Success story:

HP technology helps Fernwärme Wien distribute Vienna's hot water as environmentally safe heat source

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— Ing. Christian Gruber, Electrical Engineering and Automation, District Heating Company of Vienna

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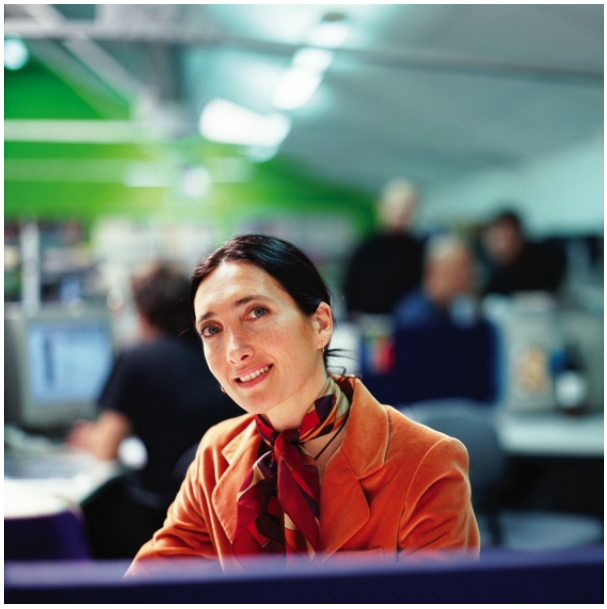

An intelligent connection
Like any highly populated metropolitan area, Vienna faces the ongoing challenges of disposing of city trash and providing dependable heat to its residents and businesses. However, Vienna is home to Fernwärme Wien, an innovative company whose solution for connecting these unrelated challenges is both benefiting the city and serving as a model for the rest of the world.

The mission of Fernwärme Wien, one of Europe's largest district heating networks, is to keep Vienna's residents and businesses warm through the operation of ten interconnected heating facilities. Fernwärme Wien has attracted global attention and acclaim by efficiently converting Vienna's household and non-hazardous commercial waste of similar composition into clean, environmentally safe heating energy for the city.

Art meets technology
Located in the heart of Vienna is the showpiece of Fernwärme Wien: the Spittelau Thermal Waste Treatment Plant, a city landmark attracting thousands of visitors from around the world each year. Designed by the famous Austrian artist and architect Friedensreich Hundertwasser, the Spittelau facility looks more like a modern art museum than a utility and demonstrates a harmonious marriage of technology, ecology and art. But the artistic facade is surpassed only by the technical elegance of the operations within.

The Spittelau Thermal Waste Treatment Plant processes more than twelve hundred tons of waste every day. The incineration process reduces the waste to 10% of its original volume. The remaining slag no longer reacts chemically and, therefore, represents no danger to the underground water or atmosphere when dumped. Before the slag leaves the plant, a magnetic extractor separates all scrap from the slag. The slag is then bonded with water and cement into slag concrete and used for the construction of concrete at a dump. Finally, the incombustible components, ash and filtercake, are sent to an abandoned salt mine as clean fill.

Compared with the direct land filling of untreated domestic waste, thermal waste treatment offers a number of advantages: it greatly reduces the amount of land filled waste, destroys organic pollutants contained in the waste, and reduces gases that cause the greenhouse effect.

Through its waste treatment processes, the Spittelau facility generates enough energy to fuel its own operations, and then links with the other nine plants in the district to provide Vienna with clean, dependable heat.

Employing the most advanced emissions-purification technology, Fernwärme Wien far exceeds all requirements of Austria's environmental protection laws – which are one of the most stringent in Europe – while also delivering a dependable supply of heat at the lowest possible cost to its customers.

24-hour operation requires 24-hour system availability
The monitoring and controlling of distribution processes is a complex, round-the-clock effort that requires tracking more than two hundred discrete activities per second. Christian Gruber and his team of engineers manage distribution operations from a central command post within Spittelau.

"Turning waste into heat energy – while emitting fewer pollutants – requires a very complex series of processes," explains Gruber. "To distribute this energy we rely on HP and in particular, OpenVMS to keep our systems stable."

The Fernwärme Wien heating network has grown in size and complexity over the last two decades. "Today, the top requirement for the district heating system is to satisfy our customers with a constant supply of heat at the lowest possible cost," says Gruber. "And by cost we mean both external costs, such as environmental effects, and internal costs, such as investment, personnel, energy costs, and so forth."

Gruber explains how HP OpenVMS systems meet the utility's requirements. "The reliability of our IT systems is an important prerequisite for providing Vienna with heat – day in and day out. OpenVMS is an easy-to-monitor operating system with a high level of security and high availability, which is critical to our success."

"Any failure of our computer system would negatively affect the controlling of the entire district-heating network, which would not only impact the company financially, but also seriously affect our safety. We have an excellent relationship with HP and ABB and we depend on them to help us solve our IT challenges. They provide us with an ideal solution to ensure 24x7 operations." — Ing. Christian Gruber, Electrical Engineering and Automation, District Heating Company of Vienna

Gruber also cites the benefits of HP OpenVMS systems from an IT perspective. "By using OpenVMS, our system administrator gets a user-friendly, easy-to-manage operating system that offers the protection of high reliability and a high level of security. Due to the numerous interfaces of the process control system, we use the interoperability features of OpenVMS extensively."

Fernwärme Wien utilizes a plant-wide control system developed by HP partner ABB, a leader in power and automation technology. "The OpenVMS servers run MAS3002, an application developed for us by ABB to provide all the different functions we need – process control, trend analysis, remote effect monitoring, and information archiving," says Gruber.

The control system collects and archives operational data, while continuously displaying real-time information from not only the Spittelau facility, but also from Fernwärme Wien's nine other energy plants located throughout Vienna.

Creating a fail-safe system

"Any failure of our computer system would negatively affect the controlling of the entire district-heating network, which would not only impact the company financially, but also seriously affect our safety," states Gruber. "We have an excellent relationship with HP and ABB and we depend on them to help us solve our IT challenges. They provide us with an ideal solution to ensure 24x7 operations."

Because high availability is imperative for Fernwärme Wien, the utility has built redundancy into its systems, services and networks. The control center is also distributed to separate rooms, so in case one room had to be evacuated, the other could be used to control the whole operation of the system.

Fernwärme Wien will further enhance these disaster-resistant environments by implementing new back-up strategies – specifically, separating the server hardware and the storage systems.

Adapting to future needs

Due to the increasing volume of operational data that Fernwärme Wien has to archive, storage plays an ever-demanding role.

Gruber explains, "Storage has become more important than ever. The rapidly increasing volume of operational data, and the resulting archiving of that data, requires more and more capacity. We also require a high degree of flexibility, as more and more tasks have to be handled by fewer and fewer people. The storage solution we create must meet all these requirements."

Fernwärme Wien has demonstrated how to use alternative energy sources for safe, dependable and economical heating. Its efficient operations save Vienna from having to burn three hundred thousand tons of fuel oil each year and has brought about a considerable improvement in Vienna's emission and air-borne pollutant balance sheet.

HP is honored to be helping Fernwärme Wien provide such an economically viable and environmentally sound solution to the people of Vienna – and by example, to the world.

"We are very confident in HP's ability to meet our computing demands in the future, as it has in the past," adds Gruber.

Adaptive enterprise solution overview: Reduce costs and increase efficiency of plant operations

Challenge

Satisfy Fernwärme Wien's residential and business customers by providing a constant supply of heat at the lowest possible financial and environmental cost

Solution

HP OpenVMS systems running MAS3002, a plant-wide distribution control system developed by HP partner ABB to provide required functions, including process control, trend analysis, remote effect monitoring, and information archiving

Results

- 24x7 availability
- Business continuity and disaster tolerance
- Substantial cost savings
- Environmental protection

At a glance

- Name: Fernwärme Wien (District Heating Company of Vienna)
- Headquarters: Vienna, Austria
- Formed: 1969
- URL: http://www.fernwaermewien.at/
- Services: Fernwärme Wien converts Vienna's household and commercial trash into energy. It operates and maintains 10 interconnected plants in the district heating network, including the Spittelau Thermal Waste Treatment Facility. At present, Fernwärme Wien supplies heat and hot water to more than 200,000 dwellings and approximately 4,400 industrial consumers in the Vienna metropolitan area.

Technology highlights

- Hardware: 4 HP AlphaServer DS20E systems, 2 AlphaServer DS20/500 systems, 1 AlphaServer 4100-5/400 system, 1 AlphaServer 2100-4/233 system, and 3 ProLiant DL 380 servers working together in a local area network
- Operating systems: HP OpenVMS v7.3, Windows 2000® Server
- Software: MAS3002, a plant-wide control system application from ABB

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