e	23e	24e	25e	23e	24e	25e	23e	24e	25e
System peers																
Nordex SE	EUR	11.63	2,748.7	2,582.5	n.a.	45.7 x	15.6 x	0.4 x	0.4 x	0.4 x	73.8 x	8.8 x	5.4 x	n.a.	22.3 x	9.4 x
Vestas Wind Systems A/S	DKK	169.12	170,674.4	181,083.5	435.1 x	27.5 x	17.0 x	1.6 x	1.4 x	1.2 x	23.4 x	12.3 x	9.1 x	127.9 x	22.0 x	14.3 x
SMA Solar Technology AG	EUR	75.75	2,628.5	2,359.5	15.1 x	16.6 x	15.0 x	1.3 x	1.2 x	1.1 x	9.6 x	9.3 x	8.2 x	11.8 x	11.2 x	10.5 x
SolarEdge Technologies, Inc.	USD	166.57	9,420.8	9,542.3	17.7 x	14.8 x	11.7 x	2.5 x	2.1 x	1.7 x	13.5 x	10.5 x	8.5 x	15.5 x	12.7 x	9.5 x
Enphase Energy, Inc.	USD	129.05	17,596.6	18,245.0	25.6 x	19.6 x	14.3 x	6.9 x	5.7 x	4.4 x	20.8 x	15.1 x	12.2 x	30.5 x	21.2 x	16.1 x
Siemens Energy AG	EUR	13.48	10,676.4	12,243.2	n.a.	20.6 x	9.2 x	0.4 x	0.4 x	0.3 x	n.a.	5.4 x	3.9 x	n.a.	15.0 x	7.4 x
SFC Energy AG	EUR	24.75	429.8	384.9	74.5 x	38.3 x	21.2 x	3.4 x	2.3 x	1.6 x	27.5 x	16.7 x	10.4 x	48.1 x	25.0 x	13.8 x
Average					113.6 x	26.2 x	14.9 x	2.4 x	1.9 x	1.5 x	28.1 x	11.2 x	8.2 x	46.8 x	18.5 x	11.6 x
Median					25.6 x	20.6 x	15.0 x	1.6 x	1.4 x	1.2 x	22.1 x	10.5 x	8.5 x	30.5 x	21.2 x	10.5 x
2G Energy AG	EUR	24.55	440.4	433.2	21.3 x	16.6 x	13.2 x	1.2 x	1.1 x	1.0 x	12.3 x	9.8 x	8.0 x	14.5 x	10.9 x	9.0 x
Valuation difference to Average					432%	58%	13%	92%	76%	59%	129%	14%	3%	223%	70%	29%
Fair value per share based on Average					130.63	38.72	27.68	47.06	43.30	38.99	56.15	27.98	25.39	79.40	41.63	31.65
Consensus																
2G Eneray AG	EUR	24.55	440.4	433.2	26.4 x	21.2 x	15.8 x	1.2 x	1.2 x	1.0 x	14.1 x	11.6 x	9.0 x	16.9 x	13.6 x	10.3 x

Source: FactSet, Warburg Research

Peer-group II: Manufacturing basket

Company	LC	Price	MC	EV	P / E			EV / Sales			EV / EBITDA			EV / EBIT		
					23e	24e	25e	23e	24e	25e	23e	24e	25e	23e	24e	25e
System peers																
SPIE SA	EUR	27.34	4,499.7	6,267.6	13.5 x	12.4 x	11.6 x	0.7 x	0.7 x	0.7 x	8.1 x	7.7 x	7.4 x	11.2 x	10.6 x	10.1 x
NIBE Industrier AB Class B	SEK	83.66	168,664.5	178,220.1	30.9 x	26.8 x	24.0 x	3.7 x	3.3 x	2.9 x	19.4 x	17.0 x	15.1 x	23.7 x	21.5 x	19.1 x
ABB Ltd. Shs Sponsored American D	USD	38.15	70,957.1	77,125.5	18.8 x	18.3 x	17.1 x	2.4 x	2.3 x	2.2 x	13.1 x	12.7 x	12.0 x	15.4 x	14.6 x	13.8 x
Krones AG	EUR	99.10	3,130.9	2,979.0	13.5 x	10.9 x	9.6 x	0.6 x	0.6 x	0.6 x	6.6 x	5.8 x	5.1 x	9.8 x	8.1 x	6.9 x
Durr AG	EUR	27.64	1,912.7	2,277.8	10.6 x	8.8 x	7.7 x	0.5 x	0.5 x	0.5 x	5.8 x	5.0 x	4.8 x	8.0 x	6.9 x	6.3 x
Interroll Holding AG	CHF	2,685.00	2,204.6	2,100.0	33.7 x	26.9 x	24.3 x	3.6 x	3.3 x	3.0 x	19.5 x	16.1 x	14.5 x	25.0 x	20.7 x	18.7 x
Wolfpack-Adisa Holding AG	EUR	11.60	55.7	60.1	50.4 x	17.3 x	13.3 x	0.8 x	0.6 x	0.6 x	10.4 x	6.9 x	6.0 x	23.1 x	11.1 x	8.6 x
Sulzer AG	CHF	89.40	3,033.7	3,358.1	13.3 x	12.8 x	12.1 x	1.0 x	1.0 x	0.9 x	7.6 x	7.4 x	7.1 x	10.4 x	10.2 x	9.8 x
Weir Group PLC	GBP	18.27	4,741.7	5,604.7	15.9 x	14.7 x	13.5 x	2.1 x	2.0 x	1.9 x	10.4 x	9.9 x	9.2 x	12.3 x	11.6 x	10.8 x
WashTec AG	EUR	33.60	449.6	522.0	15.0 x	13.3 x	11.6 x	1.1 x	1.0 x	1.0 x	9.0 x	8.2 x	7.0 x	12.1 x	10.7 x	9.3 x
Average					21.5 x	16.2 x	14.5 x	1.6 x	1.5 x	1.4 x	11.0 x	9.7 x	8.8 x	15.1 x	12.6 x	11.3 x
Median					15.4 x	14.0 x	12.7 x	1.0 x	1.0 x	0.9 x	9.7 x	8.0 x	7.3 x	12.2 x	10.9 x	9.9 x
2G Energy AG	EUR	24.55	440.4	433.2	21.3 x	16.6 x	13.2 x	1.2 x	1.1 x	1.0 x	12.3 x	9.8 x	8.0 x	14.5 x	10.9 x	9.0 x
Valuation difference to Average					1%	-2%	10%	33%	39%	47%	-11%	-1%	11%	4%	15%	26%
Fair value per share based on Average					24.78	24.02	26.93	32.73	34.22	36.00	21.94	24.22	27.16	25.65	28.35	30.99
Consensus																
2G Energy AG	EUR	24.55	440.4	433.2	26.4 x	21.2 x	15.8 x	1.2 x	1.2 x	1.0 x	14.1 x	11.6 x	9.0 x	16.9 x	13.6 x	10.3 x

Source: FactSet, Warburg Research

Peer-group III: Hydrogen basket

Company	LC	Price	MC	EV	P / E			EV / Sales			EV / EBITDA			EV / EBIT			
					23e	24e	25e	23e	24e	25e	23e	24e	25e	23e	24e	25e	
System peers																	
Ballard Power Systems Inc.	CAD	5.84	1,744.4	681.7	n.a.	n.a.	n.a.	5.6 x	3.6 x	2.1 x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
NEL ASA	NOK	11.82	19,750.2	15,876.9	n.a.	n.a.	n.a.	9.2 x	6.4 x	4.1 x	n.a.	n.a.	1,427.9 x	n.a.	n.a.	n.a.	
Ceres Power Holdings plc	GBP	3.50	674.2	490.3	n.a.	n.a.	n.a.	14.2 x	8.2 x	7.2 x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
ITM Power PLC	GBP	0.89	547.0	271.0	n.a.	n.a.	n.a.	14.2 x	5.5 x	3.7 x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
Plug Power Inc.	USD	8.88	5,345.5	5,196.4	n.a.	n.a.	n.a.	4.0 x	2.6 x	1.8 x	n.a.	152.5 x	11.8 x	n.a.	n.a.	38.1 x	
FuelCell Energy, Inc.	USD	1.47	661.7	426.9	n.a.	n.a.	n.a.	3.3 x	2.2 x	1.5 x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
PowerCell Sweden AB	SEK	71.76	3,741.7	3,577.6	n.a.	n.a.	n.a.	11.4 x	8.2 x	6.1 x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
Average					n.a.	n.a.	n.a.	8.8 x	5.3 x	3.8 x	n.a.	152.5 x	719.8 x	n.a.	n.a.	38.1 x	
Median					n.a.	n.a.	n.a.	9.2 x	5.5 x	3.7 x	n.a.	152.5 x	719.8 x	n.a.	n.a.	38.1 x	
2G Energy AG	EUR	24.55	440.4	433.2	21.3 x	16.6 x	13.2 x	1.2 x	1.1 x	1.0 x	12.3 x	9.8 x	8.0 x	14.5 x	10.9 x	9.0 x	
Valuation difference to Average								618%	382%	293%	1456%			8936%			324%
Fair value per share based on Average								176.35	118.37	96.38	381.97			2,218.39			104.15
Consensus																	
2G Energy AG	EUR	24.55	440.4	433.2	26.4 x	21.2 x	15.8 x	1.2 x	1.2 x	1.0 x	14.1 x	11.6 x	9.0 x	16.9 x	13.6 x	10.3 x	
Source: FactSet, Warburg Research																	

Source: FactSet, Warburg Research

2G Energy trades at a discount on all relevant multiples

Within the renewables peer group, 2G Energy trades at a discount on all multiples, except for EV/EBITDA. If we apply the average P/E or EV/EBIT multiple for 2024e to our estimates, the fair value per share ranges between our base and accelerated case valuations (DCF-based). On EV/EBITDA level though, the fair value (2024e) is close to current share-price levels.

Compared to manufacturing peers, 2G Energy trades at a lower discount on P/E and EV/EBIT (2024e) multiples, resulting in fair values ranging between the current share price and our base-case scenario.

The multiples derived from the hydrogen peer group result in extremely high price targets, though most companies are not profitable yet on EBITDA level, which limits the significance of the used data base.

Markets do not seem to be pricing in 2G Energy's role in the energy transition

The difference between renewables and manufacturing multiples hints at a current classification of 2G Energy as sole manufacturer, not accounting for the company's role in the energy transition. Markets seem to apply higher multiples to companies which are part of the renewables value chain, given its prospering growth opportunities. The same is true for hydrogen companies, where markets are willing to pay very high multiples on loss-making companies, eyeing the chances ahead.

However, our analysis shows that the key growth drivers behind 2G Energy's business model are the same as for other manufacturers for renewable energy sources (PV, wind). In addition, 2G Energy also profits from the development of a hydrogen infrastructure and is positioned as a first mover in the market. Hence, we position 2G Energy in the renewables basket and apply higher valuation multiples for the share's fair value.

With regard to our DCF valuation, we assume an upbeat renewable infrastructure growth scenario to our base and accelerated case, leading to target prices in the same range as derived from multiples of the renewables peer group (P/E, EV/EBIT). Hence, we deem our base case and accelerated case to be verified, depending on the renewables growth path applied.

Conclusion

As the main valuation approach and to derive our target price, we opted for the DCF-model based on our base-case assumptions. With regard to growth rates and EBIT-margin expansion, we consider this scenario to be fairly cautious, given the current economic and regulatory uncertainties.

However, if regulators ambitious renewable expansion plans and the set-up of a large hydrogen infrastructure in Europe comes to pass, we would opt for the accelerated case and subsequently, a higher fair value per share. This approach is backed by the

We opt for the base-case DCF as our main approach...

renewables peer-group, which trades at higher valuation multiples. As important milestones to justify a higher price target, we identify the following key pillars:

...but expect further upside if milestones are reached

- 2G Energy shows an EBIT-margin expansion up to 10% until FY 2025 and implements further measures to optimize its throughput.
- Hydrogen CHPs achieve high market penetration and are regarded as integral part of the hydrogen infrastructure by market participants.
- Growth in the CHP segment follows the renewable growth cycle, which is expected to grow at double-digit rates until 2030.
- Large heat-pumps can be established as a new business segment, which delivers a sustainable margin contribution. Further efficiencies can be implemented in procurement and production.
- 2G Energy is able to corner the market as technology leader and increase its market penetration in the US and Europe.
- The service network can be expanded accordingly, to solidify 2G Energy's quality leadership.

Company & Products

2G Energy, headquartered in Heek, Germany, is an internationally leading producer of combined heat and power cogeneration units ("CHP") for different fuel types. The offered product range includes systems with a capacity of 20kW-4,500kW, suitable for a vast scope of application. 2G's machinery offering is complemented by its service unit, providing maintenance and life-cycle management as well as its digital application, allowing operators to monitor its system and integrate the CHP in its energy management.

2G Energy has a sole focus on CHP production and services

Product offering

2G Energy is a specialized manufacturer of CHP systems, which offers solutions for different fuel types, output categories and project types. Apart from the development and manufacturing, the scope of service includes servicing of installed plants, project management and digital monitoring solutions.

Operating principle of a CHP / cogeneration unit

A cogeneration unit or CHP combines an electrical with a thermal cycle to reach a high energetic efficiency of the used fuel. In conventional power plants, such as coal or gas-fired power stations, the heat of the power generation is emitted as wasted heat. The CHP though, recovers the thermal energy of the generator and makes it usable for water or space heating (low-temperature heat) or as process heat in the chemical or food industry (high-temperature heat up to 400 degrees Celsius).

Energy efficiency of conventional plants vs. CHPs



Source: 2G Energy, Warburg Research

The dual cycle results in a high energy efficiency, or optimized exploitation of the used fuel. Conventional, central power plants reach an efficiency of up to 45%, whilst CHPs allow for an efficiency of 80%-98% or even more. Another advantage of CHPs is its decentralized character, as power and heat are produced on-site or nearby. This allows the operator to manage its energy supply independent of public, centralized grids and reach a high level of supply security.

Depending on the characteristics of the installation, CHPs are either focused on electricity or heat supply. In industrial applications or as part of a larger energy supply management, CHPs can also be used for the production of process heat, hot air or thermal oil.

Given its high efficiency, greenhouse emissions are reduced up to 60% compared to conventional power generation. Depending on the fuel type, CHPs can even be regarded as renewable energy sources (hydrogen) and are considered an important pillar of a renewable energy supply system.

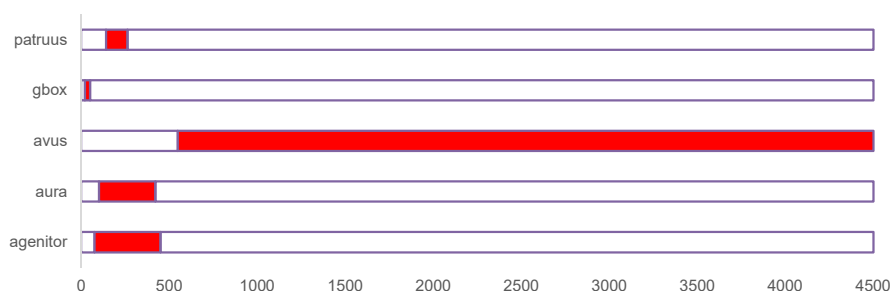
A broad product range suits different customer needs

CHP systems

2G Energy offers a broad product portfolio, including five different types of CHP systems. These are called g-box, agenitor, aura, patruus and avus. The main differences are the variety of installed capacity, therefore the areas of application, their efficiency as well as the fuel type. All 2G products are extremely reliable, based on their proven engine technology and are lowering operating costs with their robust and low-maintenance construction. 2G is pioneering in hydrogen technology with the agenitor which can operate on 100% hydrogen. Depending ultimately on the specific system, in general 2G's CHPs are generally fuelled by natural gas, LNG, biogas and hydrogen. 2G is selling its systems

over various channels, as well as offering rental and leasing models, that allow the client to benefit from CHP technology without sizeable investment.

2G Energy product range and installed capacity in kW



Source: 2G Energy, Warburg Research

- **G-box** is a highly efficient and quiet CHP with an electrical output range of 20 and 50 kW. As it is very quiet, the g-box is suitable for high-traffic and noise-sensitive areas such as hotels and educational facilities. Moreover, it achieves combined efficiency scores of above 100%. The g-box can be fuelled with natural gas, biogas or LNG, providing flexibility to clients.
- **Agenitor** is the global efficiency benchmark by 2G. It is particularly effective in assisting to minimize energy consumption and costs. With its improved gas engine technology, the agenitor, reaches an electrical efficiency of up to 42.5%— a worldwide peak in its respective performance category, delivering reduced gas consumption, lower fuel costs and increased yield. Offering an electrical output range of between 75 and 450 kW, the agenitor is primarily used in the food processing industry or in hospitals and runs with hydrogen, biogas or natural gas.
- **Aura** is 2G's response to the increase in strict emission limits in urban areas. Due to the Lambda-1 technology that was developed in-house, the aura complies with the strictest nitrogen oxide limits and is therefore 2G's clean performer. With a power range between 100 and 420 kW it is ideal for customers that prioritize great thermal output, low operating costs and structural compactness. The aura is only available running on natural gas.
- **Patruus** is one of the first and oldest CHP systems in 2G's portfolio but has proven its worth in practice for more than a decade, delivering performance between 140 and 263 kW of electrical output. Patruus is only usable with natural gas but with its customizable configuration due to the possibility of choosing between an aspirated and a turbocharged engine, the easy-to-install equipment is providing educational as well as care facilities and other establishments with sustainable energy, calibrated for individual requirements.
- **Avus**, running with natural- and biogas is the CHP system for industries and energy suppliers. Delivering an output range between 548 and 4,500 kW, avus is the biggest CHP system in the product range. Offering an end-to-end full service, 2G is ensuring the best possible outcome of projects by planning them in their entirety, while also advising on the configuration of components.

On-site and containerized solutions comply with varying applications

2G offers two installation solutions for its CHP systems, containerized solutions as well as an in-house set-up. The in-house set-up is completely customizable and available for all CHP systems. The installation of the equipment is individually tailored inside the specific building. Project planning as well as configuration, which can be combined with soundproof encapsulation, is done directly by 2G.

For containerized solutions, 2G is offering several possibilities for the different CHP systems. Compact and basic container for simple installation, concrete acoustic enclosure container for noise reduction and soundproof encapsulation container for even lower noise emissions. The containers are also available with further advancements like roof integrated cooling units as well as air inlets and outlets for optimized design and space-saving.

Service portfolio

2G Energy is offering extensive services to its customers, either in person or digitally with its own software solutions. 2G's customer support is available for any questions regarding CHPs as well as providing a 24/7 service for installed plants, not only for 2G manufactured products, but also for maintenance and repair of equipment from other producers. 2G is guaranteeing high quality, operational safety and efficiency of the plants by only using original 2G spare parts, or spare parts of other renowned manufacturers.

Additionally, 2G is offering a service contract that includes all maintenance and repair works as well as spare parts that are included in an all-inclusive price in the contract for clients to have a better and complete cost control.

Extensive partner network allows for worldwide servicing

With its remanufacturing programme, 2G takes environmental responsibility and is contributing to a circular economy by inspecting old components, remanufacturing them and selling them again at a reduced price.

2G has its own service network and is represented by its own subsidiaries or by licensed partners under various forms of cooperation. Tipster is a partner that provides information about potential customers and it receives commission if the sale is completed. Sales partners distribute a specific selection of 2G's product portfolio in regions where 2G doesn't have the infrastructure to set up its own stores. Service partners and service providers support 2G clients with in-person assistance in regions where 2G does not have its own capacity to provide maintenance. Service partners are independent and serve their own pool of 2G systems whereas service providers perform maintenance in the name of 2G for 2G customers. 2G stations, only available outside of Germany, are companies that solely sell 2G products and operate as part of 2G without legally belonging to 2G Energy. With its own training centre, 2G is teaching partners and customers knowledge and skills about the operation of cogeneration plants. Using those different levels, 2G can offer reliable and qualitative maintenance and support all around the world.

Digital tools report irregularities and ensure service efficiency

2G's digital service focuses on the I.R.I.S. system as well as on the online platform 'my.2-g.com'. The Intelligent Report Information System ('I.R.I.S.') was developed in-house and is able to detect and report irregularities of CHP systems before they occur. This leads to cost and time savings and therefore to more sustainable operation of the systems. While monitoring the systems around the world, 400 million sensor readings are transmitted through the I.R.I.S. platform every week for further analysis and evaluation, completely automated.

The digital toolbox, 'my.2-g.com' is an all-in-one solution for clients and partners. The self-developed online platform offers the entire spectrum of useful tools to help clients and partners with their CHP systems. From accessing valuable data about plant performance, to ordering spare parts online to managing relevant documents, all is clearly arranged in one place.

History

Founded in 1995, 2G has developed into an internationally leading company

2G Energy was founded in 1995 by Christian Grotholt and Ludgar Gausling as "2G Energietechnik GmbH" in Heek, Germany. The company quickly developed into one of the leading manufacturers of combined heat and electricity cogeneration units and subsequently expanded its product range and local footprint.

- 1995: Founded as 2G Energietechnik GmbH
- 1996: Release of the first product line based on heating oil with a capacity of 12kW-35kW.
- 1999: Installation of the first biogas CHP
- 2000: The introduction of the EEG in Germany with its regulated remuneration for CHPs sets off the first surge in demand
- 2004: Tapping into international markets with the first successful shipping of a CHP to Japan and the Netherlands.

- 2007: IPO on the entry standard of the German stock exchange and acquisition of AEM, a manufacturer for micro CHPs.
- 2008: Establishment of the Spanish subsidiary (2G Iberica S.L.).
- 2009: Establishment of US-based 2G Cenergy Inc. with a 25% shareholding of 2G Energy AG
- 2009: Expansion of product offering into natural gas and introduction of the first CHP optimized for biogas, delivering an electrical output of 220kW
- 2011: International expansion with the foundation of subsidiaries for sales and service in Italy, Poland and the UK.
- 2014: Commissioning of first CHP that could run entirely on hydrogen at Berlin airport
- 2015: 100% acquisition of 2G Cenergy Inc. and renaming to 2G Energy Inc.
- 2016: Pioneering the digitization of CHP systems with the launch of my.2g.com, a digital platform for the operation of CHP plants
- 2018: Introduction of I.R.I.S., a self-developed AI platform for the prediction of malfunctions
- 2020: Celebrating 25 years of 2G Energy, the company releases its unique life-cycle management for CHPs, setting new standards in services.

Management Board

The management of 2G Energy currently consists of four members, covering all relevant departments of the company:

An experienced management board covers all relevant topics

CEO Christian Grotholt – Strategy, IT and Sales



Christian Grotholt, born in 1968, is one of the co-founders of 2G Energy. He has been CEO of the company since its IPO in 2007 and he led the former packager of CHPs to an internationally leading developing and manufacturing company. His term as CEO runs until June 2025.

COO Ludger Holtkamp – Procurement, Production and Project Management



Ludger Holtkamp has been COO since the company went public and is responsible for procurement, production and project management. He has broad professional experience in several engineering positions including the assembly of CHP plants. His contract runs until June 2025.

CFO Friedrich Pehle – Finance, IR, Controlling and HR



Friedrich Pehle was appointed CFO in 2017 after spending more than 20 years in various international agricultural and energy companies and being responsible for different

managerial positions at the interface of business administration and technology. He is appointed CFO until December 2027.

CTO Frank Grewe – Service and Research & Development



Frank Grewe joined the management board as CTO in 2020 after a successful in-house career in several management positions including the formally spun-off of 2G Drives GmbH and the structuring and strategic management of 2G's service unit. He is appointed CTO until June 2026.

Supervisory Board

Dr. Lukas Lenz

Dr. Lenz is entrepreneur and lawyer, focussing on corporate finance, M&A and stock corporation law. He has broad experience in several supervisory board positions and is appointed until 2026.

Dr. Jürgen Vutz

Dr. Vutz holds a degree in engineering and business administration and held several managing positions in machinery & equipment companies during his professional career.

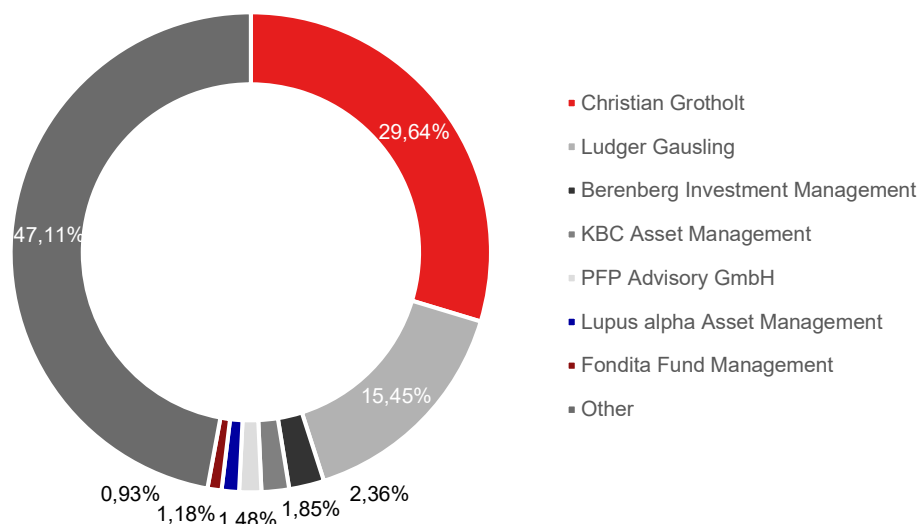
Prof. Dr. Christof Wetter

Prof. Dr. Wetter holds a chair at the FH Münster, specializing in environmental technology, waste management, bioenergy and CHPs.

Shareholder structure

2G Energy's shares have been listed in the scale segment of the Frankfurt Stock Exchange since the IPO in 2007. The share capital consists of 17,940,000 shares with the ISIN DE000A0HL8N9. Both founders, Mr. Grotholt and Mr. Gausling, are still involved with a shareholding of 29.64%, respectively 15.45%. The remainder of 54.91% is freefloat with several institutional investors involved.

Shareholder structure (as of June 2023)



Source: FactSet; Warburg Research

Within the top 10 institutional shareholders, funds from Germany are dominant, but there are also investment managers from the Nordics and the UK.

Top 10 institutional investors

Top 10 Institutional Shareholders	% of shares
Berenberg Investment Management	2,36%
KBC Asset Management	1,85%
PFP Advisory GmbH	1,48%
Lupus alpha Asset Management	1,18%
Fondita Fund Management	0,93%
Victory Capital Management	0,73%
FIVV Finanzinformation & Vermögensverwaltung	0,69%
Grünes Geld Vermögensverwaltung	0,68%
Norges Bank Investment Management	0,66%
Hauck Aufhäuser Lampe Privatbank	0,62%

Source: FactSet; Warburg Research

DCF model

Figures in EUR m	Detailed forecast period			Transitional period										Term. Value
	2023e	2024e	2025e	2026e	2027e	2028e	2029e	2030e	2031e	2032e	2033e	2034e	2035e	
Sales	351.7	397.8	448.9	511.8	578.3	647.7	718.9	790.8	862.0	931.0	986.8	1,026.3	1,057.1	3.0 %
Sales change	12.5 %	13.1 %	12.8 %	14.0 %	13.0 %	12.0 %	11.0 %	10.0 %	9.0 %	8.0 %	6.0 %	4.0 %	3.0 %	
EBIT	29.8	38.3	48.1	61.4	72.3	84.2	89.9	94.9	103.4	102.4	108.6	112.9	116.3	11.0 %
EBIT-margin	8.5 %	9.6 %	10.7 %	12.0 %	12.5 %	13.0 %	12.5 %	12.0 %	12.0 %	11.0 %	11.0 %	11.0 %	11.0 %	
Tax rate (EBT)	30.0 %	30.1 %	30.1 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %
NOPAT	20.8	26.8	33.6	43.0	50.6	58.9	62.9	66.4	72.4	71.7	76.0	79.0	81.4	
Depreciation	5.5	5.9	6.3	7.2	8.7	9.7	10.8	11.9	12.9	14.0	14.8	15.4	15.9	1.5 %
in % of Sales	1.6 %	1.5 %	1.4 %	1.4 %	1.5 %	1.5 %	1.5 %	1.5 %	1.5 %	1.5 %	1.5 %	1.5 %	1.5 %	
Changes in provisions	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Change in Liquidity from														
- Working Capital	11.7	14.8	19.5	23.2	27.1	29.4	17.0	15.8	22.8	22.1	17.9	12.6	9.9	9.9
- Capex	10.3	6.7	5.9	6.7	8.1	9.7	10.8	11.9	12.9	14.0	14.8	15.4	15.9	
Capex in % of Sales	2.9 %	1.7 %	1.3 %	1.3 %	1.4 %	1.5 %	1.5 %	1.5 %	1.5 %	1.5 %	1.5 %	1.5 %	1.5 %	1.5 %
- Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Free Cash Flow (WACC Model)	4.4	11.2	14.6	20.3	24.1	29.6	45.9	50.6	49.6	49.6	58.1	66.4	71.5	74
PV of FCF	4.3	10.0	11.9	15.2	16.5	18.6	26.4	26.6	23.9	21.8	23.4	24.5	24.1	397
share of PVs	4.07 %			34.33 %										61.59 %

Model parameter

Derivation of WACC:		Derivation of Beta:	
Debt ratio	10.00 %	Financial Strength	1.20
Cost of debt (after tax)	5.6 %	Liquidity (share)	1.30
Market return	8.25 %	Cyclicality	1.60
Risk free rate	2.75 %	Transparency	1.20
		Others	1.00
WACC	9.27 %	Beta	1.26

Valuation (m)

Present values 2035e	247		
Terminal Value	397		
Financial liabilities	6		
Pension liabilities	0		
Hybrid capital	0		
Minority interest	0		
Market val. of investments	0		
Liquidity	13	No. of shares (m)	17.9
Equity Value	651	Value per share (EUR)	36.29

Sensitivity Value per Share (EUR)

Terminal Growth								Delta EBIT-margin									
Beta	WACC	2.25 %	2.50 %	2.75 %	3.00 %	3.25 %	3.50 %	3.75 %	Beta	WACC	-1.5 pp	-1.0 pp	-0.5 pp	+0.0 pp	+0.5 pp	+1.0 pp	+1.5 pp
1.46	10.3 %	28.75	29.25	29.78	30.34	30.95	31.60	32.30	1.46	10.3 %	24.91	26.72	28.53	30.34	32.15	33.96	35.77
1.36	9.8 %	31.16	31.75	32.40	33.09	33.83	34.63	35.50	1.36	9.8 %	27.22	29.17	31.13	33.09	35.04	37.00	38.95
1.31	9.5 %	32.49	33.15	33.86	34.62	35.45	36.34	37.31	1.31	9.5 %	28.51	30.55	32.58	34.62	36.66	38.70	40.74
1.26	9.3 %	33.93	34.65	35.44	36.29	37.20	38.20	39.29	1.26	9.3 %	29.91	32.03	34.16	36.29	38.41	40.54	42.66
1.21	9.0 %	35.47	36.28	37.15	38.09	39.12	40.24	41.46	1.21	9.0 %	31.43	33.65	35.87	38.09	40.32	42.54	44.76
1.16	8.8 %	37.14	38.04	39.01	40.06	41.21	42.47	43.86	1.16	8.8 %	33.09	35.41	37.74	40.06	42.39	44.72	47.04
1.06	8.3 %	40.92	42.04	43.26	44.59	46.05	47.67	49.47	1.06	8.3 %	36.89	39.46	42.02	44.59	47.15	49.72	52.28

- We have computed three different growth and valuation scenarios (base, accelerated, downward)
- As main valuation indicator, we apply our base-case DCF-valuation
- Internal efficiency measures, increasing service revenues and operating leverage boost EBIT-margin generation
- Sales is expected to experience a steep growth, reflecting the roadmap to net zero until 2030/35

Valuation	2019	2020	2021	2022	2023e	2024e	2025e
Price / Book	0.6 x	0.9 x	1.1 x	4.1 x	3.5 x	3.0 x	2.4 x
Book value per share ex intangibles	14.75	17.02	20.09	5.78	6.62	8.00	9.72
EV / Sales	0.2 x	0.3 x	0.3 x	1.4 x	1.2 x	1.1 x	0.9 x
EV / EBITDA	2.0 x	3.1 x	4.2 x	15.4 x	12.4 x	9.7 x	7.6 x
EV / EBIT	2.4 x	3.7 x	5.1 x	18.4 x	14.7 x	11.2 x	8.6 x
EV / EBIT adj.*	2.4 x	3.7 x	5.1 x	18.4 x	14.7 x	11.2 x	8.6 x
P / FCF	n.a.	9.7 x	26.4 x	n.a.	109.4 x	41.1 x	31.0 x
P / E	3.7 x	5.7 x	8.4 x	27.5 x	21.8 x	16.9 x	13.3 x
P / E adj.*	3.7 x	5.7 x	8.4 x	27.5 x	21.8 x	16.9 x	13.3 x
Dividend Yield	5.2 %	2.9 %	2.1 %	0.6 %	0.6 %	0.7 %	0.8 %
FCF Potential Yield (on market EV)	37.6 %	25.4 %	18.4 %	4.9 %	6.0 %	7.7 %	9.7 %
*Adjustments made for: -							

Consolidated profit & loss

In EUR m	2019	2020	2021	2022	2023e	2024e	2025e
Sales	236.4	246.7	266.3	312.6	351.7	397.8	448.9
Change Sales yoy	12.7 %	4.4 %	8.0 %	17.4 %	12.5 %	13.1 %	12.8 %
Increase / decrease in inventory	-10.3	7.4	2.6	26.0	-3.6	10.0	6.7
Own work capitalised	0.0	0.1	0.0	0.2	0.0	0.0	0.0
Total Sales	226.1	254.2	268.9	338.8	348.1	407.8	455.6
Material expenses	146.8	167.3	171.3	224.1	215.9	250.8	273.9
Gross profit	79.4	87.0	97.7	114.7	132.2	157.0	181.7
Gross profit margin	33.6 %	35.2 %	36.7 %	36.7 %	37.6 %	39.5 %	40.5 %
Personnel expenses	39.0	44.3	49.4	57.0	60.8	70.7	78.5
Other operating income	2.0	2.3	3.4	6.2	4.0	3.0	2.0
Other operating expenses	23.1	24.6	29.7	35.3	40.1	45.2	50.7
Unfrequent items	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EBITDA	19.4	20.3	22.0	28.7	35.3	44.2	54.4
Margin	8.2 %	8.2 %	8.3 %	9.2 %	10.0 %	11.1 %	12.1 %
Depreciation of fixed assets	2.9	3.0	3.2	3.7	4.1	4.5	4.8
EBITA	16.4	17.3	18.8	24.9	31.1	39.7	49.5
Amortisation of intangible assets	0.8	0.7	0.7	0.9	1.3	1.4	1.4
Goodwill amortisation	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EBIT	15.6	16.6	18.0	24.0	29.8	38.3	48.1
Margin	6.6 %	6.7 %	6.8 %	7.7 %	8.5 %	9.6 %	10.7 %
EBIT adj.	15.6	16.6	18.0	24.0	29.8	38.3	48.1
Interest income	0.1	0.2	0.1	0.1	0.0	0.0	0.0
Interest expenses	0.4	0.4	0.3	0.4	0.4	0.5	0.5
Other financial income (loss)	0.0	0.0	0.0	-0.1	0.0	0.0	0.0
EBT	15.3	16.5	17.8	23.6	29.3	37.8	47.6
Margin	6.5 %	6.7 %	6.7 %	7.5 %	8.3 %	9.5 %	10.6 %
Total taxes	5.0	4.5	5.2	7.2	8.8	11.4	14.3
Net income from continuing operations	10.3	12.0	12.6	16.4	20.5	26.5	33.3
Income from discontinued operations (net of tax)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net income before minorities	10.3	12.0	12.6	16.4	20.5	26.5	33.3
Minority interest	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net income	10.3	12.0	12.6	16.4	20.5	26.5	33.3
Margin	4.4 %	4.9 %	4.7 %	5.2 %	5.8 %	6.7 %	7.4 %
Number of shares, average	4.4	4.4	4.4	17.9	17.9	17.9	17.9
EPS	2.33	2.70	2.85	0.91	1.14	1.47	1.85
EPS adj.	2.33	2.70	2.85	0.91	1.14	1.47	1.85

*Adjustments made for:

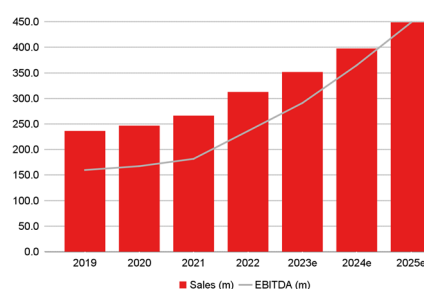
Guidance: Sales: EUR 310-350m; EBIT-margin: 6.5-8.5%

Financial Ratios

	2019	2020	2021	2022	2023e	2024e	2025e
Total Operating Costs / Sales	87.5 %	94.8 %	92.7 %	99.2 %	89.0 %	91.4 %	89.4 %
Operating Leverage	2.6 x	1.5 x	1.1 x	1.9 x	1.9 x	2.2 x	2.0 x
EBITDA / Interest expenses	47.5 x	51.0 x	71.7 x	74.7 x	79.5 x	93.1 x	114.5 x
Tax rate (EBT)	32.6 %	27.4 %	29.2 %	30.6 %	30.0 %	30.1 %	30.1 %
Dividend Payout Ratio	19.4 %	16.7 %	17.5 %	15.3 %	13.1 %	12.2 %	10.2 %
Sales per Employee	364,246	341,257	349,080	371,291	n.a.	n.a.	n.a.

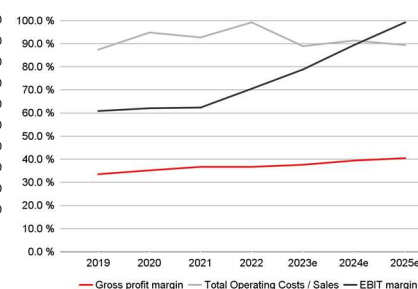
Sales, EBITDA

in EUR m

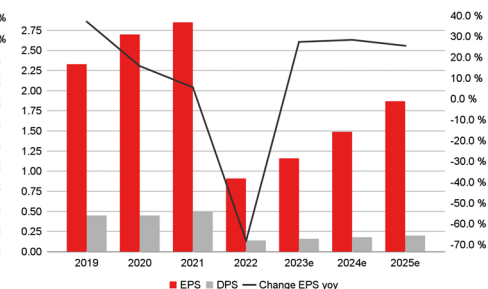


Operating Performance

in %



Performance per Share



Source: Warburg Research

Source: Warburg Research

Source: Warburg Research

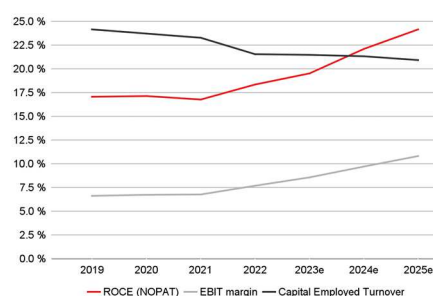
Consolidated balance sheet

In EUR m	2019	2020	2021	2022	2023e	2024e	2025e
Assets							
Goodwill and other intangible assets	3.2	3.0	4.5	5.0	7.9	7.0	6.1
thereof other intangible assets	0.5	0.5	1.0	1.1	4.0	3.1	2.2
thereof Goodwill	2.7	2.3	3.3	3.0	3.0	3.0	3.0
Property, plant and equipment	24.1	22.9	22.6	26.8	28.7	30.4	30.9
Financial assets	0.9	0.9	0.0	0.1	0.1	0.1	0.1
Other long-term assets	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fixed assets	28.2	26.8	27.1	31.9	36.7	37.5	37.0
Inventories	60.4	60.8	72.2	102.6	117.2	124.3	136.0
Accounts receivable	37.0	42.2	43.4	57.1	56.8	67.6	78.7
Liquid assets	10.7	11.0	19.9	13.5	15.0	23.2	34.2
Other short-term assets	4.6	5.9	7.1	6.5	6.5	6.5	6.5
Current assets	112.7	119.8	142.6	179.7	195.6	221.6	255.4
Total Assets	140.9	146.6	169.7	211.6	232.2	259.1	292.4
Liabilities and shareholders' equity							
Subscribed capital	4.4	4.4	4.5	17.9	17.9	17.9	17.9
Capital reserve	11.2	11.2	16.4	3.0	3.0	3.0	3.0
Retained earnings	53.8	63.7	74.3	88.5	106.5	130.3	160.3
Other equity components	-0.9	-1.0	-0.7	-0.7	-0.7	-0.7	-0.8
Shareholders' equity	68.6	78.4	94.6	108.7	126.7	150.4	180.4
Minority interest	0.0	-0.1	0.0	0.0	0.0	0.0	0.0
Total equity	68.5	78.3	94.5	108.6	126.6	150.4	180.3
Provisions	15.4	13.4	17.7	21.4	21.4	21.4	21.4
thereof provisions for pensions and similar obligations	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Financial liabilities (total)	10.6	5.5	5.3	6.3	6.3	6.3	6.3
Short-term financial liabilities	5.4	1.3	1.9	2.5	2.5	2.5	2.5
Accounts payable	13.7	10.0	11.5	20.5	23.1	26.2	29.5
Other liabilities	32.7	39.4	40.7	54.7	54.7	54.7	54.7
Liabilities	72.4	68.2	75.2	103.0	105.6	108.7	112.0
Total liabilities and shareholders' equity	140.9	146.6	169.7	211.6	232.2	259.1	292.4

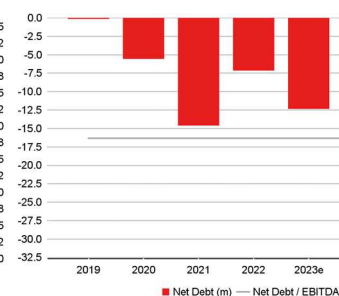
Financial Ratios

	2019	2020	2021	2022	2023e	2024e	2025e
Efficiency of Capital Employment							
Operating Assets Turnover	2.9 x	2.9 x	2.8 x	2.6 x	2.6 x	2.6 x	2.6 x
Capital Employed Turnover	3.5 x	3.4 x	3.3 x	3.1 x	3.0 x	3.0 x	2.9 x
ROA	36.6 %	44.7 %	46.5 %	51.3 %	56.0 %	70.6 %	89.9 %
Return on Capital							
ROCE (NOPAT)	17.1 %	17.1 %	16.7 %	18.4 %	19.0 %	21.3 %	23.5 %
ROE	15.9 %	16.3 %	14.6 %	16.1 %	17.4 %	19.1 %	20.1 %
Adj. ROE	15.9 %	16.3 %	14.6 %	16.1 %	17.4 %	19.1 %	20.1 %
Balance sheet quality							
Net Debt	-0.1	-5.6	-14.6	-7.1	-8.7	-16.9	-27.9
Net Financial Debt	-0.1	-5.6	-14.6	-7.1	-8.7	-16.9	-27.9
Net Gearing	-0.2 %	-7.1 %	-15.5 %	-6.6 %	-6.9 %	-11.2 %	-15.5 %
Net Fin. Debt / EBITDA	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Book Value / Share	15.5	17.7	21.1	6.1	7.1	8.4	10.1
Book value per share ex intangibles	14.7	17.0	20.1	5.8	6.6	8.0	9.7

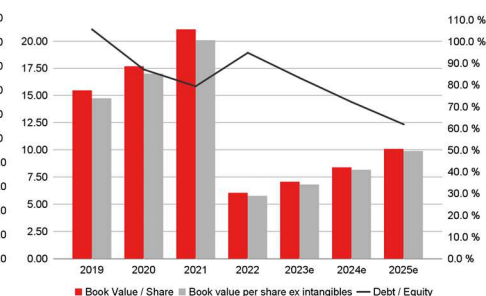
ROCE Development



Net debt in EUR m



Book Value per Share in EUR



Source: Warburg Research

Source: Warburg Research

Source: Warburg Research

Consolidated cash flow statement

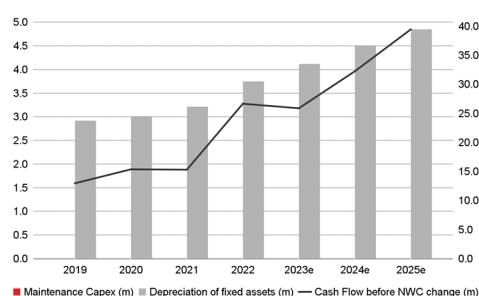
In EUR m	2019	2020	2021	2022	2023e	2024e	2025e
Net income	10.3	12.0	12.6	16.4	20.5	26.5	33.3
Depreciation of fixed assets	2.9	3.0	3.2	3.7	4.1	4.5	4.8
Amortisation of goodwill	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Amortisation of intangible assets	0.8	0.7	0.7	0.9	1.3	1.4	1.4
Increase/decrease in long-term provisions	-0.3	-2.0	3.5	3.4	0.0	0.0	0.0
Other non-cash income and expenses	-0.8	1.7	-4.8	2.3	0.0	0.0	0.0
Cash Flow before NWC change	12.9	15.3	15.3	26.7	26.0	32.4	39.6
Increase / decrease in inventory	-14.3	3.3	-7.0	-17.2	-14.6	-7.1	-11.7
Increase / decrease in accounts receivable	-4.4	-5.1	-0.7	-13.4	0.3	-10.8	-11.1
Increase / decrease in accounts payable	7.7	-3.7	1.3	8.9	2.6	3.1	3.3
Increase / decrease in other working capital positions	0.0	-0.1	0.0	0.0	0.0	0.0	0.0
Increase / decrease in working capital (total)	-11.0	-5.7	-6.4	-21.7	-11.7	-14.8	-19.5
Net cash provided by operating activities [1]	1.9	9.7	8.9	4.9	14.3	17.6	20.1
Investments in intangible assets	-0.2	-0.4	-0.8	-1.2	-4.3	-0.5	-0.5
Investments in property, plant and equipment	-4.3	-2.4	-4.0	-8.2	-6.0	-6.2	-5.4
Payments for acquisitions	-1.4	0.0	-1.2	-0.8	0.0	0.0	0.0
Financial investments	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Income from asset disposals	0.2	0.4	3.3	0.5	0.0	0.0	0.0
Net cash provided by investing activities [2]	-5.7	-2.1	-1.9	-9.6	-10.3	-6.7	-5.9
Change in financial liabilities	3.1	-5.0	-1.3	1.0	0.0	0.0	0.0
Dividends paid	-2.0	-2.0	-2.0	-2.2	-2.5	-2.7	-3.2
Purchase of own shares	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Capital measures	0.0	0.0	5.3	0.0	0.0	0.0	0.0
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net cash provided by financing activities [3]	0.7	-7.4	1.6	-1.6	-2.5	-2.7	-3.2
Change in liquid funds [1]+[2]+[3]	-3.0	0.2	8.6	-6.3	1.6	8.2	11.0
Effects of exchange-rate changes on cash	0.0	0.1	0.1	-0.1	0.0	0.0	0.0
Cash and cash equivalent at end of period	10.6	10.9	19.7	13.5	15.0	23.2	34.2

Financial Ratios

	2019	2020	2021	2022	2023e	2024e	2025e
Cash Flow							
FCF	-2.6	7.0	4.0	-4.4	4.1	10.9	14.2
Free Cash Flow / Sales	-1.1 %	2.8 %	1.5 %	-1.4 %	1.2 %	2.7 %	3.2 %
Free Cash Flow Potential	14.4	15.8	16.8	21.4	26.4	32.8	40.1
Free Cash Flow / Net Profit	-25.2 %	58.1 %	31.8 %	-27.0 %	19.8 %	41.0 %	42.7 %
Interest Received / Avg. Cash	0.5 %	2.0 %	0.6 %	0.5 %	0.0 %	0.0 %	0.0 %
Interest Paid / Avg. Debt	4.6 %	5.0 %	5.7 %	6.6 %	7.0 %	7.5 %	7.5 %
Management of Funds							
Investment ratio	1.9 %	1.1 %	1.8 %	3.0 %	2.9 %	1.7 %	1.3 %
Maint. Capex / Sales	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Capex / Dep	121.7 %	74.5 %	123.1 %	200.6 %	187.5 %	113.5 %	92.9 %
Avg. Working Capital / Sales	21.8 %	24.4 %	25.4 %	26.7 %	28.5 %	28.6 %	29.1 %
Trade Debtors / Trade Creditors	269.7 %	421.2 %	378.0 %	278.8 %	245.9 %	258.0 %	266.8 %
Inventory Turnover	2.4 x	2.8 x	2.4 x	2.2 x	1.8 x	2.0 x	2.0 x
Receivables collection period (days)	57	62	59	67	59	62	64
Payables payment period (days)	34	22	24	33	39	38	39
Cash conversion cycle (Days)	108	108	121	128	143	140	146

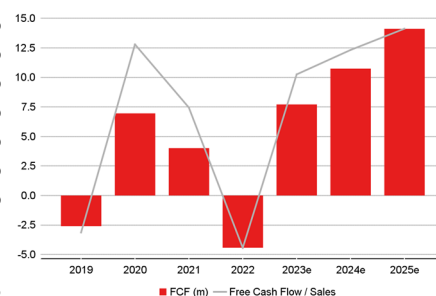
CAPEX and Cash Flow

in EUR m



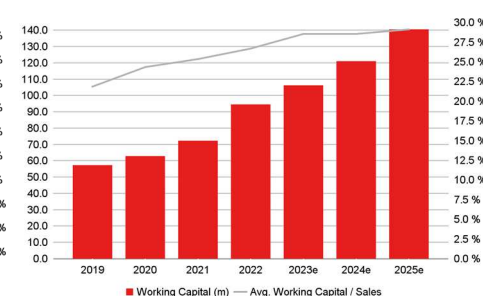
Source: Warburg Research

Free Cash Flow Generation



Source: Warburg Research

Working Capital



Source: Warburg Research

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Company	Disclosure	Link to the historical price targets and rating changes (last 12 months)
2G Energy	5	https://www.mmwarburg.com/disclaimer/disclaimer_en/DE000A0HL8N9.htm

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Investment recommendation: expected direction of the share price development of the financial instrument up to the given price target in the opinion of the analyst who covers this financial instrument.

-B-	Buy:	The price of the analysed financial instrument is expected to rise over the next 12 months.
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“-“	Rating suspended:	The available information currently does not permit an evaluation of the company.

WARBURG RESEARCH GMBH – ANALYSED RESEARCH UNIVERSE BY RATING

Rating	Number of stocks	% of Universe
Buy	153	74
Hold	44	21
Sell	6	3
Rating suspended	3	1
Total	206	100

WARBURG RESEARCH GMBH – ANALYSED RESEARCH UNIVERSE BY RATING ...

... taking into account only those companies which were provided with major investment services in the last twelve months.

Rating	Number of stocks	% of Universe
Buy	42	86
Hold	5	10
Sell	0	0
Rating suspended	2	4
Total	49	100

PRICE AND RATING HISTORY 2G ENERGY AS OF 31.08.2023



Markings in the chart show rating changes by Warburg Research GmbH in the last 12 months. Every marking details the date and closing price on the day of the rating change.

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