



ENGINEERING
AND SERVICES

Bilfinger Mauell GmbH

WE MAKE **POWER SYSTEMS** WORK

Bernhard Mecking | CMD 2013 – Capital Market Days

November 29, 2013

➤ Innovation, quality and solidity

- Since 1957
- 460 employees worldwide
- 340 in Germany
- Activities around the world

- In-house development of hard and software
- Manufacturing of automation components
- Engineering and service
- Deep process know-how for power generation and distribution

➤ Tailored solutions for the requirements of our customers !



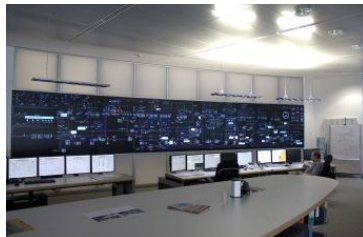
POWER STATION CONTROL SYSTEMS



POWER DISTRIBUTION CONTROL SYSTEMS



CONTROL ROOM TECHNOLOGY

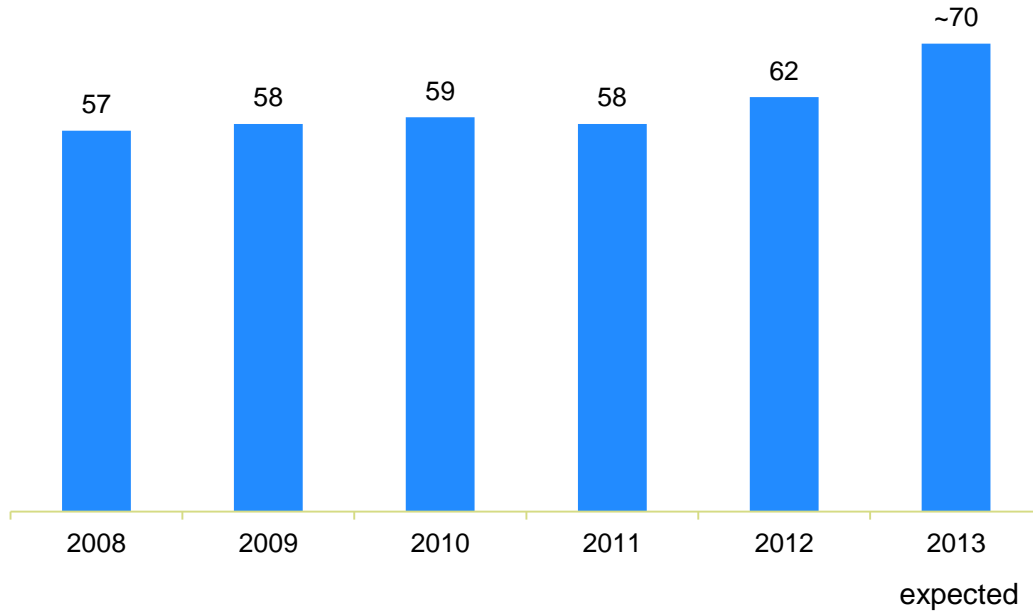


Our Services

- Development
- Project Management
- Engineering
- Manufacturing
- Commissioning
- Maintenance
- World wide - Service
- Consulting
- Supervision



Output volume 2008 – 2013 in € million



Contract structure

POWER STATION
CONTROL SYSTEMS



- Project Size: 1,0 – 30,0 million €
- Execution Time: 6 – 48 months

POWER DISTRIBUTION
CONTROL SYSTEMS



- Project Size: 0,1 – 1,0 million €
- Execution time: 2 – 12 months

CONTROL ROOM
TECHNOLOGY



- Project Size: 0,1 – 2,0 million €
- Execution time: 1 – 12 months

40%



20%



40%



Power Plant Control

Reference project; Power Plant „Moorburg“



Power Plant ‘Moorburg’ (Vattenfall)

Project Description

- Hard coal fired power plant (2x820MWe)
- Controllability 35 % - 100 %, max 103 %
- Net efficiency > 46.5 % (61% fuel utilization with district heat)
- Process Automation with ME 4012SN
- Project size 55 million €

Power Plant Control

Reference project; Power Plant „Moorburg“

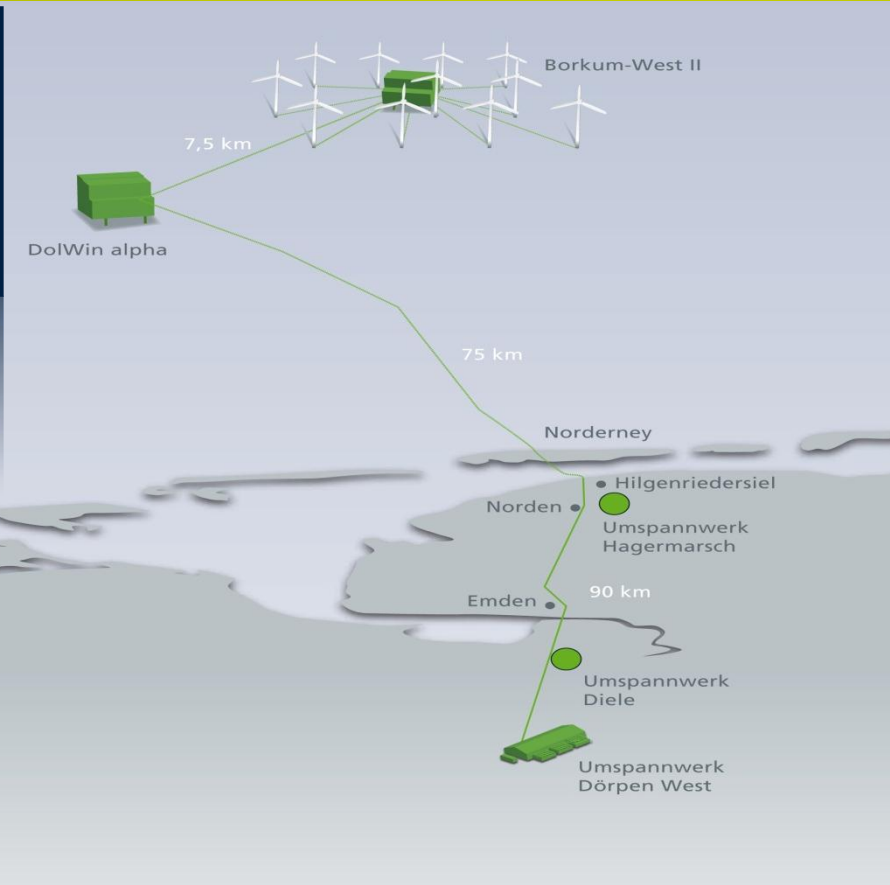


Large process system - Decentralized automation

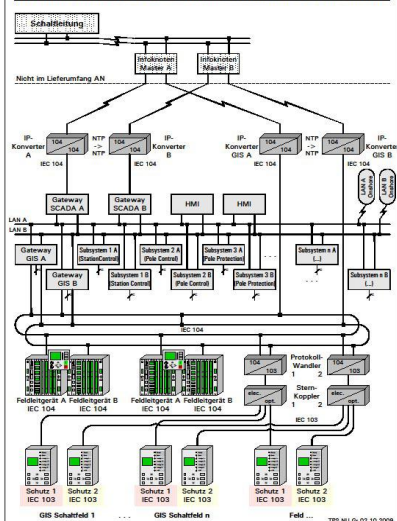
- 80,000 Signals
- 300 redundant controllers
- 250 electrical cabinets
- 30 engineering stations
- simulator

Power Distribution Control

Reference project: DCS System DOLWIN 1



Konfiguration Leittechnik Offshore Option GIS Feldleittechnik



AC Control and protection of Offshore Plattform Dolwin 1

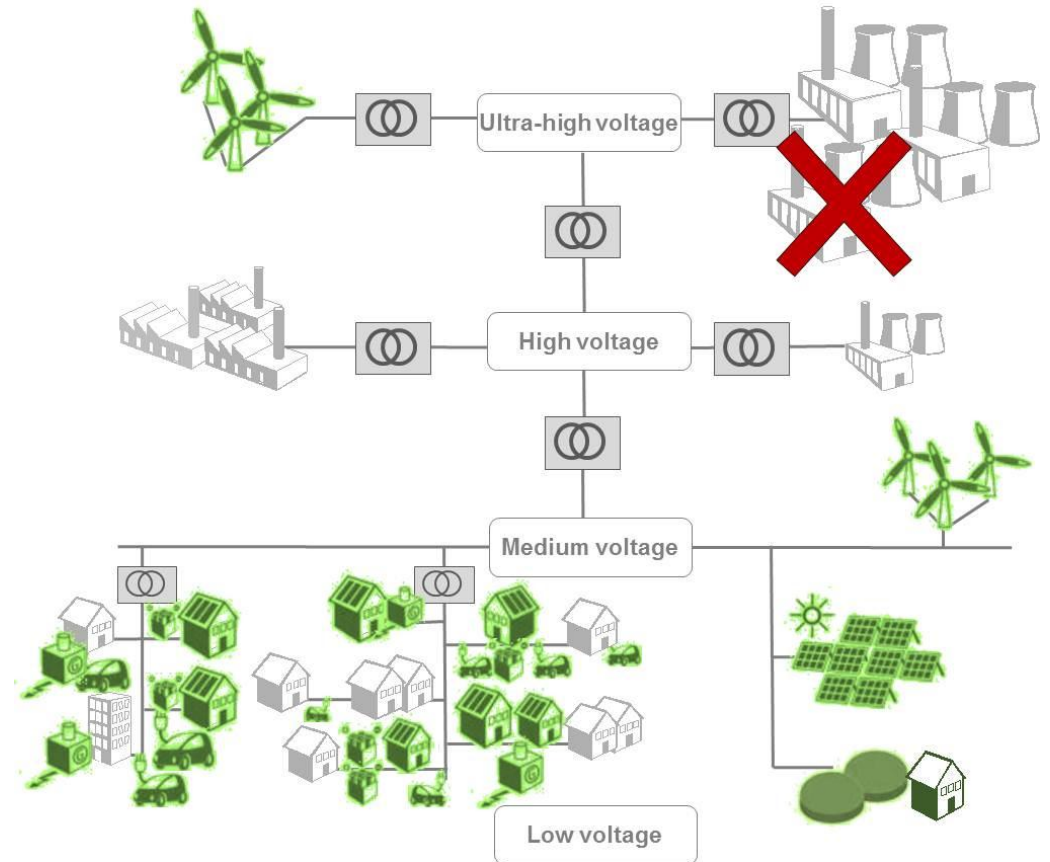
- Connection of 3 Offshore windparks (800 MW)
- Ca. 50 switch sections
- Redundant Control Systems for 2 HVDC converter stations (On-, Offshore)
- Island control
- Project size 1,0 million €

Power Distribution Control

Reference project: iNES, Smart Grid

Massive changes in the electrical grid due to German ‚Energiewende‘

- Decentralized energy generation by wind and photovoltaic energy (>60,000 MW in Germany)
- Nuclear phase-out
- Increasing large electrical consumers like electrical vehicles and heat pumps
- Increasing demand of electrical storage facilities by gas and thermal energy



Power Distribution Control

Reference project: iNES, Smart Grid



Smart grid application for Mainova, Frankfurt

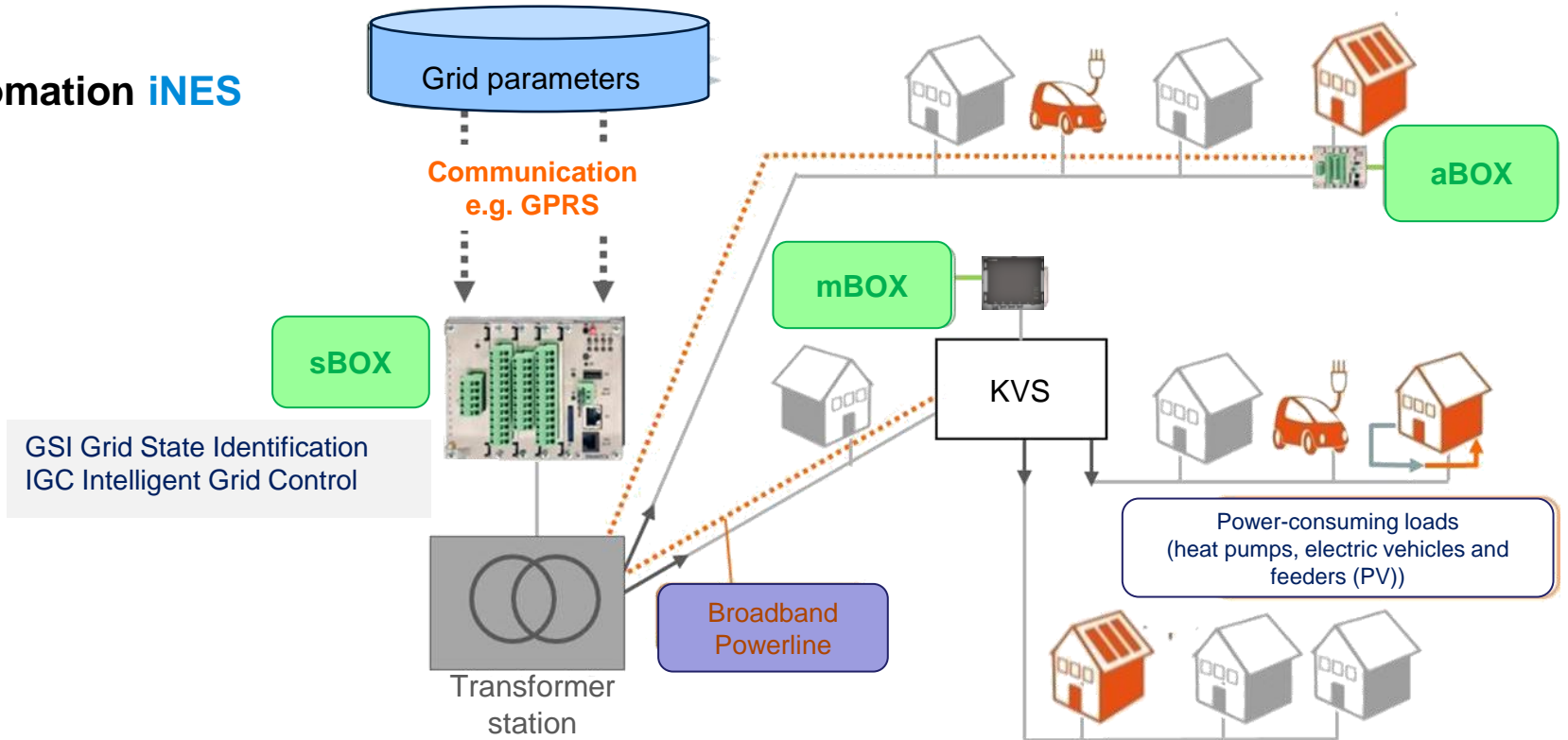
Project Description

- Realization of two smart grids in the 400V distribution grid
- Intelligent grid protection instead of large investments in new power lines
- Automatic power control of decentralized generation
- Automatic voltage regulation
- Integrated grid state estimation
- Project < 10.000€

Power Distribution Control

Reference project: iNES, Smart Grid

Intelligent Smart Grid automation **iNES**



Control Room Technology

Reference project: Telekom Service Center



Service Management Center Telekom, Bonn

Project Description

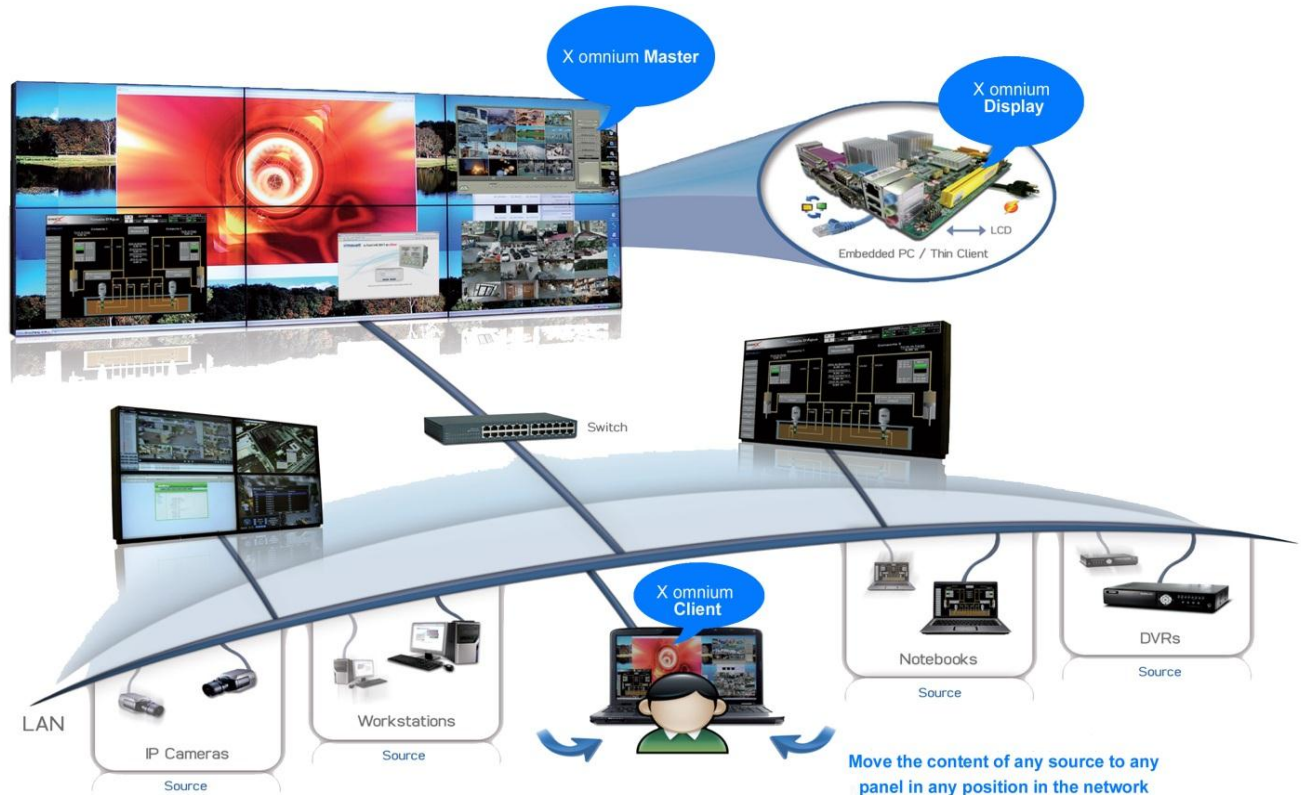
- 60 m² large screen display
- One desktop for more than 100 applications
- Separate displays for solution teams and management for the same content
- Up to 40 operators in the control room
- Project size 500 k€

Control Room Technology

Reference project: X-Omnium

Decentralized large screen controller software **X-Omnium**

- 100% IP based system
- Decentralized – one embedded controller for each display
- Infinite scalability
- High resilience
- Project size up to 1 million €



Control Room Technology

Reference project: Rio Operations Center



Cooperation within Bilfinger

POWER STATION CONTROL SYSTEMS



- Competence Center for Automation in power systems division
- Automation system for micro gas turbine

POWER DISTRIBUTION CONTROL SYSTEMS



- Greylogix: North stream pipeline
- Facility Service: energy control systems





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