



# Green electricity, green heat

CO<sub>2</sub>-neutral and highly efficient small power plants



**bachmann.**



**The Kyoto Protocol adopted in 1997 by the United Nations intends that the annual greenhouse gas emissions of the industrial countries will be reduced by 2012 on average 5.2 percent below the level of 1990. In this discussion, the use of renewable energy sources is moving more and more to the center. In this, decentralized energy production, such as in block heating power systems, plays an important role. enertec Kraftwerke GmbH in Thuringia's Mühlhausen (D) is a specialist in these especially energy-efficient systems. They are controlled by Bachmann M1 automation systems.**

The enertec Kraftwerke GmbH develops, produces and sells block heating power stations with ratings from 20 to 400 kW of electrical or 40 to 560 kW of thermic output as ready-to-connect standard products. Block heating power systems convert natural gas or regenerative energy sources, such as biogas or sewage gas, into electric power using modern combustion engines. They meet the energy needs of the installation site and can possibly feed excess electricity into the power network. The thermal energy released is used simultaneously to provide connected consumers with heat. As a result, block heating power stations are very efficient and can be used everywhere that electricity and heat are needed. This can be companies, hospitals, residences or municipal facilities. Small, compact block heating power systems are also directed at private customers or apartment buildings.

### **Combined heat and power generation is gaining importance.**

The combination of generation and use of heat and electricity represents one of the most important technologies for energy savings and reduction of CO<sub>2</sub> emissions. This is called "combined heat and power generation" (CHP). This has a markedly higher total efficiency than conventional energy generation systems, where the electrical energy is generated centrally in large-scale power plants and thermal energy in a local heating system. Modern block heating power systems convert fuel into electricity and heat at around 90 percent efficiency. The losses are thus only 10 percent. This essentially double energy use massively reduces CO<sub>2</sub> emissions compared to a conventional power plant for pure electrical energy generation: There, significantly more than half the fuel's energy is emitted into



▲ **Highly efficient and environmentally protective:**  
Block heating power plants from enertec Kraftwerke

the environment as unused heat. If the enertec block heating power systems use CO<sub>2</sub>-neutral biogas or sewage gas, no additional CO<sub>2</sub> is produced at all.

### **System availability determines cost-efficiency**

The cost-efficiency of block heating power systems depends on the number of operating hours per year. And so for manufacturers and their final customers, it is very important to use a robust, reliable system to control and regulate the block heating power systems. The unmatched high availability of the Bachmann M1 automation system convinced enertec Kraftwerke. In addition, enertec Kraftwerke values the openness and scalability of the M1 system: "The hardware and software concept developed together with Bachmann makes our systems 100 percent modular," says Matthias Lehmann, Director of Automation at enertec Kraftwerke, and is pleased that in this way many functions and characteristics can be used in all block heating power systems simultaneously.

### **Demand is rising**

To achieve greater independence from fossil fuels, demand for renewable energy and its efficient use will continue to grow considerably in the next few years. With its block heating power systems, which can be individually adapted to meet the respective needs, enertec Kraftwerke delivers customized solutions with high ecological and economic benefit for the most varied of buildings and application fields. Here, the Bachmann M1 system is an important element of the overall concept. ■

### **Convenient project planning with the SolutionCenter**



The large interface variety of the M1 system, from Profibus to PROFINET, ETHERCAT, Modbus and CANopen, makes it easier for the enertec Project Planning Department to integrate it into the overall block heating power system. "The Bachmann SolutionCenter is also extraordinarily helpful for our work," Matthias Lehmann mentions. The programs for the machine process and process control, visualization and, last but not least, communication with the outside world are created quickly and conveniently here in a uniform environment without obstructive interfaces. "That enormously accelerates the engineering process up to start-up and service," the Director of Automation of enertec Kraftwerke confirms.

