

Intelligent Energy

Since 1957, Jenbacher AG has been an internationally acclaimed specialist for the production of gas motors which are operated using natural gas or different types of biogases and special gases. While natural gas is primarily used for decentralized energy, non-natural gas is thought to be more environmentally friendly upon disposal. Jenbacher is considered today's worldwide market leader when it comes to the usage and disposal of non-natural gas. The same is true for combined heat and power plants when simultaneously generating electricity and heat in the power range between 0.3 MW and 3 MW. In addition, Jenbacher offers Gen Sets – systems for generating power on-site where it is needed – and is known for comprehensive service and successful engineering performance worldwide.

Interface Human-Machine Dialog Network for Windows Systems (DIA.NE WIN)

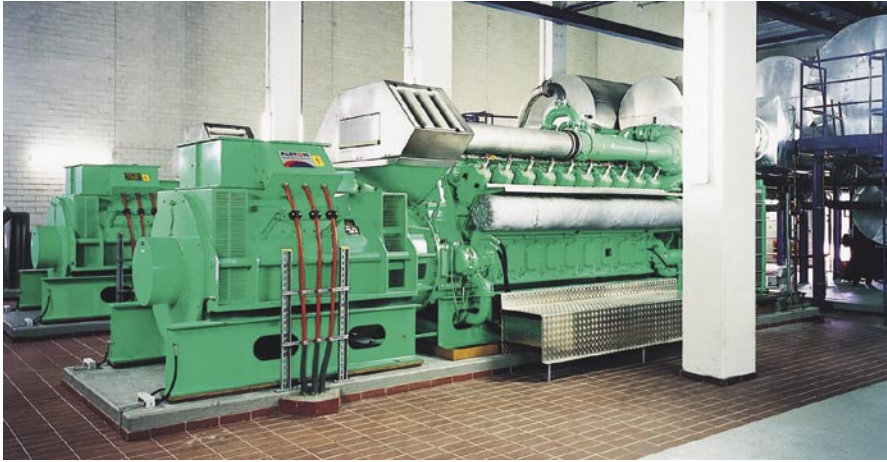
DIA.NE WIN is the newly developed human-machine interface based on the Windows operating system for commissioning, monitoring, maintenance, and diagnostic tasks for Jenbacher gas motors. Using a standard PC and Internet Explorer, several control stations can be independently connected to a central computer at the same time over a local area network (LAN), a dial-up connection (modem), or over the Internet itself. The goal of this new development was to create a comprehensive tool with the highest level of operating convenience for system commissioning, monitoring, maintenance, and diagnostics.

In September 2001, Jenbacher decided to develop their own high-level visualization system DIA.NE WIN (Dialog Network

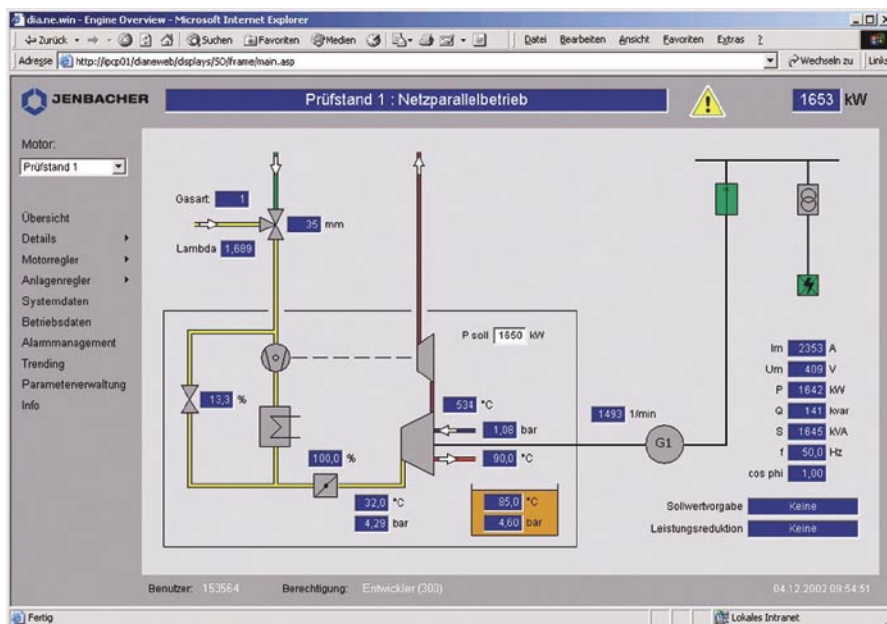
for Windows Systems) for their gas motors. This decision was reached as none of the available visualization systems on the market were suitable for their applications, despite the expensive evaluations which were carried out. Due to the increasing number of goods at Jenbacher, developing their own unique version also made economic sense. Powerful OPC servers available at that time for B&R control systems were very accommodating for Jenbacher. This eliminated programming effort when communicating with the controller, allowed data processing, and meant that the DIA.NE WIN visualization system could be based on the OPC standard interface.

The goal was to offer customers and service personnel a powerful, convenient

12_Application



Machine at Mühlheim-Broich Germany, motor type 2 x JMS 620 GS-N.LC, power 5.4 MW el.



Schematic representation of the motor indicating the most important measurement values.

human-machine interface which could be used globally. It should provide the best possible system support during commissioning, monitoring, maintenance, and error diagnostics. This system also enhances Jenbacher's new DIA.NE XT control system (Power Panel PP250 and B&R System 2003 components) with regard to operating convenience, historical data analysis, and remote operability. DIA.NE WIN represents the transition to PC-based, process control systems and offers various access possibilities using an open, standardized interface. DIA.NE WIN consists of one or more servers (Provit 5000 Industrial PCs from B&R) and any number of clients (operating

stations). Servers, where central tasks are carried out, are connected to the motors' control systems (DIA.NE XT) over an Ethernet network. One computer can be used to process up to six motors, usually a total of around 8,000 process values. The "Automation Net – PVI" communication platform from B&R is used to exchange process data with the controllers using Ethernet TCP/IP as the medium and INA2000 as the protocol. Integrated in "Automation Net", the OPC server acts as the interface to the DIA.NE WIN visualization system. The user interface on the visualization was developed as a web application with ASP (Active Server Pages). Various ActiveX control elements are used to

clearly display and input process values, thus simplifying the creation of process pictures. IIS (Internet Information Server) from Microsoft is used as the web server. Communication to the different clients is based exclusively on the HTTP protocol. This guarantees its Internet capability. A client can be any conventional PC equipped with Internet Explorer and connected with a server (LAN, WAN, dial-up networking). Cyclic updating of process values on operating stations has been implemented using remote scripting technology from Microsoft.

The visualization system contains a clear alarm manager for runtime monitoring and retroactive system diagnostics. It allows current statuses and historic events recorded in the SQL database to be displayed in table form. Comprehensive trend functions are provided to analyze current and recorded measurement values. The integrated parameter manager configures the motor and commissions it according to environmental conditions. Up to 1,000 parameters are displayed and managed in a clear tree structure. If user management is implemented, then access restrictions, user interfaces adapted to authorization levels, and user identification can all be configured. Since Jenbacher motors are exported worldwide, a uniform and easy-to-manage multilanguage capability had to be implemented.

With the new DIA.NE XT control system and the high-level DIA.NE WIN visualization system, Jenbacher gas motors can be controlled (open/closed loop), monitored, operated, and diagnosed either on-site or remotely. By using suitable technologies and components, coupled with the power of their own development team and support from B&R, this concept design was able to be implemented after just one year of development. Jenbacher now provides a custom system based on the most modern technologies which can only increase the already high quality of their gas motors. 