Welcome to Niederaußem Power Station and Coal Innovation Centre

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Niederaußem Power Station

- Gross power capacity: 3.600 MW
- Net power capacity: 3.430 MW
- Net efficiency: 32% to 43%
- Net generation: 25 TWh/a
- Consumption of lignite: 28 Mio. t/a
- Consumption of lignite: 80.000-90.000 t/d
- Number of units
  - 150 MW: (stop running end of 2012) 2
  - 300 MW: (E, F security stand by, from 1/2018) 4
  - 600 MW: 2
  - 1.000 MW: 1
- Start of operation: 1963 - 2003

Located in Bergheim-Niederaußem
The Rhenish lignite mining area

- Düsseldorf
- Grevenbroich
- Garzweiler II
- Garzweiler I
- Frimmersdorf
- Neurath
- Niederaußem
- Fortuna-Nord
- Bedburg
- Hambach
- Inden
- Weisweiler
- Düren
- Jülich
- Aachen
- Frechen
- Wachtberg
- Hürtth Ville/Berrenrath Goldenberg
- Brühl
- Köln

Map indicating:
- Operational areas
- Former operational areas under recultivation
- Recultivated operational areas
- Approved mining boundaries
- Lignite-fired power plants
- Lignite refining plants

≈ 10 km
Business Unit Lignite-fired Power Plants

- **Weisweiler**: 4 units 1798MW, district heat, paper sludge use;
- **Niederaußem**: 7 units; 3430 MW, district heat, process steam;
- **Frimmersdorf**: 2 units; 562 MW, district heat, paper sludge use;
- **Neurath**: 7 units 4168MW, district heat;

Technical Services division provides services throughout the division, i.e. regular maintenance (e.g. inspection/overhaul, projects, reconstruction measures), power plant chemistry and laboratory services, technical measurements and award of technical orders;

- Power generation: \( \approx 70 \text{ TWh/a} \); covers some 12% of German power demand
- 20 units and 2 fluidized-bed boilers
- Approx. 2,800 employees
- District heat and process steam extraction in all power plants
- Paper, sewage sludge and landfill gas co-combustion at some sites

\(^{1}\text{FTE = full-time equivalents}\)
Lignite-fired power plant with optimized plant technology (BoA)
Examples of efficiency-increasing measures related to the steam generator

- Steam parameters:
  - 274 bar/580 °C
  - 60 bar/600 °C

- Feedwater inlet temperature 295 °C

- Flue gas heat recovery

- Minimisation of reheadspray flow

- Minimisation of water/steam-side pressure drop

- Minimisation of leakage air flows
Niederaußem BoA-Unit
Steam generator

- 2,370 km of pipework
- 45,000 t of weight
- 152,000 m² of heating surfaces
- 261,000 m² of heat recovery surfaces
- Combustion Chamber: 23.2 x 23.2x94 m; 74 m high (FGR)
Niederaußem BoA-Unit
Steam turbine and generator

**HP:** 264.6 bar; 576 °C; 740 kg/s; 280.5 MW

**MP:** 58.4 bar; 599 °C; 645 kg/s; 437.6 MW

**Generator:**

- S = 1223 MVA
- U = 27.0 kV
- I = 26.15 kA
- \( \cos \phi = 0.8 \)
- \( p_{H_2} = 5.0 \) bar

**Exhaust steam LP1, LP2:** 0.0291 bar; 23.6 °C

**Exhaust steam LP3:** 0.0358 bar; 27.0 °C

**LP1, LP2:** 4.63 bar; 234 °C; 153.1 kg/s; 100.6 MW

**LP3:** 4.63 bar; 234 °C; 193.5 kg/s; 121.0 MW
Flexibility of modern CCGT and lignite fired plants

BoA 1 bis 3
Max. capacity ~ 1000 MW
Min. capacity ~ 500 MW
Max. load response rate +/- 30 MW/min

CCGT plant Lingen
Max. capacity ~ 2x440 MW
Min. capacity ~ 520*/260** MW
Max. load response rate +/- 32 MW/min

BoAplus
Max. capacity ~ 2x550 MW
Min. capacity ~ 350*/175** MW
Max. load response rate +/- 30 MW/min

Brown coal Power plants and CCGT can react to the different electricity production of the renewables
Safety Advice and personal safety equipment

Gathering place
0m in front of the building

Personal safety equipment:
• helmet
• glasses
• safety shoes