



SIEMENS

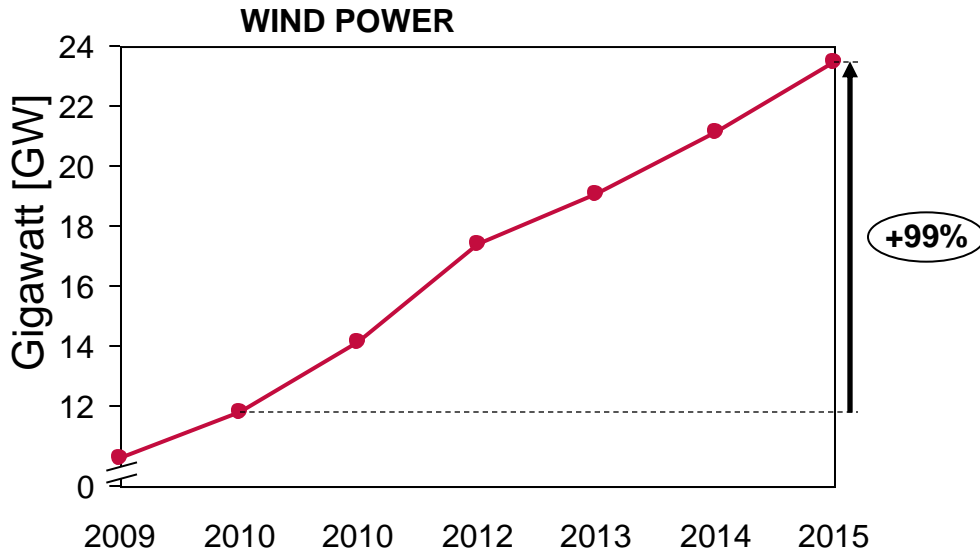


Dipl. Ing. Frederik Schrufer, Sales Director Large Steam

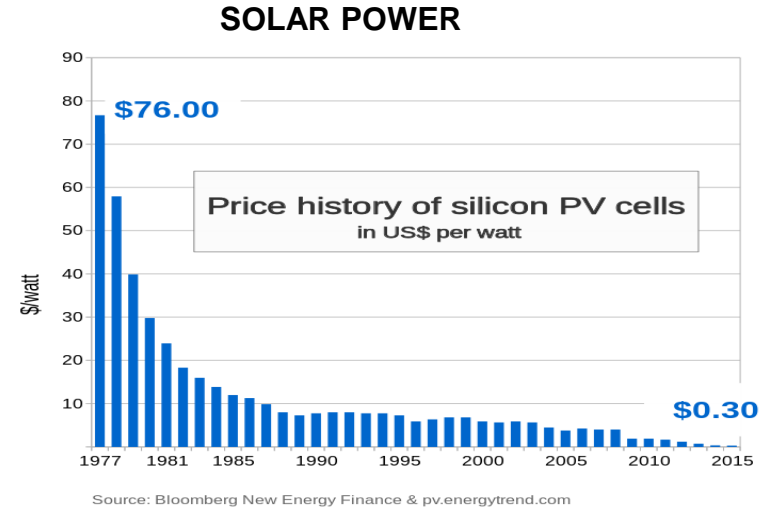
Steam Turbine Technology for Future Thermal Power Generation

Future Changes in India Grid / Power Market

Installed Wind & Solar Power



Installed Wind Power Capacity already doubled within 5 years and



Worldwide huge price decrease of PV Cells

2016: India has ambitious targets for renewables until 2022

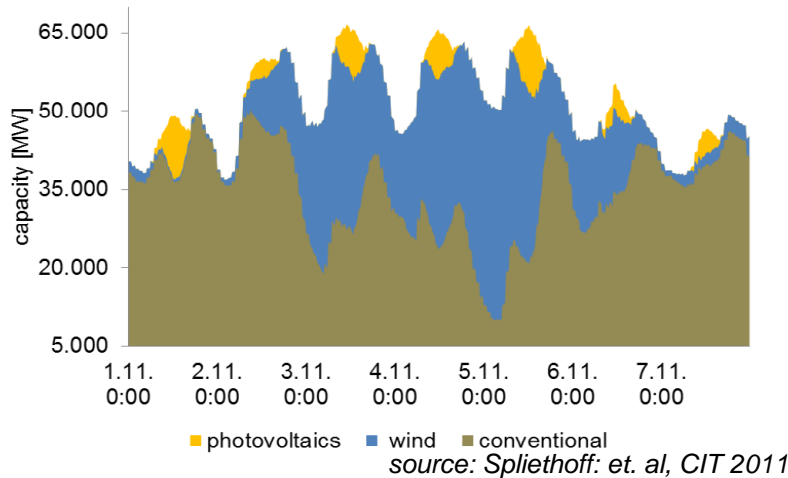
INDIA is a fast growing market in renewable investment

which is more than six times the current installed capacities
 → in total 160GW additional capacity until 2022

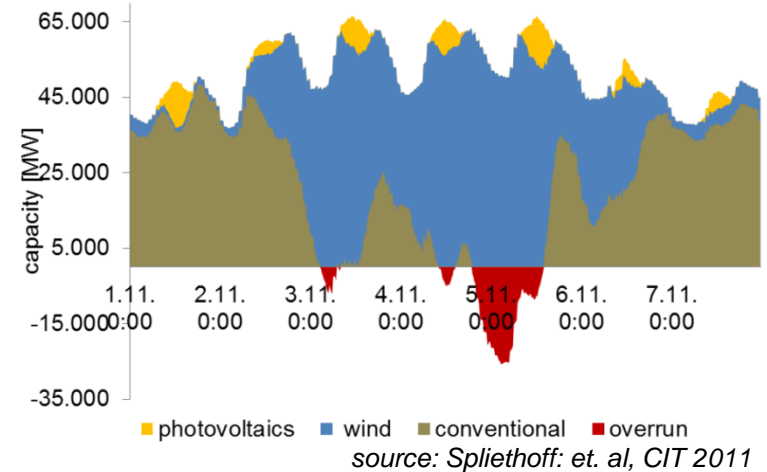
Tomorrows Load Requirements

Energy from Renewables has the „Right of Way“ in Grid

Scenario 2020



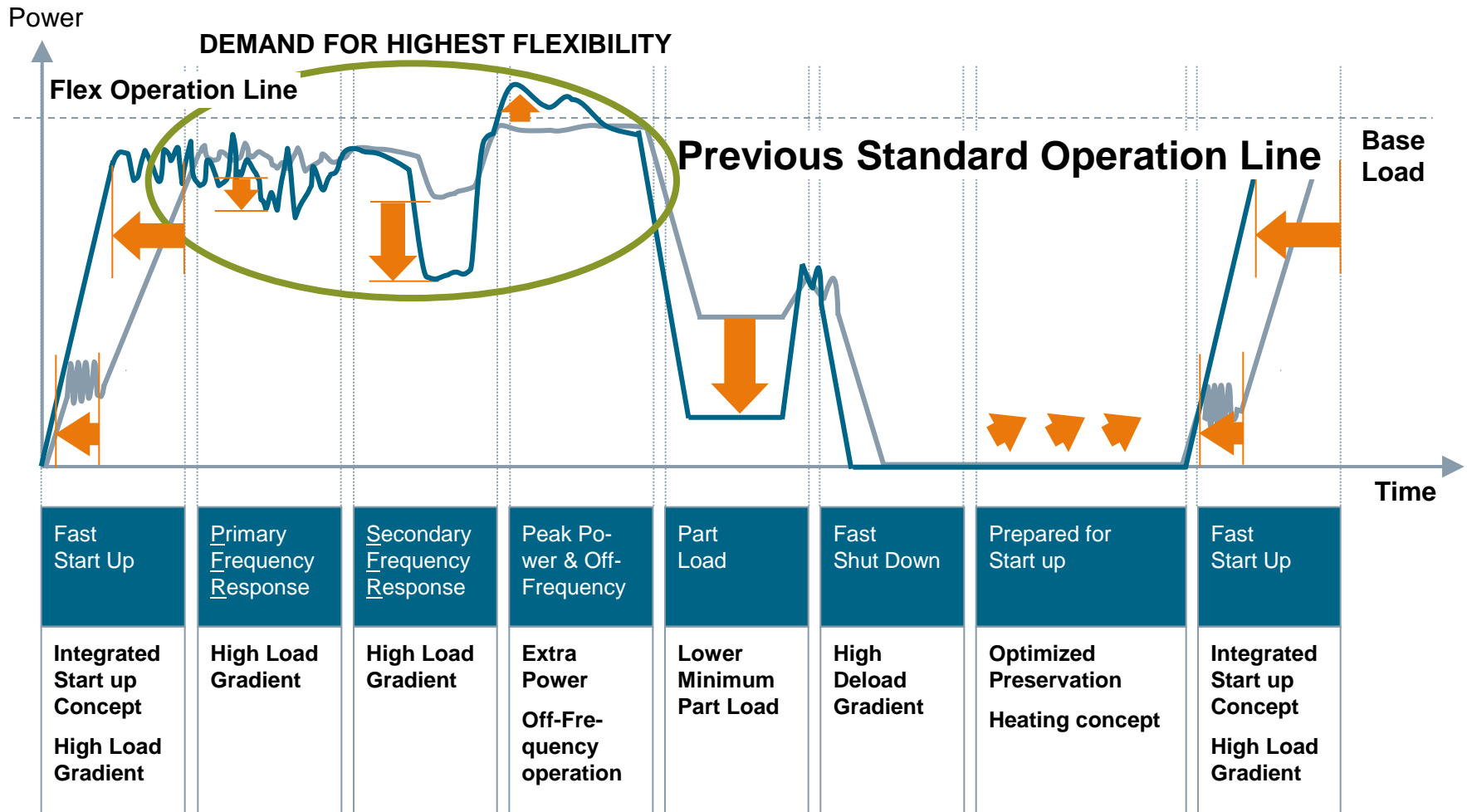
Tomorrow (Scenario 20XX)



	Lignite / Nuclear	Hard Coal	Gas
2011	Base Load	Intermediate Load	Intermediate Load
2020	Intermediate Load	Intermediate Load	Peak load
20XX	Intermediate Load	?	?

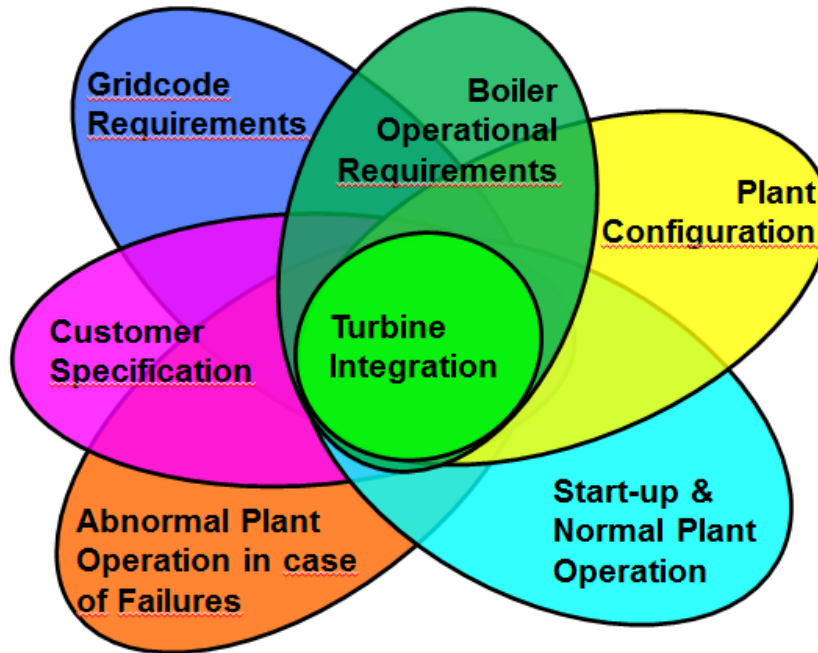
Feeding of renewable energy requires flexible fossil fired power plants

Volatile Renewable Energy Intensifies Requirements for Transient Operation



Overall Optimization of Steam Power Plant

Steam Turbine consolidated with Water Steam Cycle



- All of these mentioned Measure needs to be fully integrated in the Turbine & Plant Automation System
- only single point or Island Solution (e.g. Throttling) will not serve the future plant operator, customer and Grid demands

→ Provision of advice and support by OEM in regards to optimization of turbine integration mandatory

→ Improvements for new Plants and during service of power plants

→ Coal based power plants with Higher efficiency and cleaner power production

Contact

Dipl. Ing. Frederik Schruefer

Sales Project Director
Large Steam South Asia

PG S EPC LSP

Freyeslebenstr. 1

91056 Erlangen

Germany

Phone: +49 (9131) 7-48167

Mobile: +49 172 1496071

E-mail:

frederik.schruefer@siemens.com