Construction of a self-sufficient power island with an output of approximately 7 MW for the Ammerland Dairy

Molkerei Ammerland eG is a long-established dairy cooperative founded in 1885 that is now one of the most successful companies in the German dairy industry. Its diverse product portfolio includes, among other things, sliced cheese, butter, milk and whey powder, concentrates, as well as fresh and UHT milk. With over 800 employees and approximately 1,954 active milk suppliers, Ammerland is firmly rooted in the region while also maintaining an international focus. The foundation for this innovative energy project was laid as early as 2021, when the possibilities of a collaboration with 2G Energy in the field of combined heat and power were first presented. Even back then, the goal was to tailor energy production optimally to the specific requirements of the Ammerland dairy. The situation in 2024 ultimately necessitated concrete action: existing grid bottlenecks prevented a planned plant expansion. To enable further growth while remaining economically viable, the idea of a self-sufficient power island was revisited and systematically developed further.

At the heart of the solution are three avus 2000e CHP modules, each providing approximately 2.3 MW of electrical power. The system is supplemented by a Piller rotary storage unit and an emergency diesel generator. Together, these components form a highly available and flexible energy system that reliably supplies the dairy's key production processes. The steam generated in the process, as well as the hot water produced, are utilized in their entirety, thereby achieving a particularly high overall efficiency of the system.

The rotary storage system plays a key role in this. It compensates for short-term fluctuations between power generation and consumption and ensures an uninterrupted energy supply. This is particularly crucial in an isolated power grid, as a precise balance between generation and demand must be maintained at all times. For longer-lasting imbalances, the diesel generator is also available to provide backup support when needed, thereby further enhancing supply reliability. At the same time, the diesel generator serves as additional redundancy in the fuel concept alongside the natural gas-fired CHP units.

Another important aspect of the project is noise protection. With an emission of just 35 dB(A) at a distance of 10 meters, the plant operates at an extremely low noise level. This ensures that the scenic surroundings of the dairy are not impaired.

The decision to generate electricity on-site and establish a self-sufficient power island was made as an alternative to expanding the existing grid connection with an additional substation. Both options were chosen for economic reasons. Since the dairy's energy demand continues to rise due to growth, on-site power generation and the power island are the more economically viable solution for meeting that demand.

This project provides valuable practical experience in the operation of power islands and impressively demonstrates how industrial companies can respond to grid bottlenecks.

Molkerei Ammerland eG

3 x avus 2000e
Natural gas
3 x 2.292 kW electrical
3 x 2.645 kW thermal
(Steam and warm water)