

Berlin Hauptbahnhof (central station)

A SUPERLATIVE RAILWAY STATION, WHICH FORMS BOTH AN ARCHITECTURAL AND LOGISTICAL ZENITH, HAS BEEN DEVELOPED CLOSE TO GOVERNMENTAL AREA IN BERLIN. THE STATION WELCOMES 300,000 TRAVELLERS AND VISITORS EACH DAY AND TRAINS DEPART EVERY 90 SECONDS TO ALL POINTS OF THE COMPASS.

THE SITUATION

The pump installation designs for the central heating and refrigeration systems have a few outstanding special features. For example, the railway managers specified a strict level of reliability as on one hand, high availability was required by the operator, which is why all of the units were designed as double pumps each with 100% performance. On the other hand, a connection to the central building control systems was obligatory.

THE GRUNDFOS SOLUTION

The engineers from Brandi IGH GmbH, Berlin, planned the complete building control system in the station area and the suspended floors: sanitary installations, fire extinguishing system, heating installations and refrigeration installations. The Herzberg-based company Lodewick GmbH was responsible for carrying out the HVAC installation. It came as no surprise to the Lodewick site manager Alfons Schalude that the railway managers and the Brandi planners had chosen Grundfos products (MAGNA-D heating circulation pumps with LON bus links, TPED and CDME in-line double pumps and DC2000 associated controls): "We have been working with Grundfos for years on a wide range of projects. The products are good – and their service is exemplary. This is vital for us: product and service go together." One call is all it takes and a solution to the problem is provided quickly and reliably, he says.

TOPIC:

Grundfos pumps installed in the Lehrter station · MAGNA-D heating circulation pumps with LON bus link · TPED and CDME in-line double pumps and associated DC2000 controls

LOCATION:

Berlin

COMPANY:

Developer: DB Station & Service - Architect: gmp, Gerkan Marg and Partner, Hamburg - Planner: Brandi IGH GmbH, Berlin - Installer: Lodewick GmbH, Herzberg - Wholesaling: Lindenblatt + Gottzmann, Berlin

With Grundfos pumps, the control engineering for the automatic adjustment of performance is integrated directly into the pump electronics. However, the optimum condition for the use of this technology is that the connected installation components can also communicate with each other. This is a given: all electronically controlled Grundfos pumps, and most of the standard ones, for building systems can be connected to a LONWorks network through LONbus modules; in this way, all the data from the pump through to the central building control system (GLT) and/or the facility management (FM) can be viewed transparently. This creates the basis for optimised system management and minimised operating costs.

THE OUTCOME

What was amazing at first was the demand for such marked redundancy. Indeed, it is increasingly seen that 100% security (double pumps) are requested not only in industry but also in building systems. There are plausible reasons for this: on the one hand, there is definitely the risk of a commercial failure (there are many businesses leased in the station). On the other hand, the operator cannot assume that manufacturers or wholesalers will hold stocks of the kind of large pumps that are installed in the main station, as they would be able to with smaller pumps. Not least, double pumps are important in refrigeration systems from the point of view that under certain circumstances computer centres depend on correct air conditioning.

However, what is not surprising is the networking of all of the technical components using LONWorks. Only through such an 'open' and to a large extent brand-neutral databus system and data protocol can efficient functioning across all facilities be assured in building automation.

Efficiency has a high value in large projects of this size. More than a third of the operating costs of a building are made up from energy costs, a significant proportion of which are electricity costs for operating heating, air conditioning and sanitary technology. Heating circulation pumps, for example, are on average responsible for 5% of the energy costs. Up to 50% of the drive energy can easily be saved through an optimal automatic adaptation of pump performance to the changing delivery requirements in the installation using infinitely-variable speed-controlled pumps. Further benefits are associated with efficient pump control:

- Improvement in the controllability of the installation
- Reduction in heat distribution losses
- Intelligent cross-network communication
- Increase in user ease.