

# REFERENCE CASE POWER PLANT



Photo: Ralf Bille

## Quality assurance for fire protection. Combined cycle power plant.

Düsseldorf municipal utilities' Block "Fortuna" combined cycle power plant (CCPP) has been in operation since 2016 and is the world's most efficient power plant of its kind to date. Along with optimal utilization, the combination of gas and steam turbines also ensures climate-friendly energy production. In addition, the ability to use waste heat for district heating increases efficiency.

### Facts and figures.

Customer	Stadtwerke Düsseldorf AG
Timeframe	December 2012 to January 2016
Project location	Auf der Lausward, Hafen Düsseldorf, Deutschland

### About Block "F".

Block "Fortuna" – or Block "F" for short – exhibits several superlative features. One exceptional feature of the 500-million-euro complex is the electrical power of more than 600 MW that it supplies – the highest electrical output ever generated by a CCPP. The district heating capacity of about 300 MW also exceeds all previous quantities produced by cogeneration. Its location near the center of the city permits the power plant to

supply district heating to Düsseldorf's residents, businesses and the second largest industrial region of North Rhine-Westphalia. Because the district heating supplied to the network consumes no additional fuel, it has the same legal statute as renewable energies. Currently the world's most advanced bridging technology, it will also permit future use of fuel from renewably produced biogas – at a utilization of up to 85%.

At the same time, the unit has achieved over 61% net electrical efficiency. Already during its first year of operation, the plant reduced CO<sub>2</sub> emissions by 600,000 tons, thereby making a significant contribution to climate protection. In 2025, CO<sub>2</sub> emissions will have been reduced by more than 1,000,000 tons.

**Our services.**

The “Fortuna” power plant block went into operation on schedule at the end of January 2016. Düsseldorf municipal utilities and Siemens placed their trust in the professional services of TÜV Rheinland.

Along with numerous federal statutory regulations that apply throughout Germany, regulations which can vary from one German federal state to another always need to be observed as well.

**About TÜV Rheinland.**

TÜV Rheinland is a worldwide leading independent provider of inspection and testing services with a tradition going back more than 140 years. Its independent specialists stand for quality, efficiency and safety of people, technology and the environment in nearly all aspects of modern life. TÜV Rheinland inspects and tests technical plants and equipment, products and services, and provides support to companies for projects and processes. Its experts train people in many professions and industries. For that purpose, TÜV Rheinland has a global network of certified laboratories, testing facilities and training centers. Since 2006, TÜV Rheinland has been a member of the United Nations Global Compact for greater sustainability and against corruption.

**Fire protection services provided in connection with the construction of Block “Fortuna“**

**Quality assurance for fire protection**

- Quality assurance for the work of the fire protection engineering construction supervisor
- Consultation on the required fire protection engineering measures for the different start-up steps.
- Coordination of acceptances by expert assessors for commissioning and start-up

**Plant engineering fire protection**

Inspection of the following plant and equipment prior to start-up in accordance with the Inspection Ordinance for Special Buildings:

- HVAC systems
- Mechanical systems to keep rescue routes free of smoke
- Natural smoke and heat extraction systems
- Electrical systems
- Fire alarm systems
- Safety lighting
- Emergency power supply
- Review of operating principles (safety engineering management concept)
- Non-automatic fire extinguishing systems with wall-mounted fire hose reels
- Fixed automatic inert gas extinguishing systems
- Fixed automatic water spray extinguishing systems
- Fixed automatic sprinkler systems
- Above-ground fire hydrants
- Fire brigade elevator
- Lightning protection system

**Explosion Protection**

- Inspection of explosion protection prior to start-up in accordance with the German Ordinance on Industrial Safety and Health

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