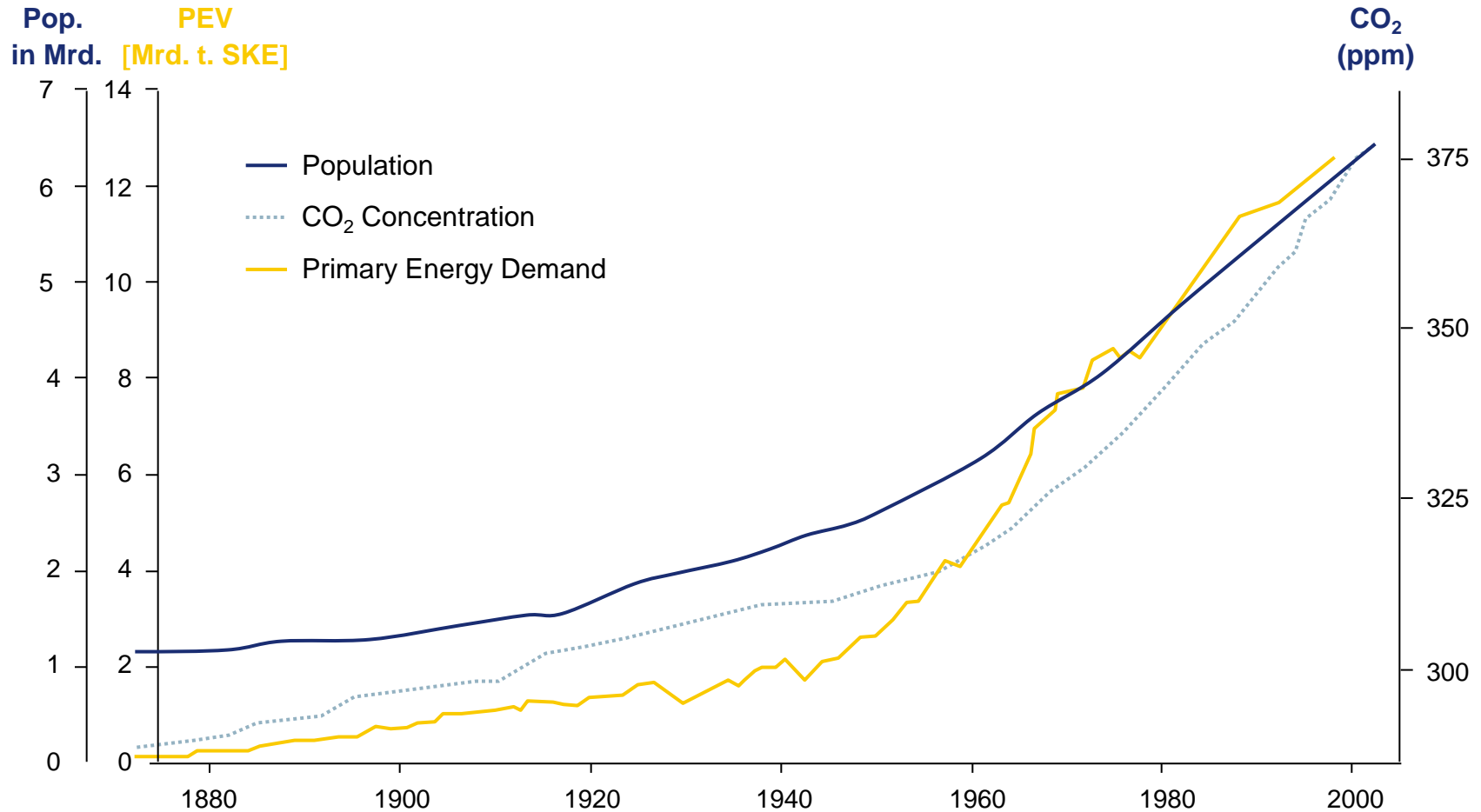


The Electricity Grid of the Future: Smart Grids

EUFORES, May 3rd 2011, Brussels
Dr. Werner Brinker, CEO, EWE AG

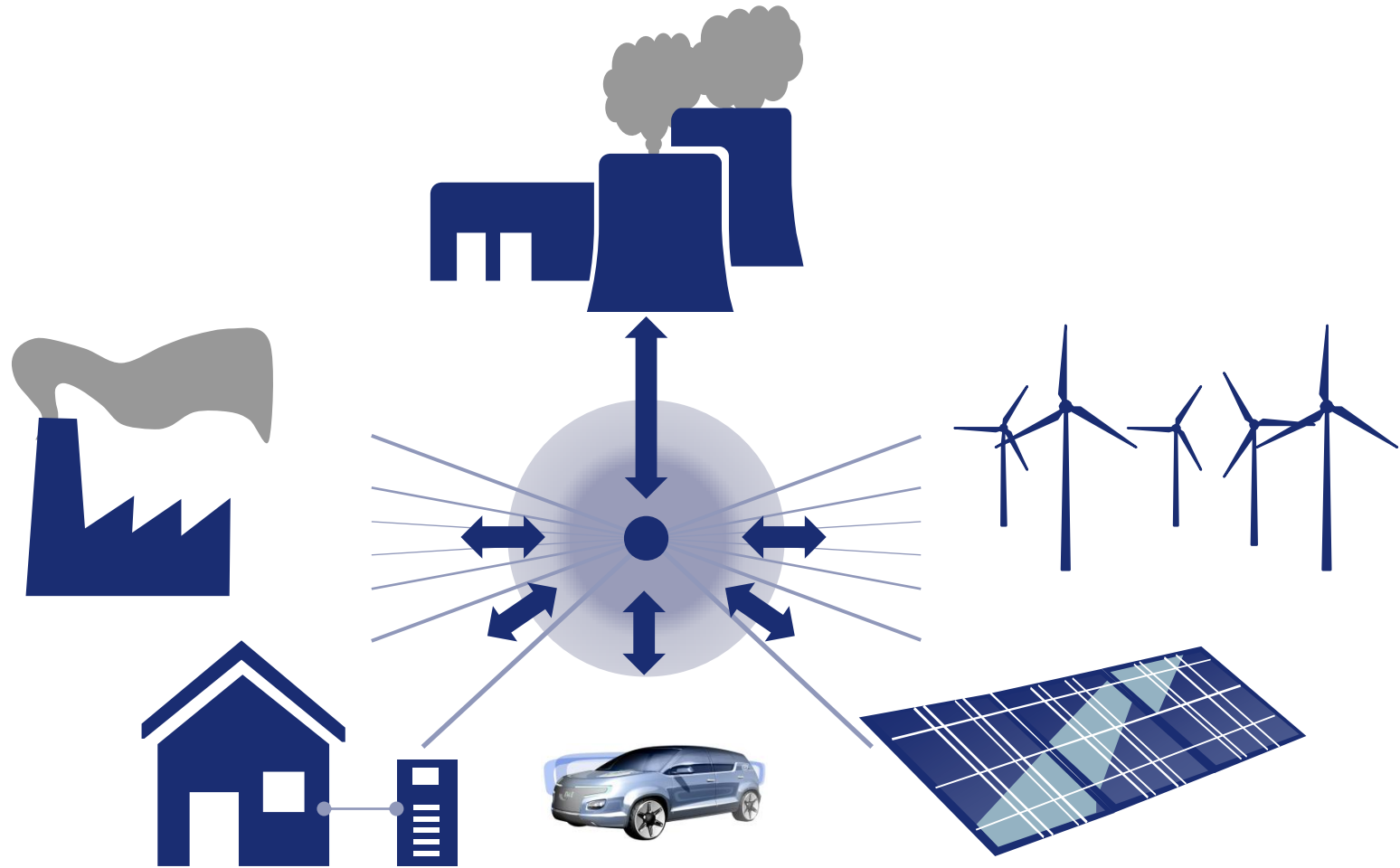


A growing world population and increasing CO₂-emissions have since 1989 led to a new way of thinking



Source: IPCC, 4th Report, 2007

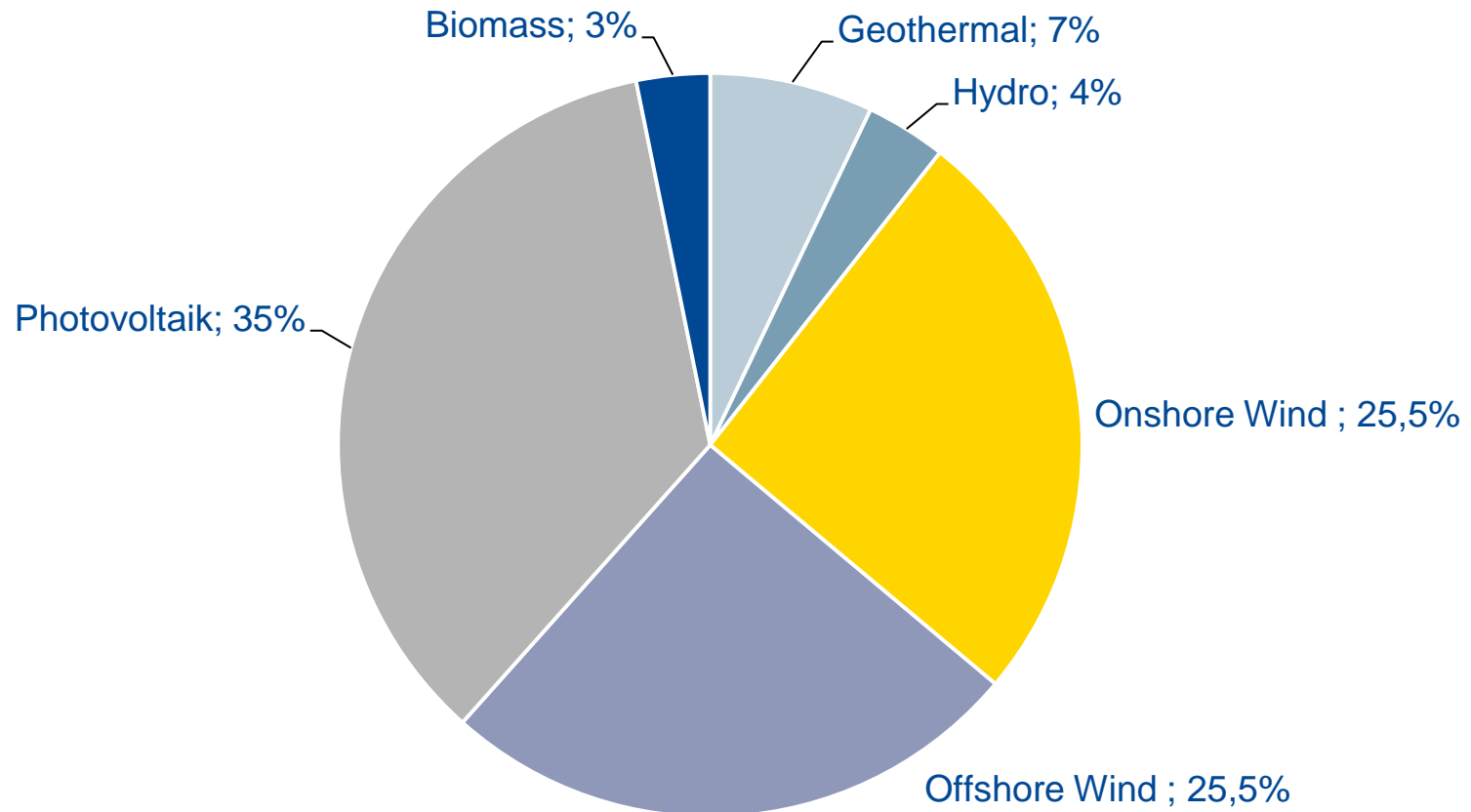
In the future, electricity production will be characterised by a decentralised structure



Is it possible to have 100% electricity production from renewable energies by 2050?



Predicted distribution of the energy sources with regards to the net- electricity production in Germany in the year 2050;
Scenario „100% Renewable Energy“



Source: UBA/Fraunhofer, 2006.

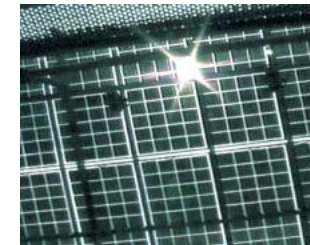
Each technology affects different voltage levels



Offshore Wind-Energy



Onshore Wind-Energy



Photovoltaik



Mikro CHP/Fuel Cell



Electric car

High voltage

up to 380 KV

Middle voltage

up to 110 KV

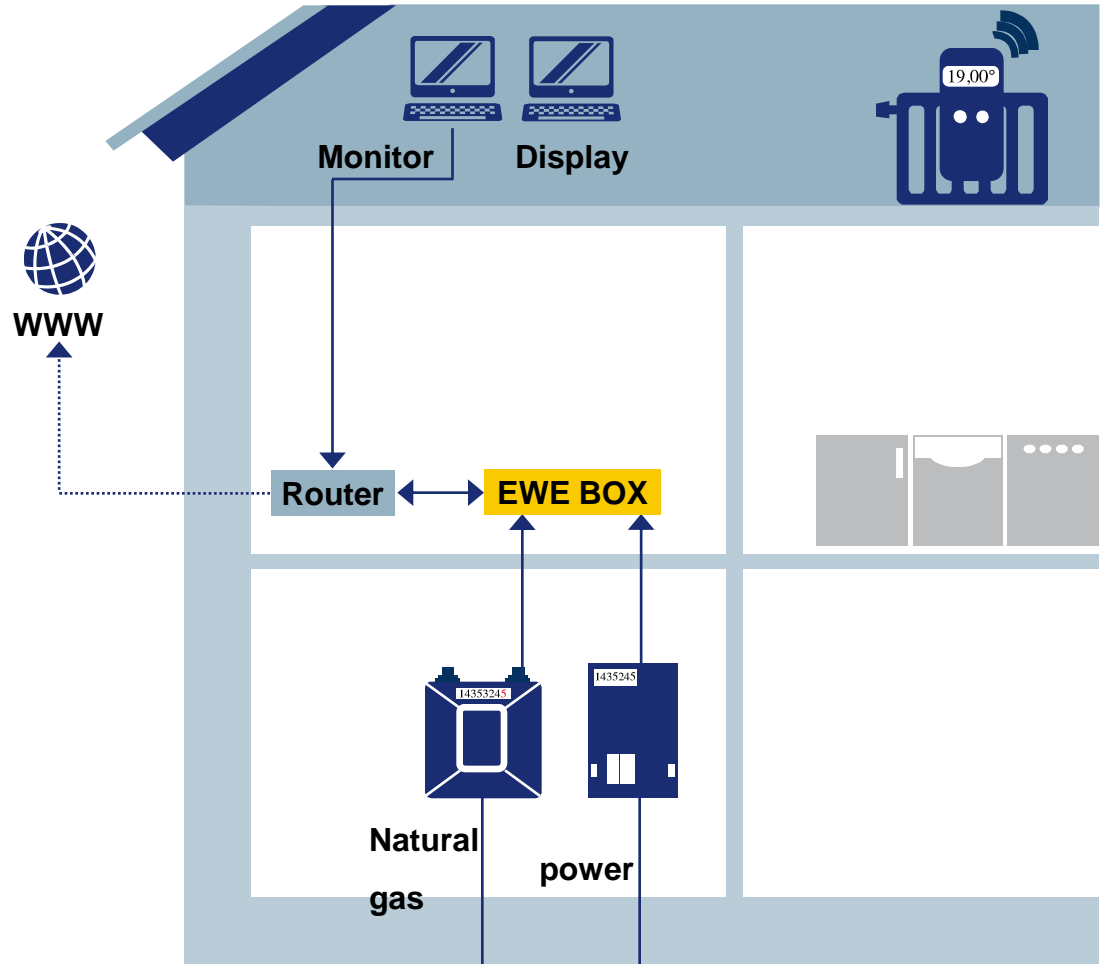
Low voltage

up to 10 KV

Transformer
Stations

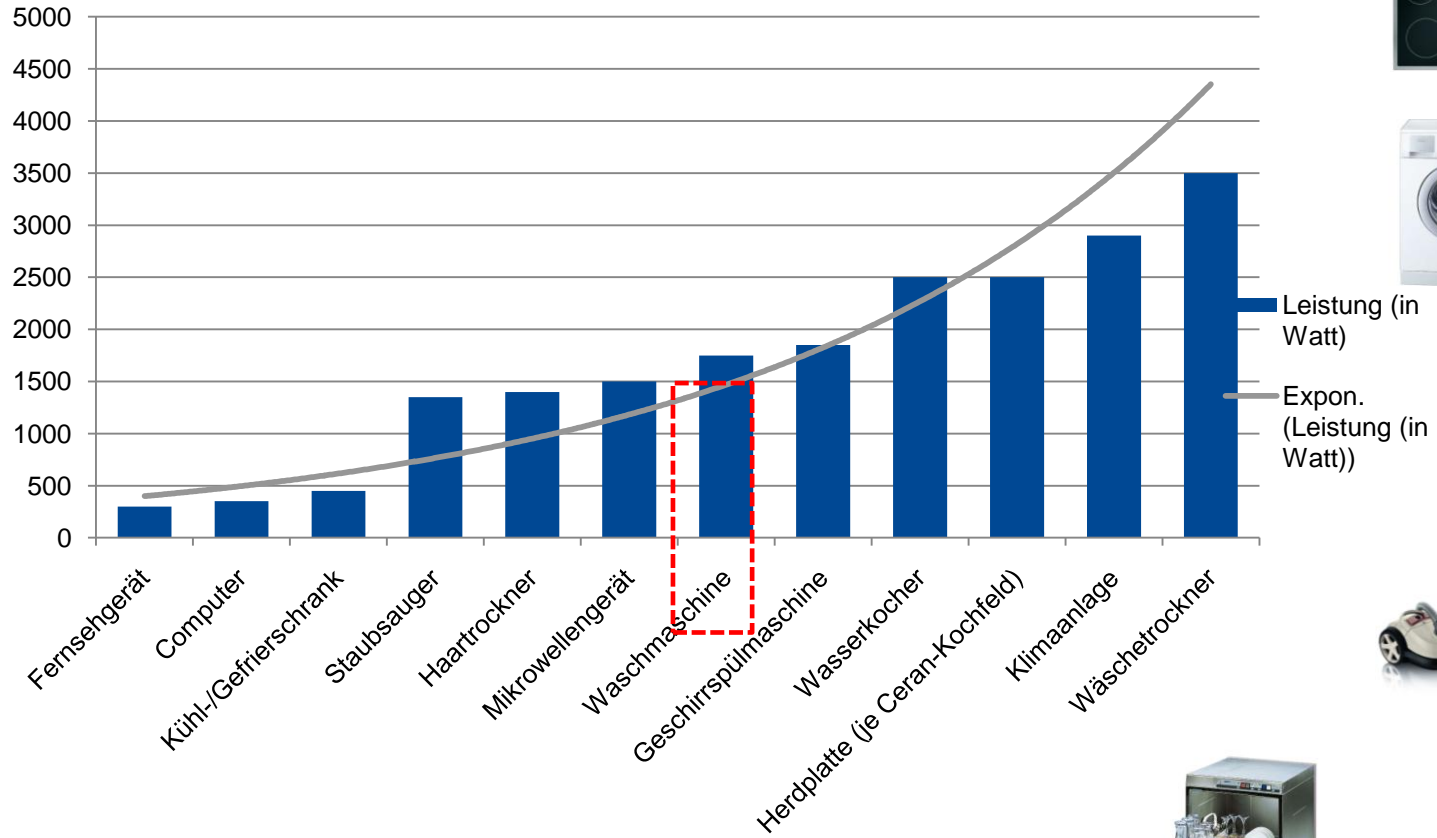
Transformer
Stations

Households will be able to participate in such a system with the help of our EWE trio smartbox

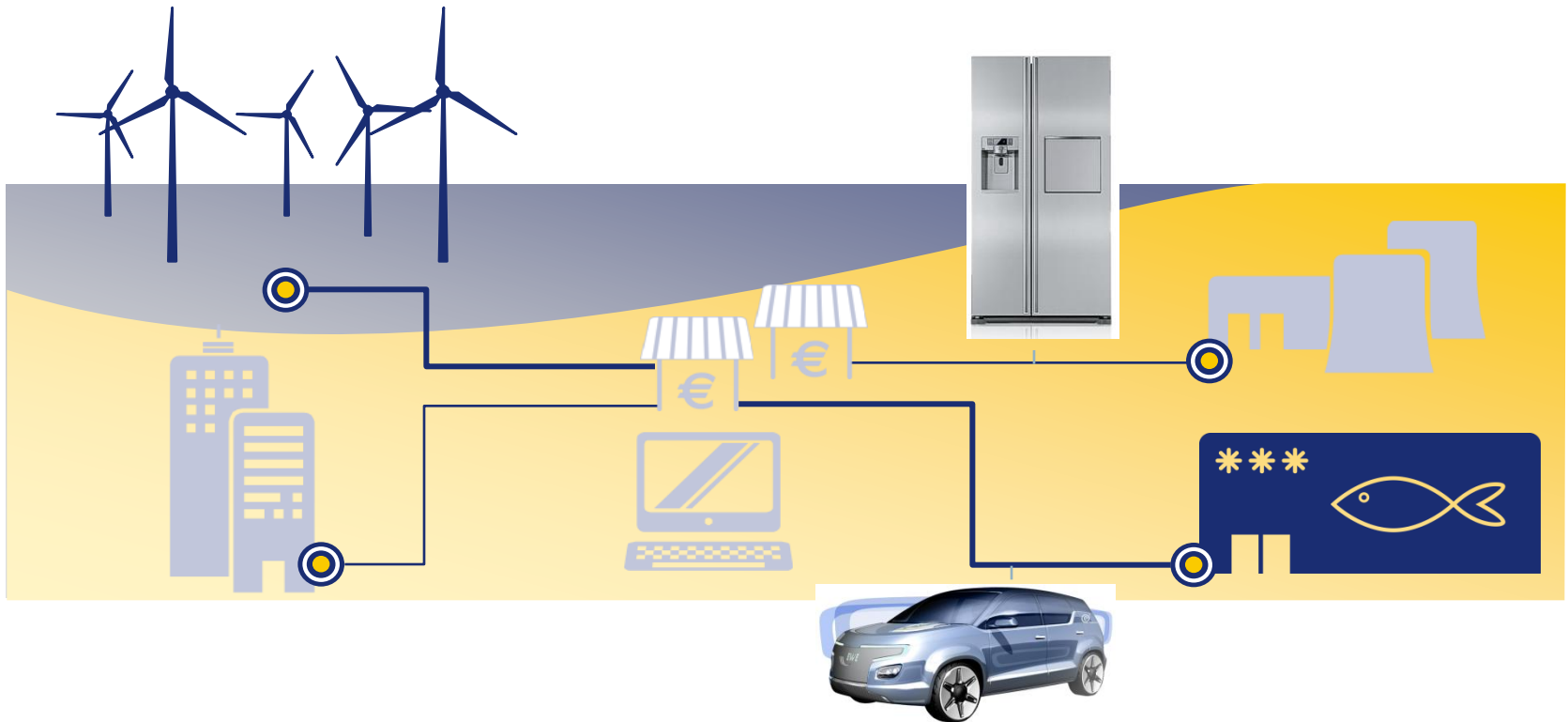


Therefore we need smart appliances for households

Output (Watt)

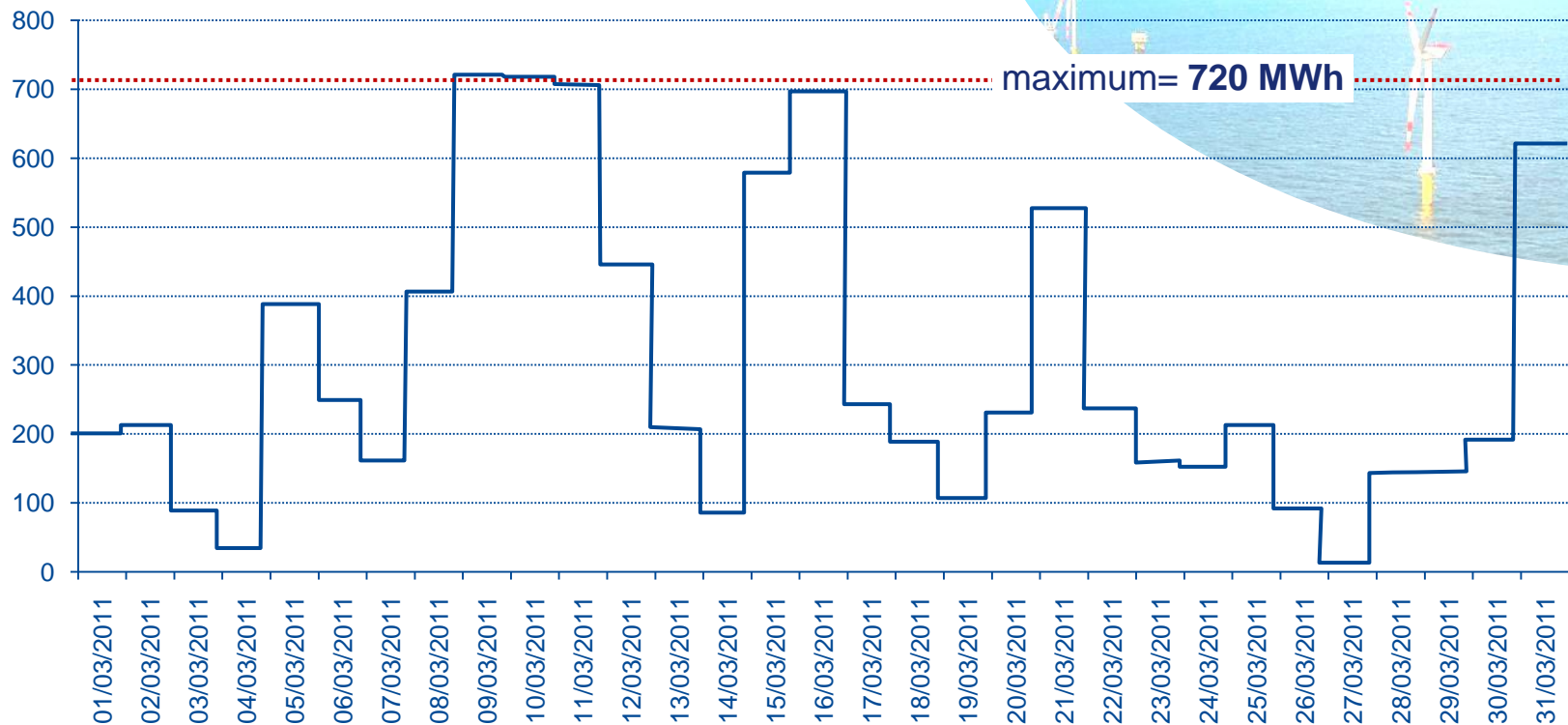


Such an intelligent energy system is being tested in Cuxhaven: project eTelligence



High volumes of wind energy come with technical challenges to the high voltage grids

Daily production in MWh; AV1 – AV6



➤ Daily production of alpha ventus for the period of 01.03. until 31.03.2011 – REpower

Trading happens according to the following process steps

1. Step: Prices at EEX Spotmarkt



2. Step: Setting (buy/sell) Bids.



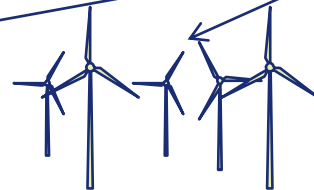
3. Step: Market agencies make bids transparent



4. Step: Optimization



marginal costs



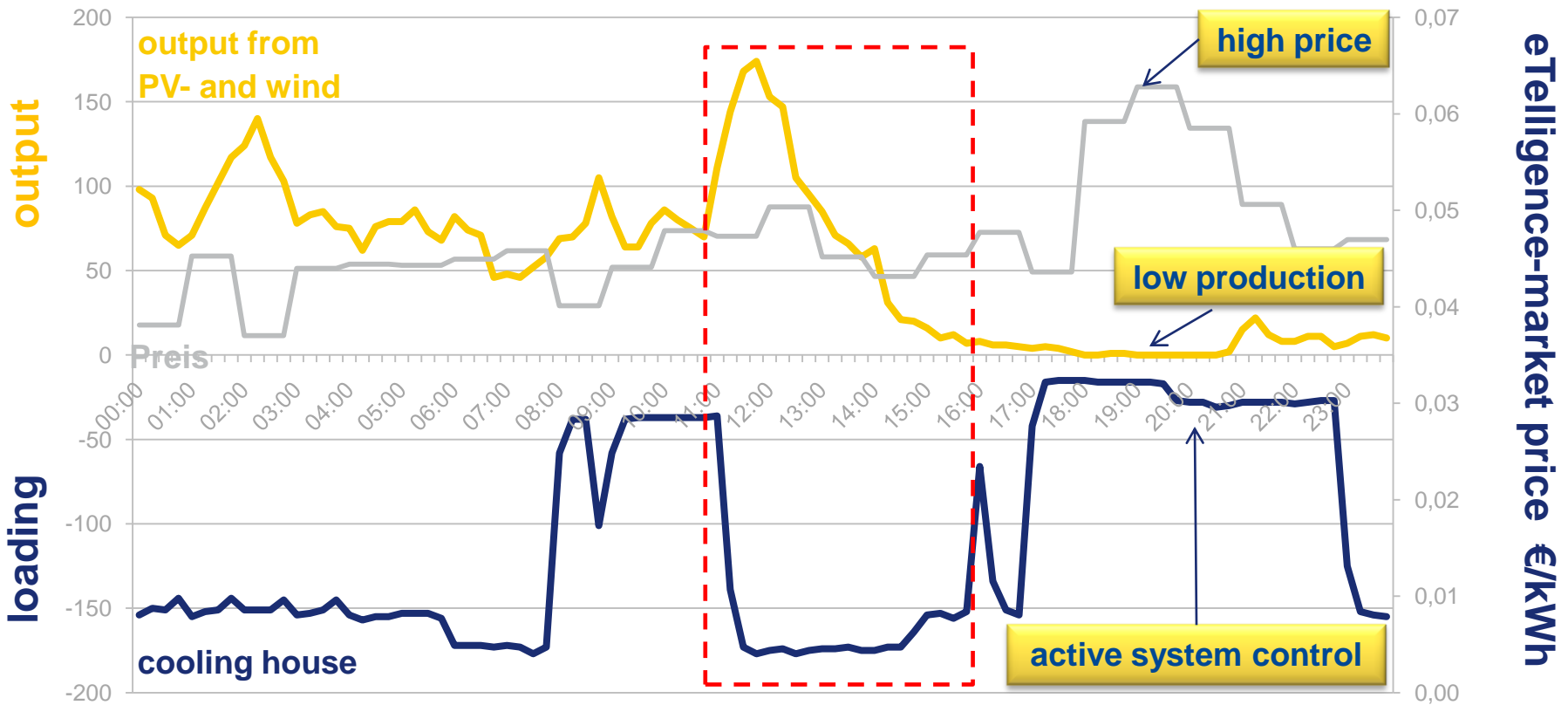
Globaleinst.- Prognosis

Wind-Prognosis

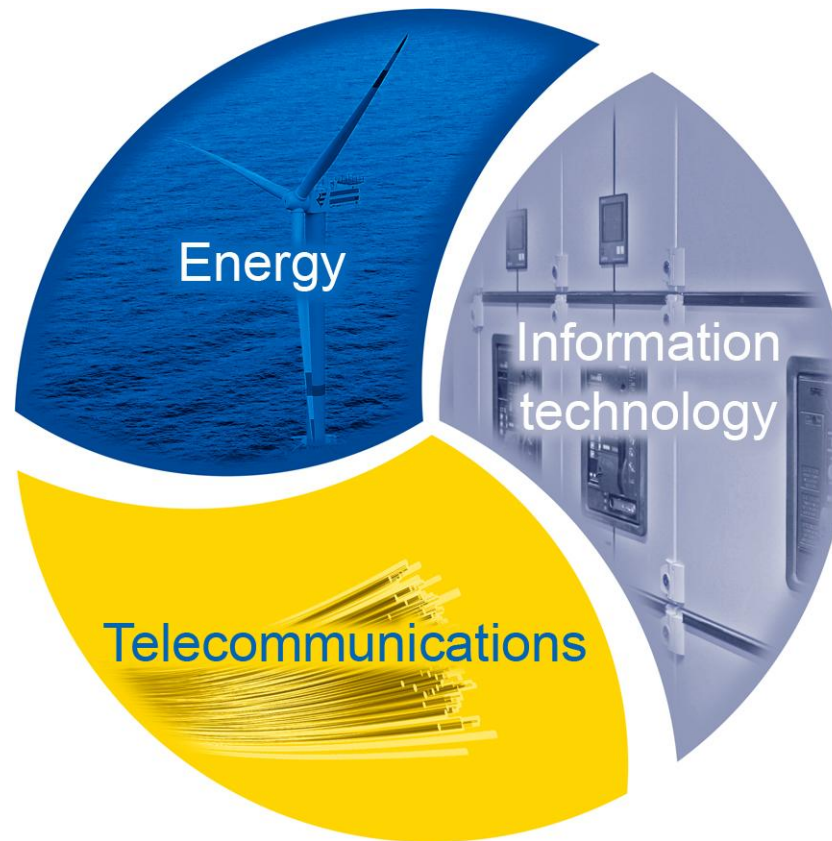
A cooling house will use power in times of high wind and low prices



active management of market players, 13. march



The challenges on the low voltage level can only be met and solved by IT and Telecommunications



Thank you for your attention

