



Grosskraftwerk Mannheim AG

Bilfinger Capital Markets Day 2013



Grosskraftwerk Mannheim
Aktiengesellschaft

Mit Energie überzeugen

Topics



GKM – Energy for the region
Securing a reliable power supply

GKM
Our projects for the future

Efficient generation of electricity and district heat



Reliable, cost-effective and environmentally sound energy for shareholders and German Rail

50 Hz three-phase alternating current

RWE Generation SE (40 %)
EnBW Erneuerbare und Konventionelle Erzeugung AG (32 %)
MVV RHE GmbH (28 %)

16.7 Hz single-phase alternating current

DB Energie GmbH

District heat

MVV RHE GmbH

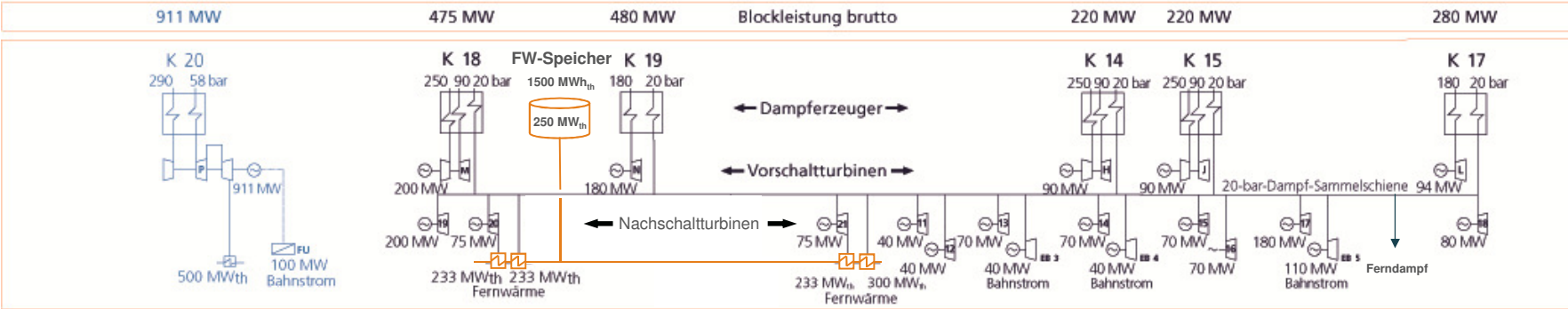
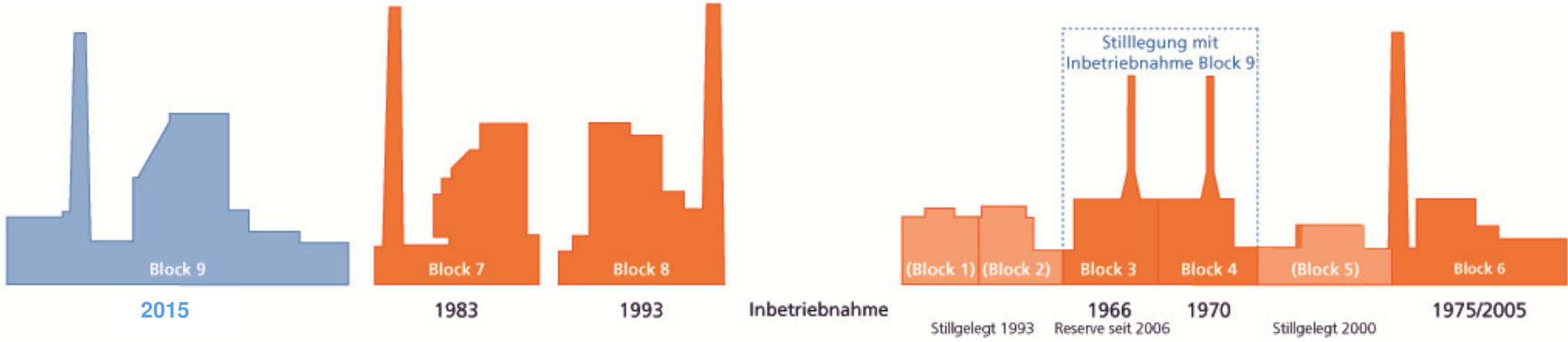
GKM generates electricity for over 1.5 million people, trade, industry and railway as well as heat for about 120,000 households in Mannheim and the region.

Business Figures at a Glance

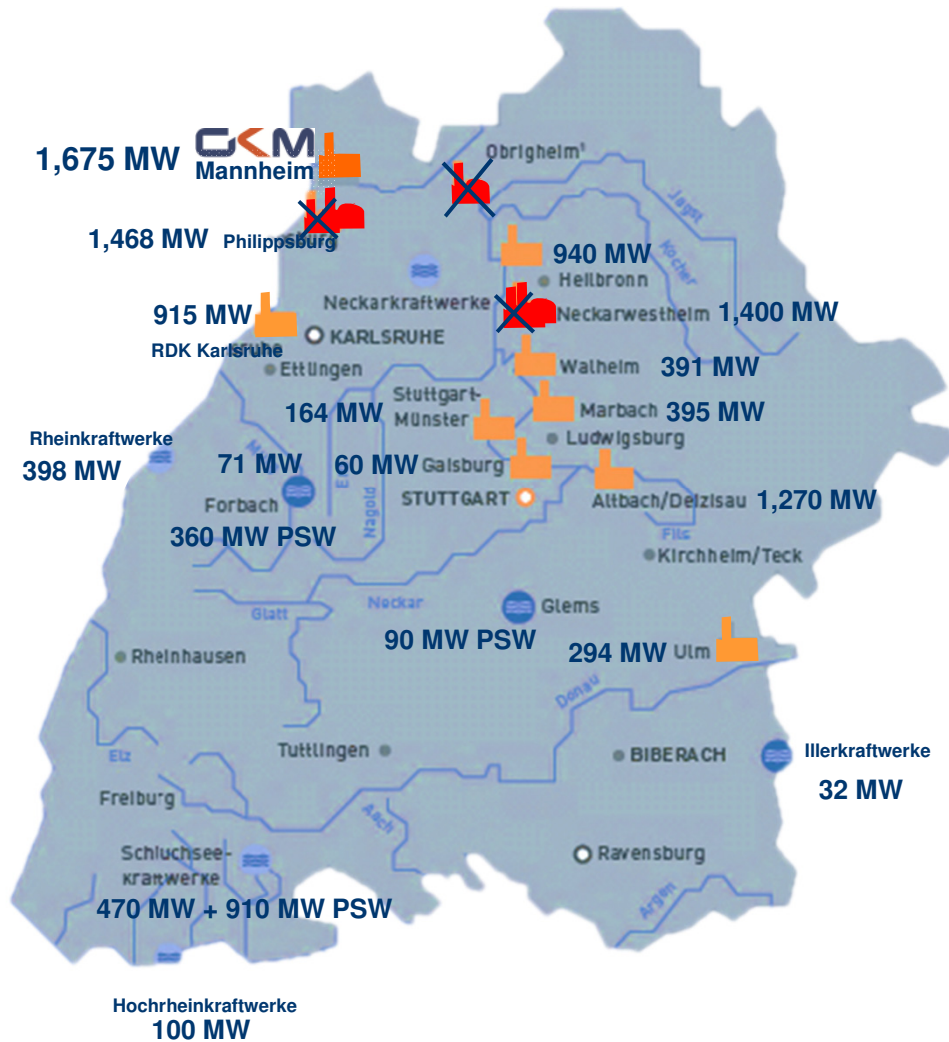
		2012	Previous year
Total Turnover	Million €	459	515
Electricity	Million €	420	469
District Heating	Million €	39	42
Investments	Million €	236	319
Balance	Million €	1,434	1,243
Assets in Equipment	Million €	1,312	1,112
Equity	Million €	114	114
Loans	Million €	1,320	1,129
Cashflow	Million €	89	84
Profit	Million €	6.6	6.6
Employees on 31.12.	number	608	610
Apprentices	number	80	73

Overview

Installed gross capacity at present: 1,675 MW (of which 220 MW reserve)
from 2015: 2,146 MW



What we achieve



Significance of GKM in BW

- largest power plant site
- highest CHP extraction
- 75% of electricity is fed in decentralised
- produces about 10% of German railway electricity

Nuclear power plants already deactivated

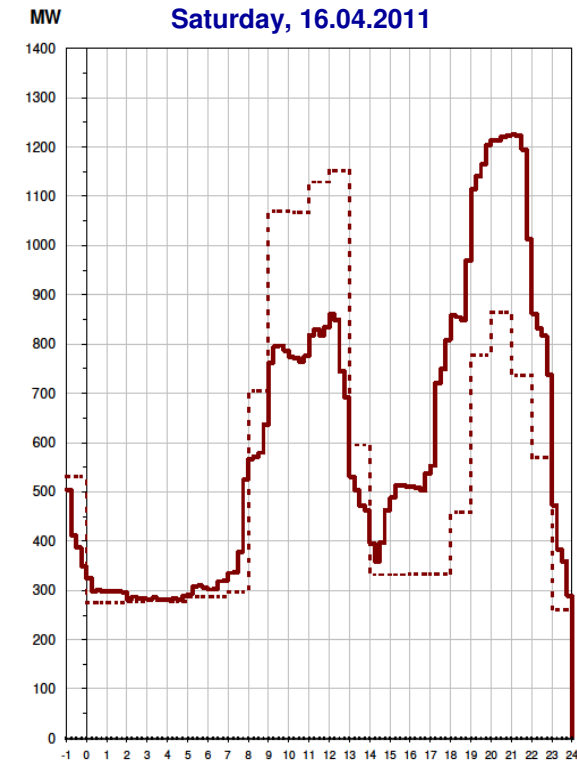
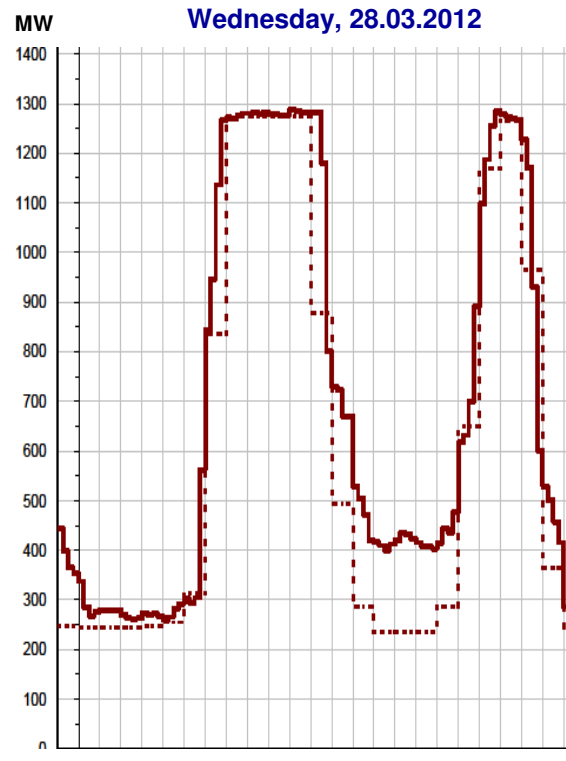
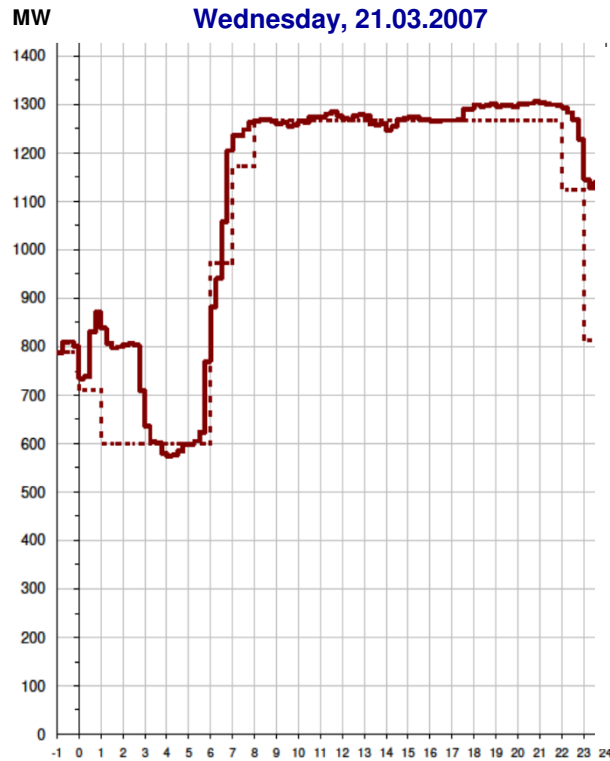
Obrigheim: 375 MW
 Philippsburg 1: 926 MW
 Neckarwestheim 1: 840 MW

Impact of power transition on GKM

Operation earlier ...

... and today

Planned and actual data

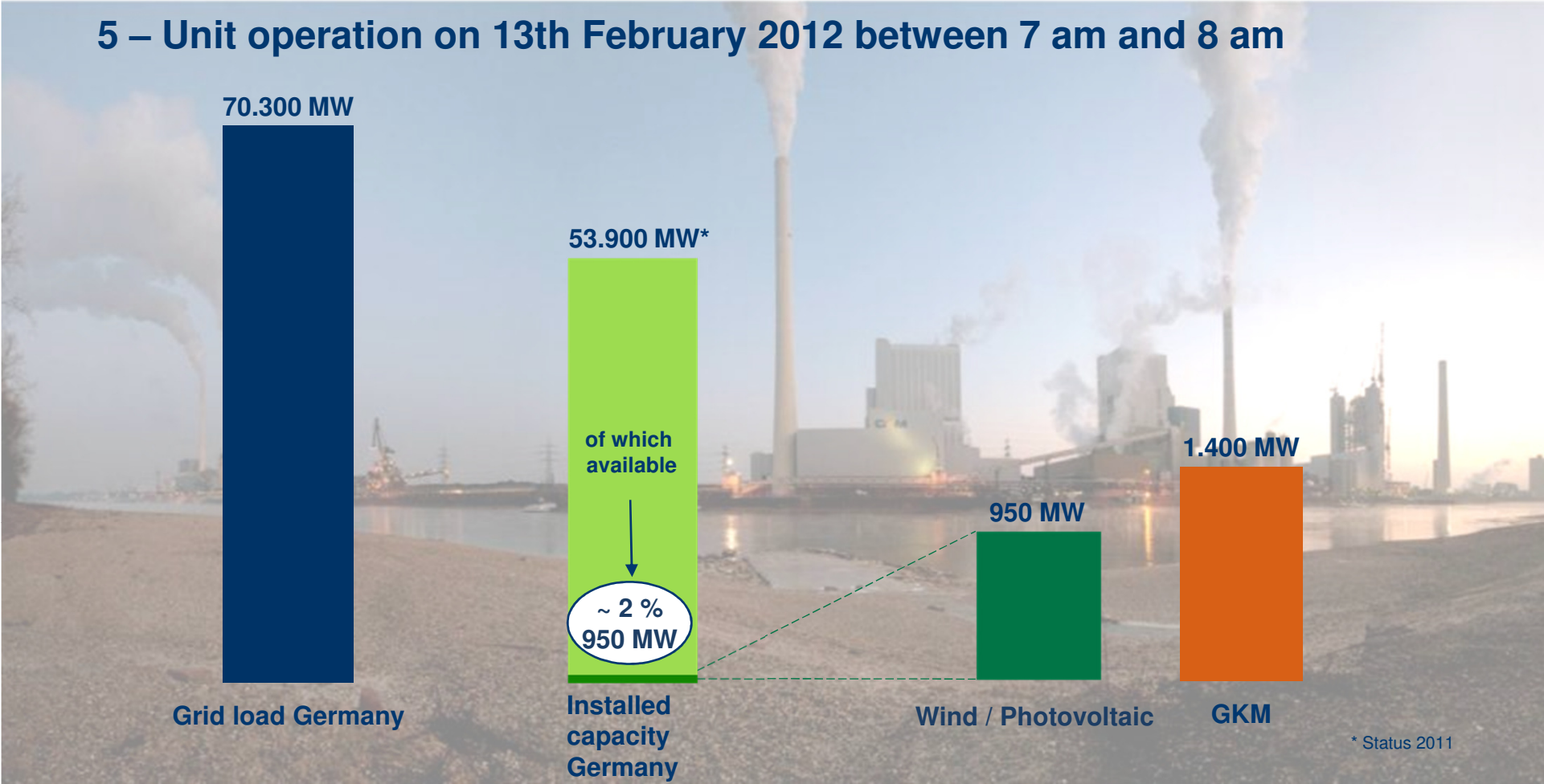


— Output GKM - - - Planned output GKM

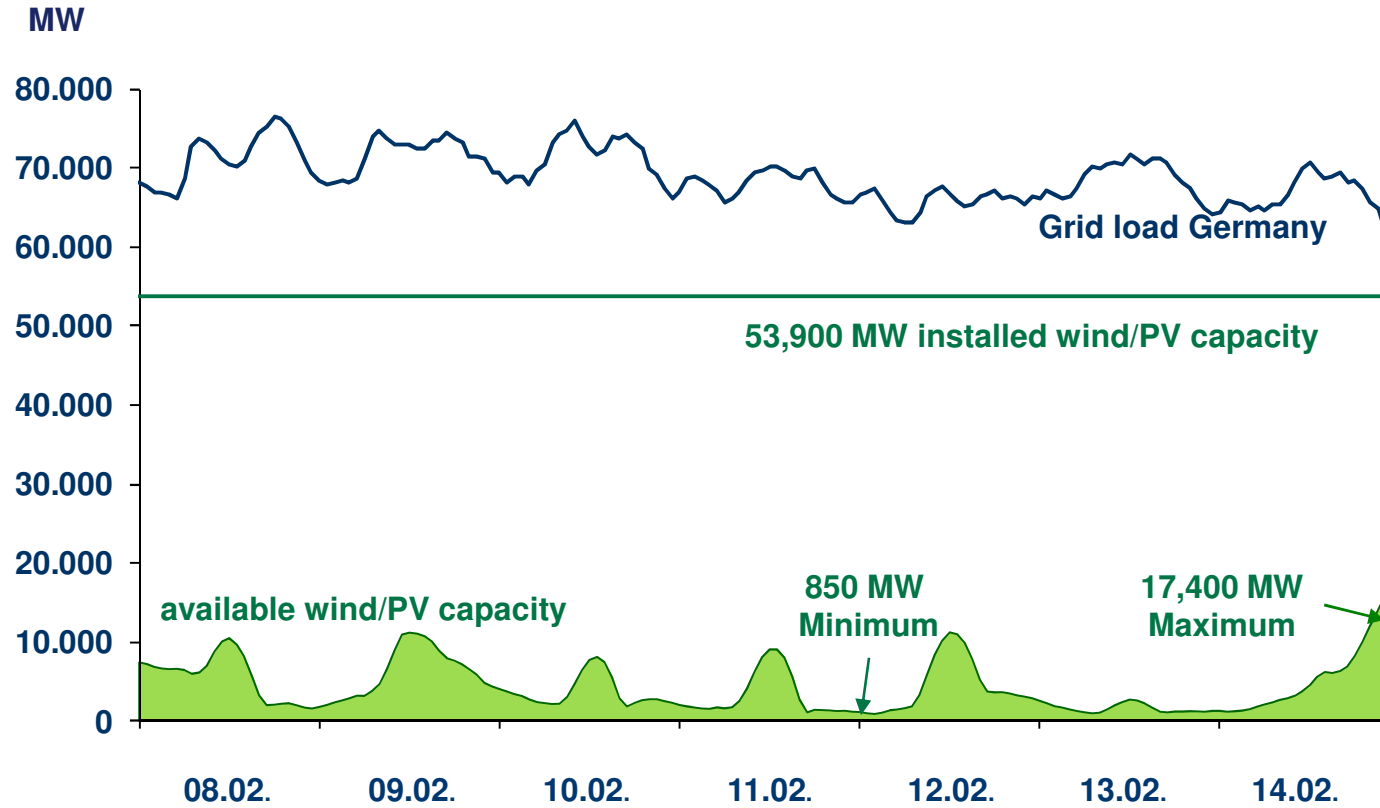
Today's requirements mean significantly higher demands on equipment and personnel.

GKM – The backbone of power supply

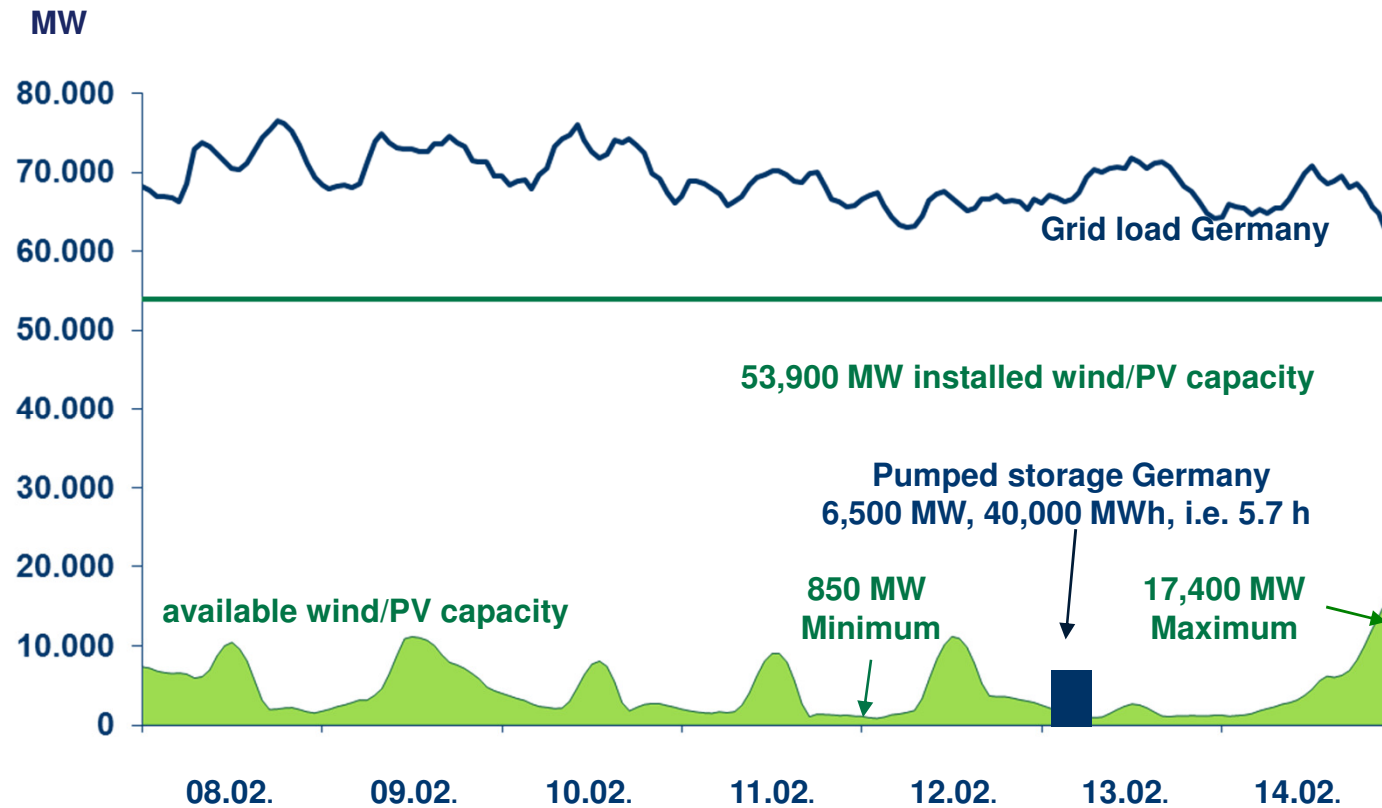
5 – Unit operation on 13th February 2012 between 7 am and 8 am



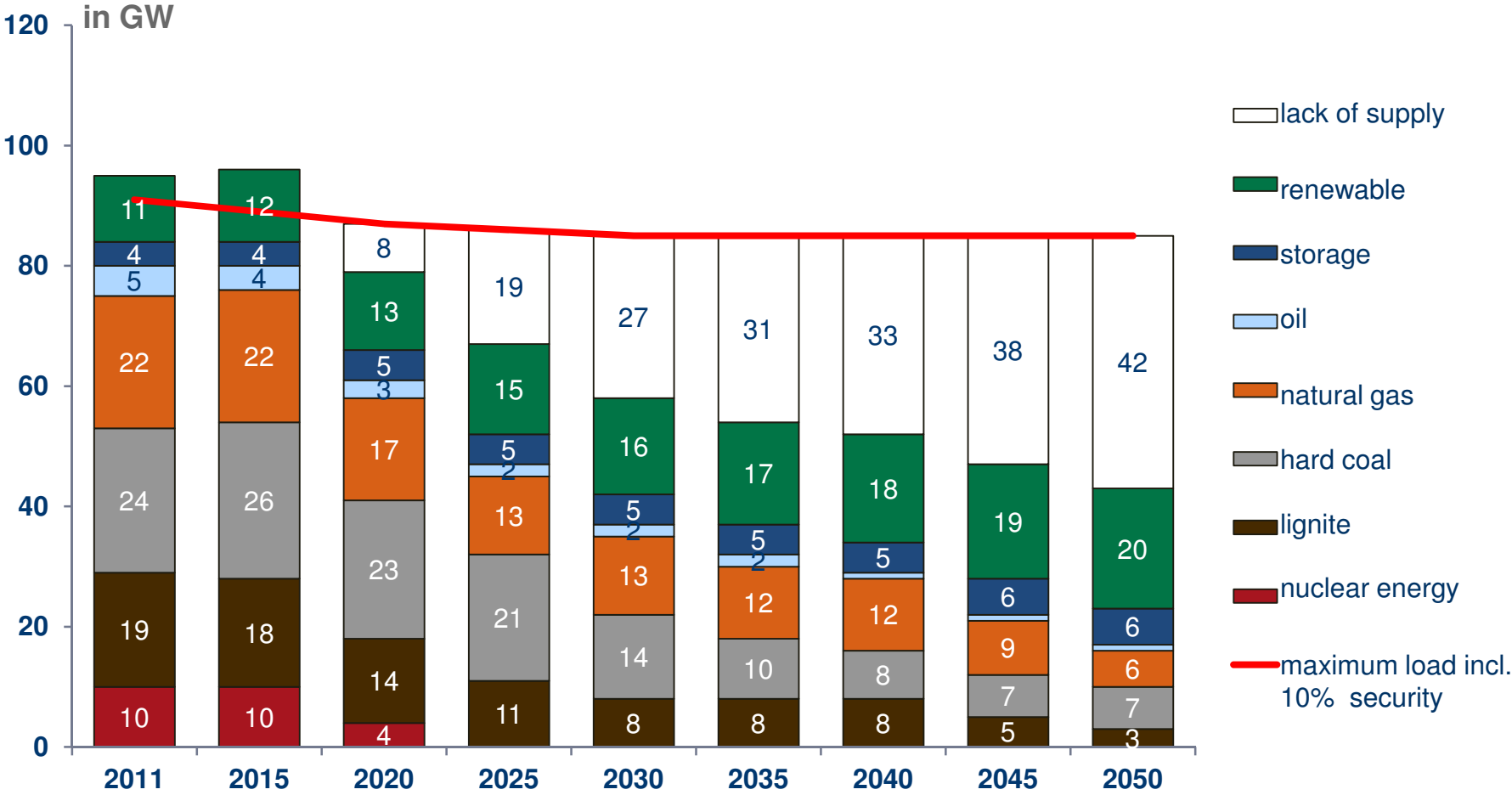
5 – Unit Operation in February 2012



5 – Unit Operation in February 2012



Difference of secured net generated output / annual peak load up to 2050



¹ considering actually operating thermic power stations, increase of renewable energy and storage.
Source: Prognos AG

Topics



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Unit 9



Energy for Mannheim
and the region

Unit 9

Facts and Figures

Planned commissioning	2015
Gross output	911 MW _{el}
Electrical efficiency	46.4 %
District heating with CHP	max. 500 MW _{th}
Fuel utilisation with CHP	max. 70 %
Railway electricity	approx. 100 MW

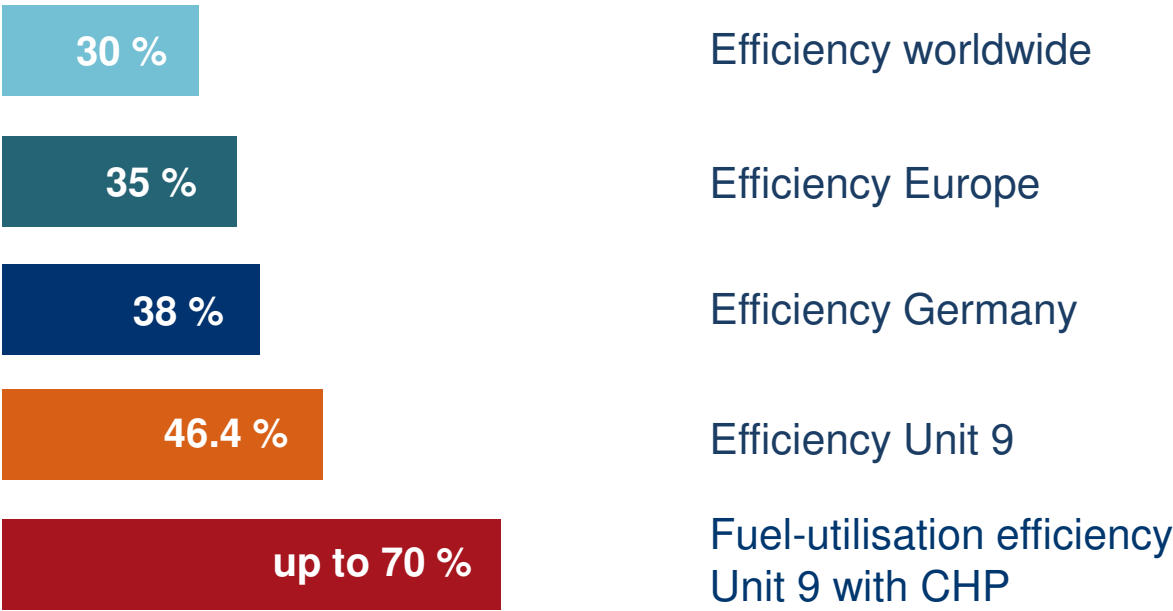
Unit 9 – Main suppliers

- Civil works – ARGE (Bilfinger Construction, Züblin, Diringer & Scheidel, Heberger)
- Steam generator – Alstom Power Systems
- Turbine – Alstom Power Systems
- Flue-gas cleaning – Fisia Babcock Environment
- High-pressure pipework – Bilfinger Power Systems / Kraftanlagen München
- Process-control technology and transformers – Siemens
- Frequency converter – ABB
- Feed-water pumps – Sulzer

Unit 9 – Advanced technology



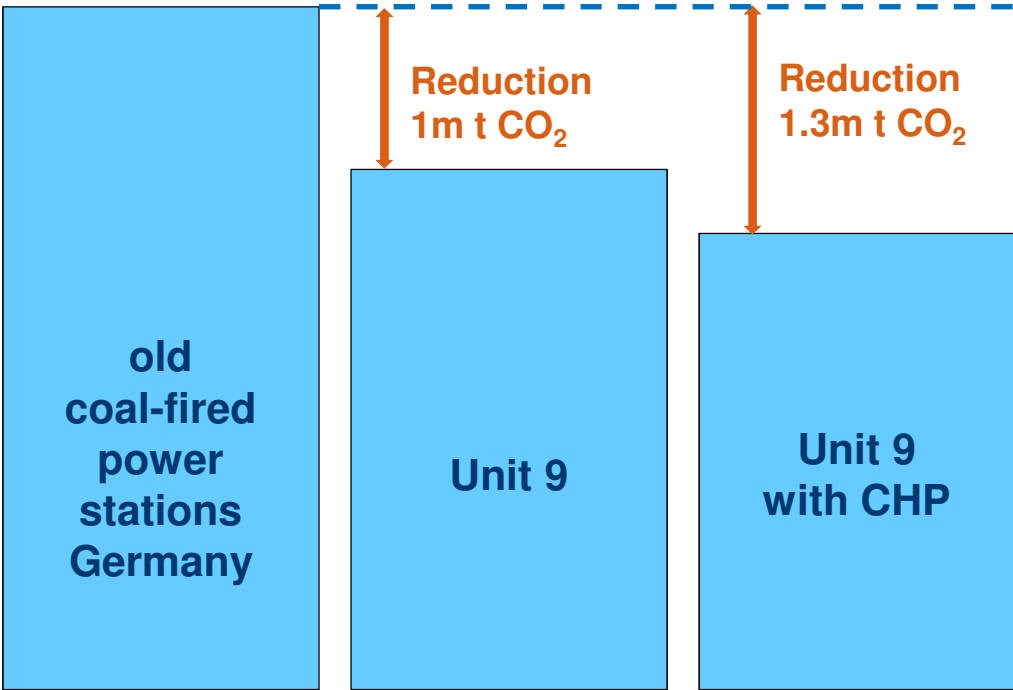
Net efficiency coal-fired power stations



Unit 9 – Our contribution to climate protection

Comparing CO₂ emissions of old and new coal-fired power stations with equal power generation

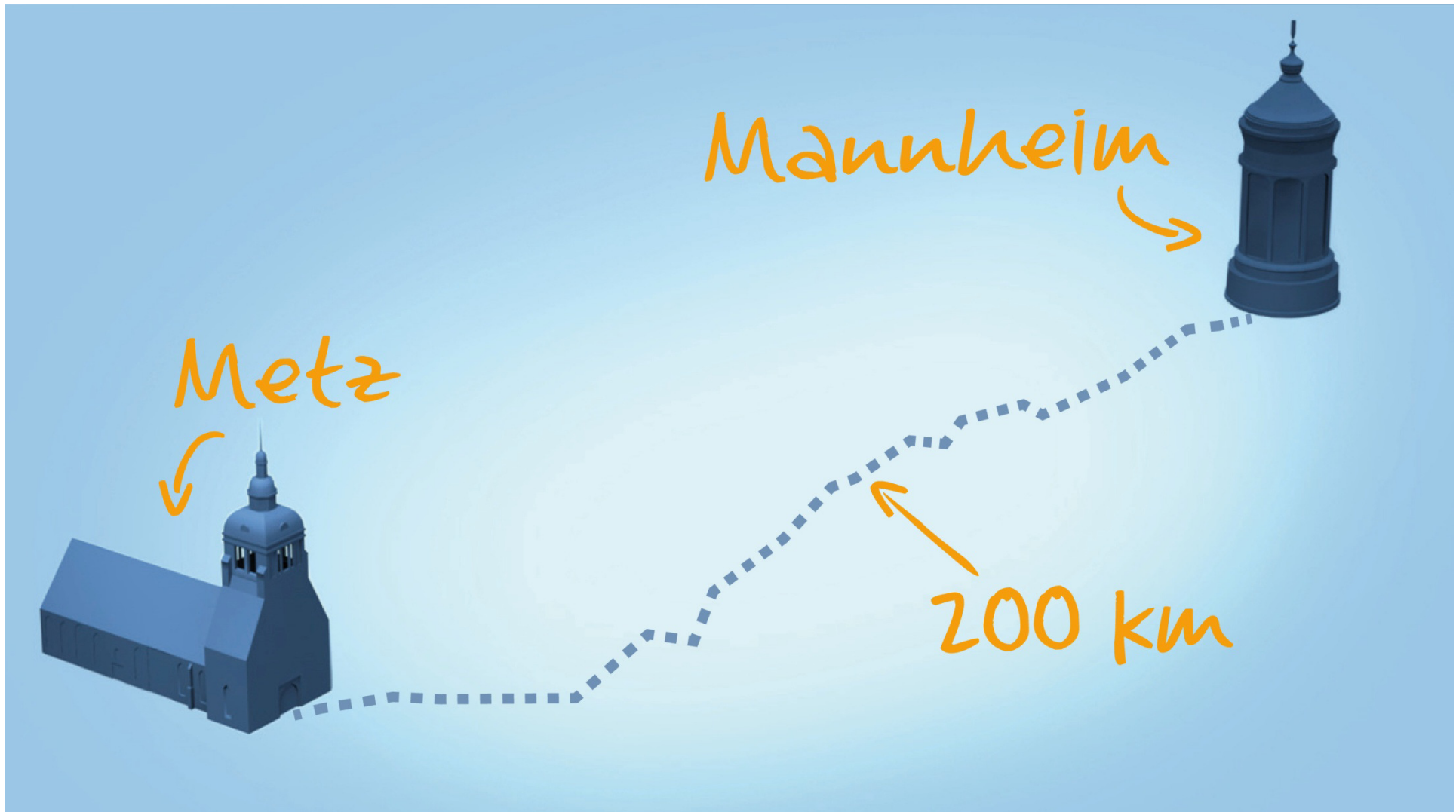
Unit 9 contributes its share to climate protection by reduced CO₂ emissions



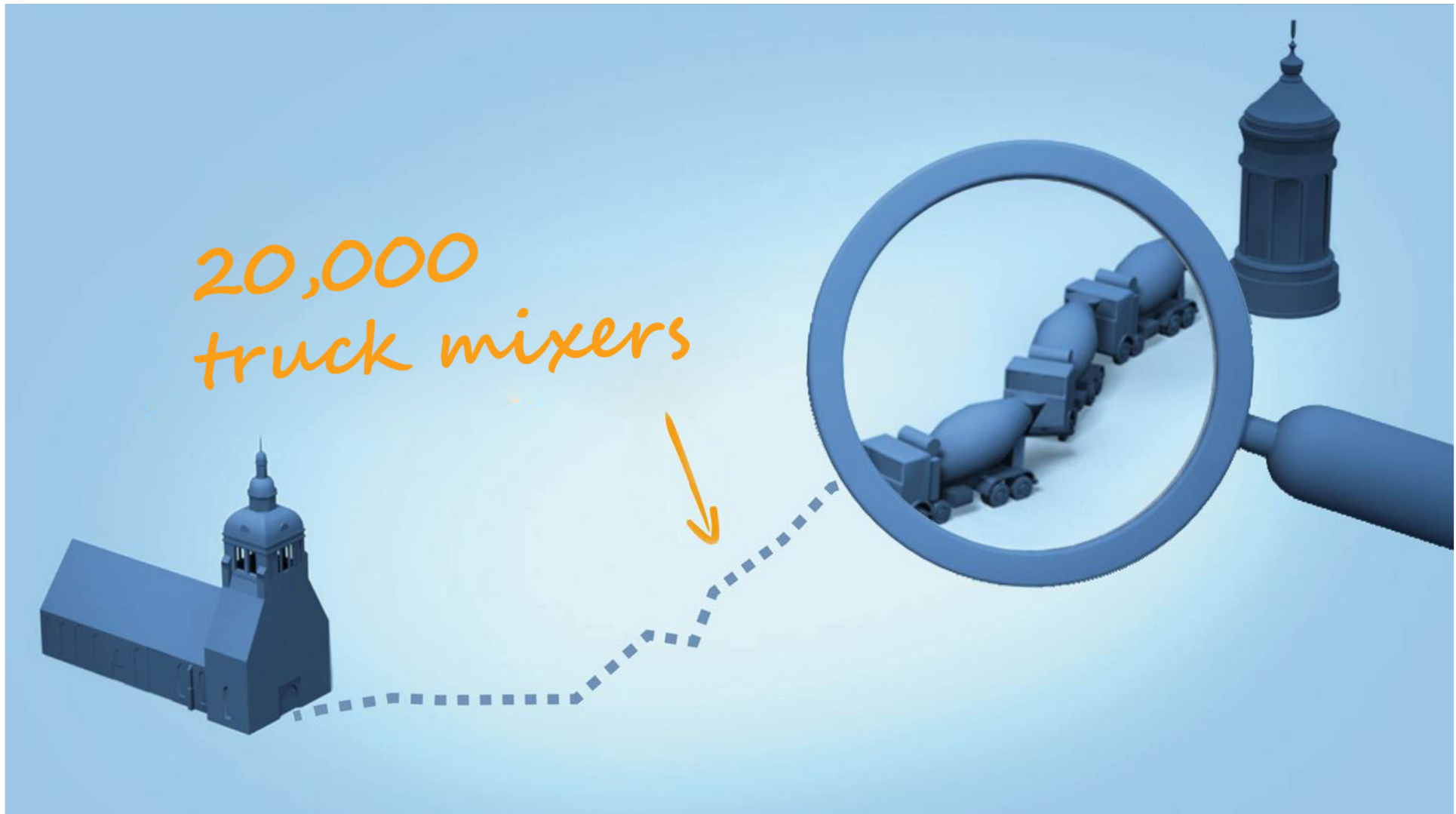
Amazing facts:
300,000 m³ excavated soil



Amazing facts:
160,000 m³ concrete



Amazing facts:
160,000 m³ concrete



Amazing facts:
60,000 t steel construction and reinforcing steel



District-heat storage module

Dimensioning

Pressureless flat-bottom tank

Effective volume 43,000 m³

Storage temperature 98 °C

Diameter 40 m

Height 36 m

Output 250 MW_{th}

Capacity approx. 1,500 MWh_{th}

Mass flow 6,200 t/h

Main pipes DN 900



District-heat storage module

- Enables us to react flexibly to volatile infeeds of renewable energy into the grid and provide security of supplies at the same time.
- Our facility is the most powerful one in Germany.
- The district-heat storage is operated on behalf of MVV Energie.
- The investment of 27m € is made by MVV Energie.

Auxiliary steam generator GKM's new starter



Auxiliary steam generators for process steam to start units

- Consists of 3 steam generators (powered by natural gas or heating oil)
- Output 49 MW (steam generation approx. 65 t/h)
- **Feeds steam into our own pipeline system and provides it that way to every unit**

Replacement of switchgears and transformers

Adjusting technology to Unit 9's output



Research project 725 °C



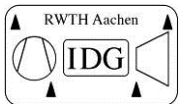
Gefördert durch:



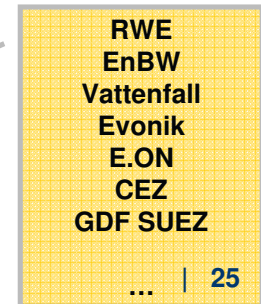
aufgrund eines Beschlusses des Deutschen Bundestages



VALLOUREC & MANNESMANN TUBES



Industrie Service



What we stand for

Efficiency

GKM operates one of the most efficient coal-fired power stations in Europe

Backbone of the energy supply

GKM will be the backbone of a reliable long-term energy supply

Protection of environment and climate

GKM produces district heat exclusively by combined heat and power generation (CHP)

Investment for the future

GKM is building one of the most sophisticated coal-fired units worldwide

Responsibility beyond the region

GKM takes responsibility and provides the so-called “cold reserve” according to the request of the State Government of Baden-Württemberg and the Federal Network Agency

High acceptance in the region

GKM stands for an honest and transparent communication policy



Thank you for your attention and have nice stay!

If you want to visit a restroom, please do now.

Meeting points for the following visit:

White:

Corridor,
exit at front

Red:

In front of the elevator,
exit at back

Blue:

Inside this room