EFFICIENT, RESOURCE-FRIENDLY AND SAFE

Controlling and monitoring CHP units of Bayern BHKW GmbH

The economical use of valuable raw materials and the considerably reduced environmental impact through the reduced production of toxic substances are key reasons for the use of combined heat and power units (CHP units). Bayern BHKW GmbH, based in Dorfen, Germany, produces compact combined heat and power modules and has an extensive knowledge base in this field. The company has relied on the M1 automation system from Bachmann electronic for controlling and monitoring its systems.

Bayern BHKW has already been active in the field of power generation, cogeneration and CHP units for 50 years. Their modern systems are suitable for use with conventional energy carriers such as natural gas as well as for use with biogas. The efficiency of combined heat and power units is impressive: "The financial benefit is achieved by the high overall efficiency of up to 90 percent," says Michael Niedermeier, CEO of Bayern BHKW GmbH. "Electricity and heating costs are considerably reduced through the use of combined heat and power units; electricity is either fed into the public grid and remunerated or is consumed and used on site." Compared to conventional energy generation, combined heat and power units in particular offer an impressive performance. "The carbon dioxide emissions have been reduced by up to 60% and the nitric oxide emission by up to 25%. Through the use of modern lean engines and catalyzers the emissions are also below all legal emission limits," Michael Niedermeier explains the benefits of combined heat and power units.

Efficient engineering

The company has broken new ground with the Bachmann M1 automation system. The ingenious engineering software was a real ▶▶

The beginnings of Bayern BHKW go back to 1921 when Sebastian Niedermeier used a water turbine to produce electricity for his own power supply network. In the sixties, the company produced the first power generating system with diesel and gas gensets. In 1984 the first landfill gas generator plant followed, and in the nineties Bayern BHKW started building high-end combined heat and power plants. The family run business based in Dorfen, Germany, now specializes in the construction of CHP units, and offers a range of services, including repairs and maintenance for CHP units through to servicing.

↗ www.bayernbhkw.de

▶▶ benefit here. "The CHP unit template in the Bachmann SolutionCenter provided us with all the necessary functions already preprogrammed," the CEO highlights a benefit of this solution. "We only had to make the necessary configuration and parameter settings and could thus considerably reduce the engineering effort required." The function library covers all the tasks needed for grid connection as well as typical closed-loop control tasks. All functions can also be modified or extended by the programmer if required. Bayern BHKW values this flexibility and openness in the system. "This allows us to offer our customers a product that is maintenance-friendly and reliable," Michael Niedermeier emphasizes. "Any requirements in the electricity market can be met automatically and without any major effort involved for the customer."

Grid synchronization ensured

Besides the control functions, the monitoring of all operating parameters could be implemented with Bachmann technology. The GSP274 grid synchronization and protection module ensures a problem-free power feed into the grid and meets all the requirements of the medium-voltage directive. "All electricity generation plants on the medium-voltage grid must be certified to ensure supply quality," Michael Niedermeier explains. "They must be self-regulating and stabilizing during the feed-in so that voltage stability is maintained." The GSP274 combines measured data acquisition, fault tolerant grid and plant protection as well as the monitoring of grid synchronization in a single device. Thanks to the complete integration in the automation system, high-precision measured value data is provided for further processing: any

deviations in phase angle, frequency, voltage differences and many other parameters are recorded in real time.

The protection functions of the module were tested by external certification bodies and the GSP274 was certified accordingly. "The complete package of the M1 automation system and the GSP274 enabled us to implement the medium-voltage directive without any major interventions and changes to the hardware," Michael Niedermeier explained.

Visualization with web technology

The automation implemented was rounded off with webMI pro visualization. This makes it possible to easily combine the specified function blocks into an attractive user interface. The M1 automation system provides a web server and the visualization can be displayed on any terminal device. "Modern usability concepts here enable very easy operation for a wide range of user groups," Michael Niedermeier explains. "With small plants in particular, webMi pro enables us to achieve cost savings since any permanently installed operator terminals become unnecessary. The possibility for mobile access also provides greater operator convenience."

Impressive solution

At Bayern BHKW they are really impressed with the solutions from Bachmann. "We have achieved greater flexibility in programming, improved the performance offered by the controller and can guarantee a higher level of reliability," says a delighted Michael Niedermeier. "The compact design is another benefit." The CEO adds: "In our view, Bachmann offers the best product, and its service provision is also just what we want. We are certain that we have chosen the right partner."

» We are certain that we have chosen the right partner in Bachmann. «

Michael Niedermeier, CEO of Bayern BHKW GmbH