

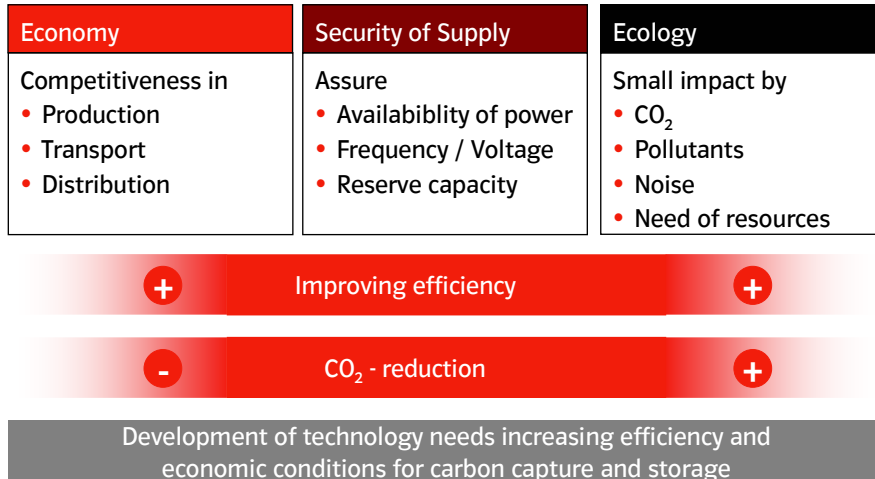
## E.ON-Project „50plus“ – The Future of High Efficient Coal Fired Power Plants

**Helmut Tschaffon**  
E.ON Energie

### E.ON Engagement for New Power Plant Technology

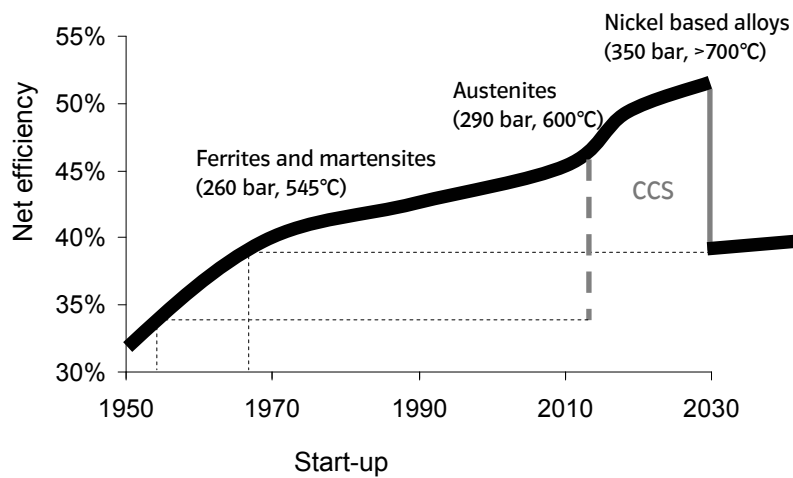
- Shut down of old power plants and changing political constraints call for a new strategy to **secure the energy supply**.
- **Save resources** and **reduce CO<sub>2</sub>-emissions** could be reached at the same time if we
  - use the technology which exists today
  - develop and prove the technology of „tomorrow“
  - test new procedures as a long-time option.
- Integration of **renewable energies** is also an important task.
- **E.ON is innovative** and promotes
  - application-oriented research and development
  - feasibility studies for future options

## Demands for the Technology of „Tomorrow“



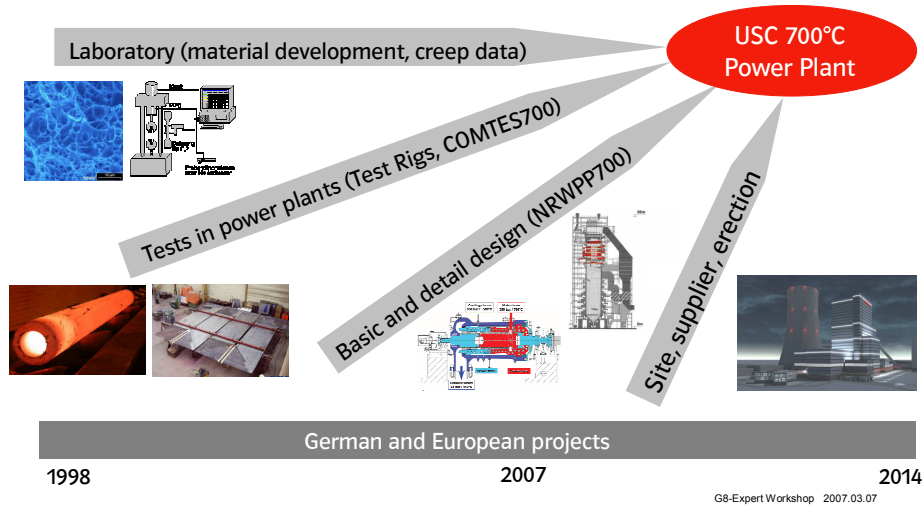
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## Development of Efficiency in Coal Fired PP in Germany

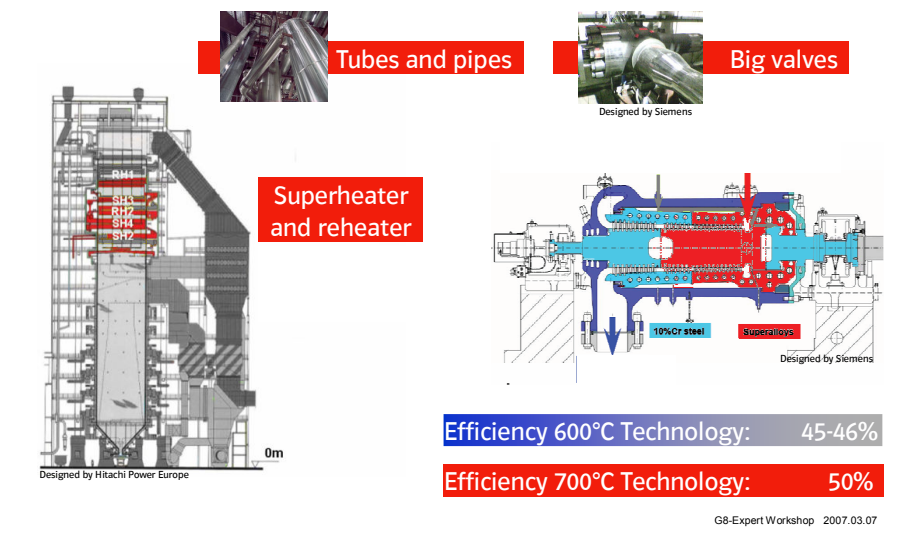


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## Pathway to USC 700°C Power Plant



## Challenges of 700°C Life Steam Temperature



### Example: Production and Qualification of Reheater Pipes

**Challenge:** Production of pipes with 500 mm outer diameter and a wall thickness of more than 30 mm which has a sufficient creep strength at 720°C

**Solution:** Production of a pipe out of Alloy 617 with a longitudinal seam by bending a plate



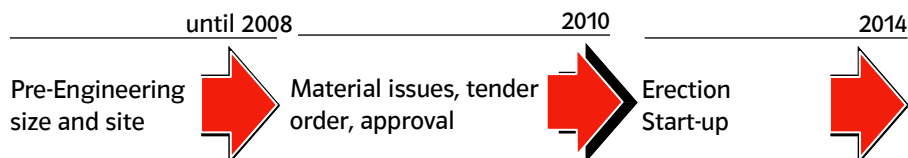
**Project data:** COORETEC - associated project  
 Duration: 2007 – 2010  
 Budget: 500 k€  
 Financed by German utilities and manufacturer

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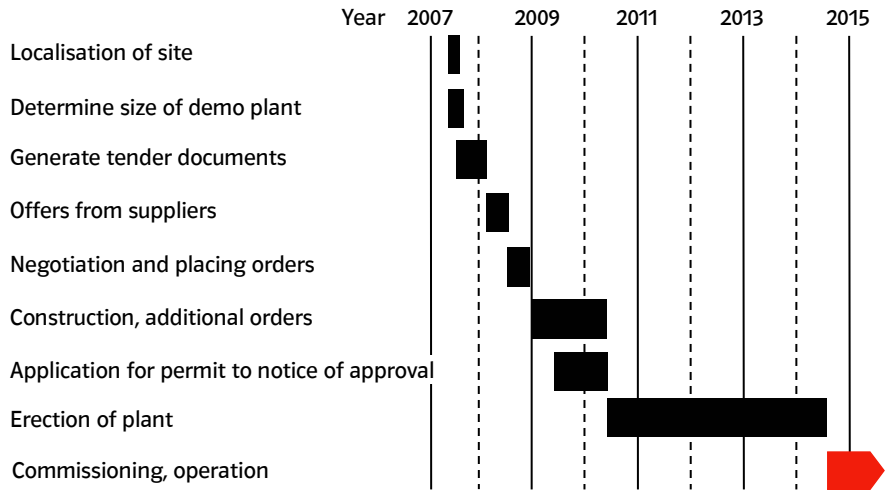
### E.ON's High Efficient 700°C Coal Fired Power Plant

... „50plus“ realised with new materials

<b>Site</b>	<b>Germany</b>
Net efficiency	50 % (LHV)
Capacity	min. 500 MW <sub>gross</sub>
Budget	min. 700 Mio. €
Start-up	2014



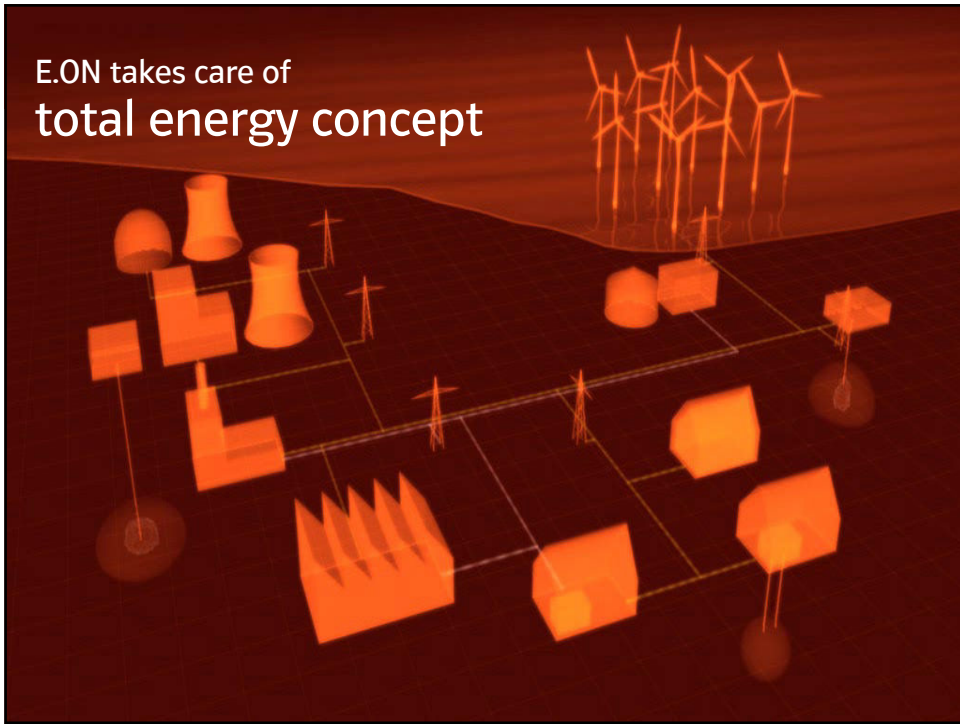
### Time Schedule to „50plus“ Demo Plant



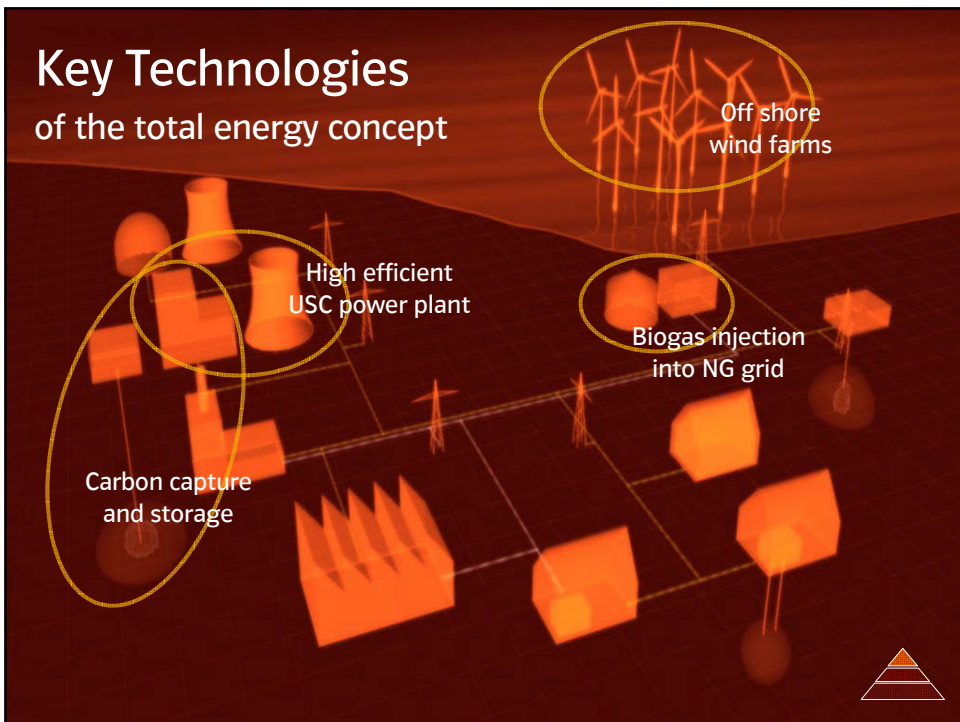
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## E.ON takes care of total energy concept



## Key Technologies of the total energy concept



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## Conclusion

- High efficient USC is pre-requisite for future coal utilization
- Europe is leading world's development of USC 700° C technology
- Long way to go to solve 700° C challenges
- E.ON builds worldwide first 700° C power plant (start-up 2014)
- Further efforts necessary to meet low CO<sub>2</sub> requirements
- E.ON launched technology offensive that puts focus on:
  - High efficient USC power plant
  - Carbon capture processes
  - CO<sub>2</sub> storage
  - Next generation nuclear reactors
  - Off shore wind farms (500 MW until 2011)
  - Biogas injection into natural gas grid (1,000 MW until 2020)
  - Increasing end energy efficiency