



HIRSCHMANN

A BELDEN BRAND

Case Study

CS 118HE

Stadtwerke Düsseldorf

Working with Stadtwerke Düsseldorf, a leading Power generation company in Germany, Belden was asked to design and implement a complete solution for the communications network. The implemented solution interconnects different SCADA systems with the server room and the management console room.



Belden delivered a network design based on: Availability, Redundancy, Performance and Security. The system offers increased productivity across various sectors at the plant. It provides remote access for the systems to the operation, maintenance and management teams. This helps optimization, reduces down time, and aids faster decision-making, in addition to achieving an overall cost reduction in spares and services.

- **High performance:** thanks to 10 Giga Backbone Ring for high bandwidth.
- **Maximum flexibility:** with 3 x 10G Ports the MACH4000 allows different topologies increasing the flexibility of the network design and increasing the paths redundancy.
- **Scalability:** the modularity of MACH4000 allows for future expansion with more ports.
- **Backwards compatibility:** can be used in combination with existing Belden Devices.
- **Lower TCO:** high Mean Time Between Failures (MTBF) of the devices assures very low cost of operation and maintenance.

Taking advantage of the deregulation of the energy market in Germany, Stadtwerke Düsseldorf has expanded well beyond its traditional business. Today, in addition to the conventional power plant sites, the company also operates various contracting plants to supply electricity and district heating to industrial customers in the city and the region.

However, this expansion in customer base and types of services has led to an increased need for communications, both inside the plant and between the new remote locations.

Belden was asked to work with Stadtwerke Düsseldorf to design and install the best technical and cost effective solution for the modernization of the data network infrastructure.

This needed all the systems to be integrated into the DCS as well as the new server room and it had to be able to meet the demand over the next 8 years.

System Requirements

- Power Generation Plants are typically managed centrally with a distributed control system (DCS) to perform all power plant automation tasks: turbine control, boiler control including boiler protection, energy systems, balance of plant and integration of third party systems, mainly instrumentation for analysis and measurement.
- The new network should also help the company to balance its energy production at its locations: Lausward, Flingern and Garath, using the different technologies: gas, fuel oil and biomass.
- Due to the mission-critical nature of the Production and SCADA Networks the design should avoid network shut-downs at any cost.
- The devices have to work effectively in harsh environments, for example near chimneys, transferring data from temperature sensors and/or analytical instruments. Other critical applications include the flow and pressure meters for the plant's steam system, boiler and pipes, to ensure proper system operation.

**Be certain.
Belden.**



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Future proof
technologies and
solutions by Belden

Belden® Solution

Why Belden?

Belden offers a systematic solution to revamp old installations with future proof technology, incorporating field upgradeable and scalable devices such as the MACH4000 family, a high density and high speed backbone switch with layer 3 routing and speeds up to 10 Gigabits. This allows customers to make long term investment plans. Typically, a refurbishment of a Generation Power Plant may take 4 or 5 years as the project is planned in different phases, avoiding any negative impact on production and minimizing risks.

The adoption of Ethernet/IP provides a number of benefits, including increased visibility of plant floor activities, integration with back-office applications and new DCS, and lower TCO.

The possibility to interconnect remote locations via public networks through Belden Firewalls allows Stadtwerke to guarantee the integrity of the data interchanged between locations.

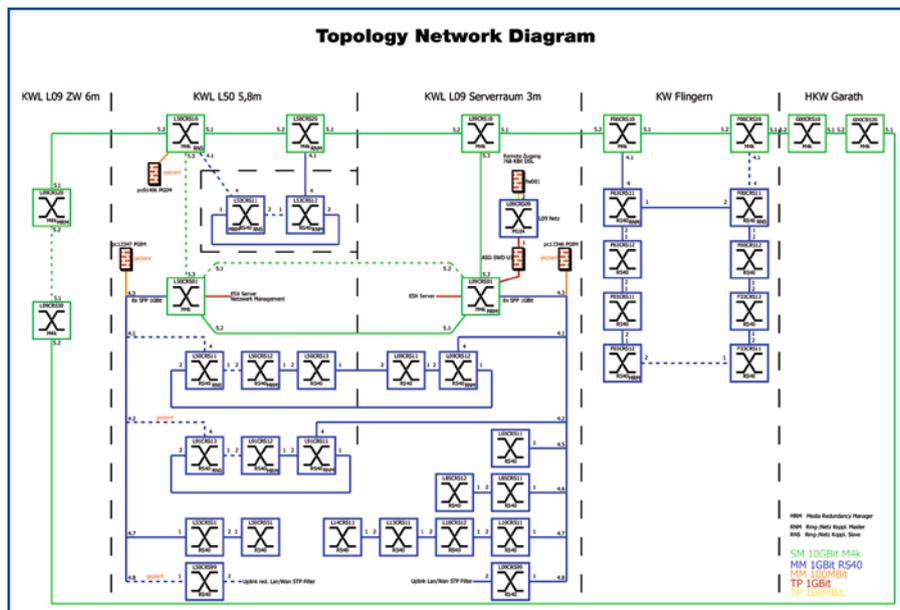




About Stadtwerke Düsseldorf AG

Stadtwerke Düsseldorf AG provides power supply, potable water supply, and community heating services. The company also operates a waste incineration plant.

Founded in Düsseldorf in 1866, today Stadtwerke Düsseldorf is one of the largest municipal utilities in Germany, with 2,500 employees generating sales of around euro 1,658 million euros in 2010.



“We have been working with Hirschmann™ products for more than 10 years, and we still have in operation some of the old MACH3000. During this time we have not experienced any issues with them, helping us to minimize our system’s downtime.”

– **Sven Hellenbrand**
(Instandhaltung Elektro- und Leittechnik)
Stadtwerke Düsseldorf





The Hirschmann™ Product Range

As a specialist for automation and networking technology, Hirschmann™ develops innovative solutions, which are tailored to its customers' requirements in terms of performance, efficiency and investment reliability.

only receive support while their tailor-made communications solution is being designed, but also throughout the subsequent planning, design, commissioning and maintenance of their networks.

Hirschmann™ not only offers a complete range of products for company-wide data networks but also a broad support package direct from the product manufacturer. Customers not

Seminars and workshops, in which trends and developments are evaluated and technical subjects put into practice, complete the range of services.

Product Details

MACH4002-48G+3X-L3P

Backbone 10Gigabit Ring across the different locations.

- High flexibility: expandable by up to 4 hot swappable media modules, Plug & Play function
- Maximum performance in the industrial backbone: extensive Layer 2 and Layer 3 software, extended temperature range from 0°C up to +60°C
- Increased uptime: power supply redundancy through use of M4-POWER chassis



RS40-0009CCCSDAPHXX.X.

Subrings, at 1Gigabit speed to interconnect parts in the Power Plant and to aggregate field devices to the backbone.

- High network availability owing to fast redundancy protocols and high data security thanks to numerous security mechanisms
- Compact DIN rail casing for space-saving installation and redundant 24/48 V power supply
- High resistance to shocks, vibrations and EMC and extended operating temperature range from 40°C to +70°C



EAGLE20 TX/TX

Firewall to secure the network from the management consoles and PC's. To allow remote connections to and from the plant with the installation in Düsseldorf Airport and DBahn.

- Scalable security functionality: stateful inspection firewall and VPN router
- Dynamic firewall rules
- Port forwarding and NAT
- Simple integration: no IP address changes needed to integrate into existing network



Hirschmann™ Industrial HiVision – Network management software

- Client/server architecture: several operators can work in parallel
- Flexible licensing: based on managed nodes
- Customizable display: topology can be displayed to map the physical structure of the network
- Faster installation and enhanced security: MultiConfig™ enables network devices to be configured simultaneously

