



Intelligent Automation Of Alternative Energy



Global warming and the waste of natural resources for supplying energy are topics of every conversation; the switch to renewable energy is the order of the day. Having been working in this area for 21 years, Sigmatek offers manufacturers of bioenergy systems a broad spectrum of products for automating energy generation and conversion systems. Closely related to components for industrial automation, they bring reliability and convenience for manufacturers, users and maintenance technicians. Intelligent control and management systems contribute to the improved use of energy and therewith, to cost reduction as well as a smaller ecological footprint.

Author: Ing. Peter Kempfner / x-technik

It's not only assembly machines and systems that must operate around the clock for decades because each stop is expensive, but also in the energy generation, distribution and conversion industry, one must be able to rely on very long periods of continuous operation readiness. This is valid for the entire chain, from power plants to heating and cooling for buildings. Especially in this area, a high degree of user comfort is required, as at the end of the chain – the office or flat – the queries and access by non-technical end users must be possible.

One reason for high demands on control and regulation technology in energy applications is increasing energy-saving and environmental consciousness. To achieve a high energy

output from the resources used and minimize emissions, precise regulation is needed.

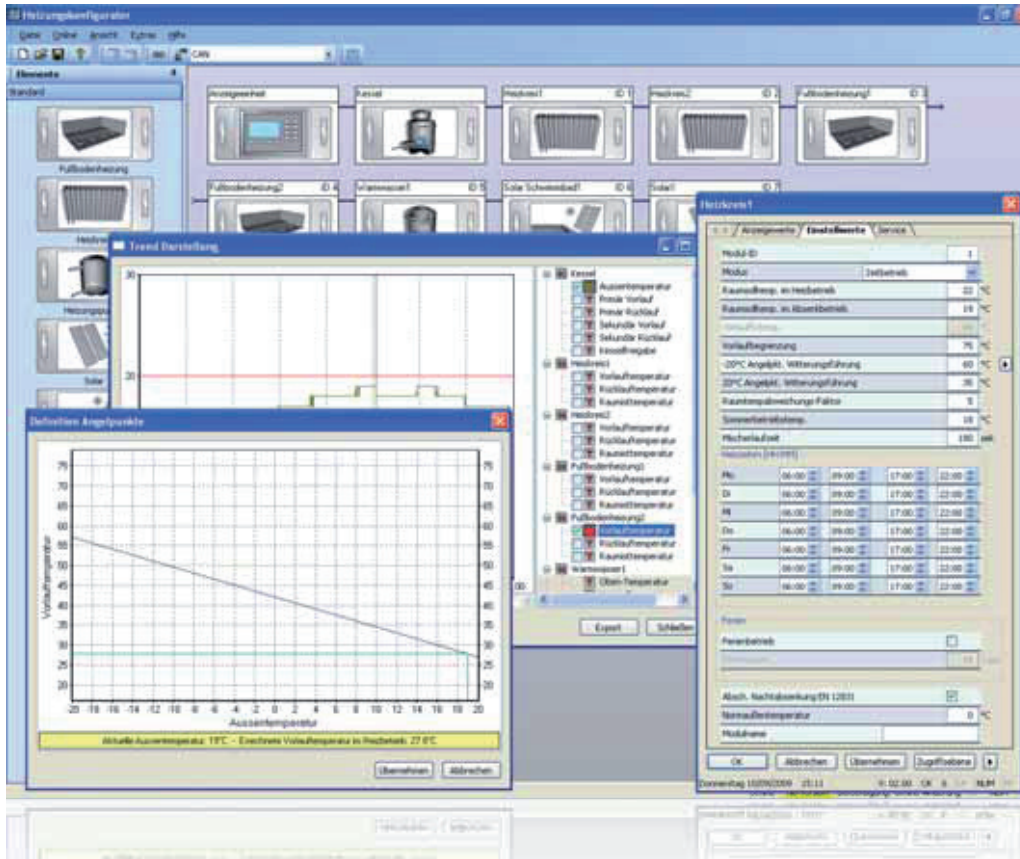
Extensive Experience in the Automation of Energy Technology

„Since the founding of the company 21 years ago, Sigmatek GmbH & Co KG in Lamprechtshausen has been working in automation for energy technology as well as industrial automation and is one of only a few manufacturers that cover the entire spectrum, especially for renewable energy sources“, says Hans Roman Seifert, Engineering and Sales Manager at Sigmatek. „This ranges from pellets and wood chip heating to biomass, solar and photovoltaic installations as well as wind and small hydro power plants to heat pumps.“



>> Through the transfer of technology from classic automation technology to building automation, we create synergy effects. <<

Hans Roman Seifert, Management Engineering and Sales at Sigmatek



The graphically operated software for plant configuration is also modular. Almost any complex network can be quickly and easily configured and loaded by the installer using an USB-Stick.

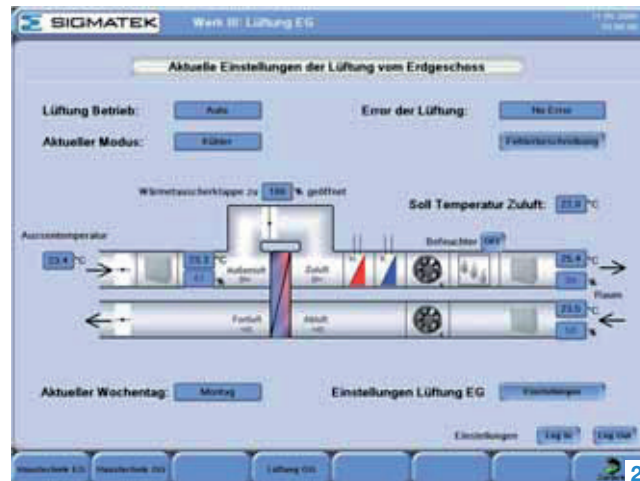
Also in regard to the size of the facility, Sigmatek offers the entire range from industrial systems to block heating plants to compact installations for the single-family home.

Sigmatek provides these markets, the manufacturers of heat pumps, heating boilers or small power plants to be exact, with its own selection of user-specific hardware. This is derived from the most modern industrial controls; however, they are modified to meet the increased requirement for sensor technology as well as the often confined installation conditions directly on the controlled unit.

„Renewable energy, which is more expensive, is always in competition with oil and gas“, says Hans Roman Seifert. This pricing pressure has therefore forced innovative solutions in the interest of our customers competitive position.“ Among which, are well-known manufacturers of biomass heating systems such as Herz, Gilles or Biotech. „The industry is strongly influenced by customer-specific solutions tailored for OEMs. This places high demands on the modularity and flexibility of the automation system.“, according to Hans Roman Seifert.

10 years ago, the electronic equip-

ment of such systems normally consisted of rather simple controls for a single unit with limited performance, small displays and little accessibility. Today, high performance panel PCs with touch screens are in demand. „Increasingly more informed and interested users appreciate a graphic, intuitive user menu that helps them to understand the relationships to energy technology and influence the use of resources“, reasons Hans Roman Seifert. „In addition, the modern network technology allows remote maintenance and operation from any office or home PC.“



1 Through the low space and wiring requirements, the modular systems ensure scalability from small plants to large installations.

2 For operation and maintenance, a web-based tool is available. Accessing, responding to error messages as well as viewing diagnostic reports is possible from any PC without special programs.



Integrated Complete System Simplify Engineering and Installation

The modern technology of Sigmatek solutions also has advantages for the machine manufacturer. This already begins with the software development; the all-in-one engineering tool LASAL integrates object oriented as well as control programming and HMI. The graphic representation and modular configuration of the software ensure flexibility and reusability. Extensive libraries contain predefined object classes for energy control, such as the heating circuit regulator. Engineering is therefore simple and comfortable.

Through graphic configuration, the installation can also be prepared and tested. Since every hardware component has a USB connection, configuration data can be loaded into the unit using a USB stick during the initial activation. This process makes the on-site presence of expensive specialists unnecessary and also helps to avoid configuration errors.

An additional advantage of the modern, PC-based control technology is the flexibility and power reserves of such equipment. In the past, controls in this area were tailored especially for the operation of the respective unit. The high performance automation modules from Sigmatek can assume the energy management for the entire building installation. „One finds mostly a combination of several technologies such as wood chip heating, a heat pump and a solar installation“, says Hans Roman Seifert, describing current energy technology in

buildings. „Since it would be counterproductive to operate each of these installations autonomously.“

In fact, energy technology can provide enormous benefits with the intelligent combination of different building technology installations. This shows in Sigmatek's new building III, which is of course fully automated using building automation technology from Sigmatek – from heating and cooling to space quality and air humidity to shade. „The key to success is the sensor technology“, knows Hans Roman Seifert. „We monitor all windows for example. If one opens, the heating and cooling for the respective area are deactivated so that valuable energy is not lost to the environment.

Flexibility Without Wiring

In this context, the origin of Sigmatek building automation systems from the demanding automation industry and its compatibility with components proven in this area are also an advantage: Without complex wiring, nearly any number of sensors and actuators can be activated or queried over the system bus with the space saving and easy to wire interface modules. Here, technologies from the IT world such as real-time Ethernet are being increasingly used. Such installations are therefore scalable for any plant size and complexity. Integration into primary management systems is no problem with common TCP/IP interfaces such as Windows OPC-Server. „Precisely this scalability is especially important for large commercial systems“, says Hans Roman Seifert. „Solar plants for example, require control systems with Plug & Play capab-

ility and a high degree of modularity since they are configured individually and are continuously extended and expanded during their lifespan. The same applies to biomass heating, in which through the simple expansion with additional interface modules, the transport equipment for the heating material can be integrated into the burner control.

The automation technology from Sigmatek offers particular flexibility especially after installation, when it comes to simple operation, control and maintenance. Not only on the control itself, where an intuitive graphic user interface with touch screen enables operation without training, but especially in the complete visualization over the network. Authorized personnel need only password-protected access to all functions of the installation over an Internet browser without special programs. Accessing, responding to error messages as well as viewing diagnostic reports is therefore possible from any PC.

Market-leading manufacturers of energy generation and conversion plants from renewable energy carriers such as Biotech, Gilles and Herz profit double from the integrated automation solutions from Sigmatek with modular hardware and software: The energy efficiency of their plants is increased and the costs reduced. This ensures the marketability of alternative energy forms and therewith, contributes to reaching climate goals.

SIGMATEK GmbH & Co KG

Sigmatekstraße 1, A-5112 Lamprechtshausen

Tel. +43 6274-4321-0

www.sigmatek-automation.com