POMS: Managementsystem für dezentrale Erzeuger und Lasten im Niederspannungsnetz
Managementsystem for distributed Generation and Loads in Low Voltags Grids

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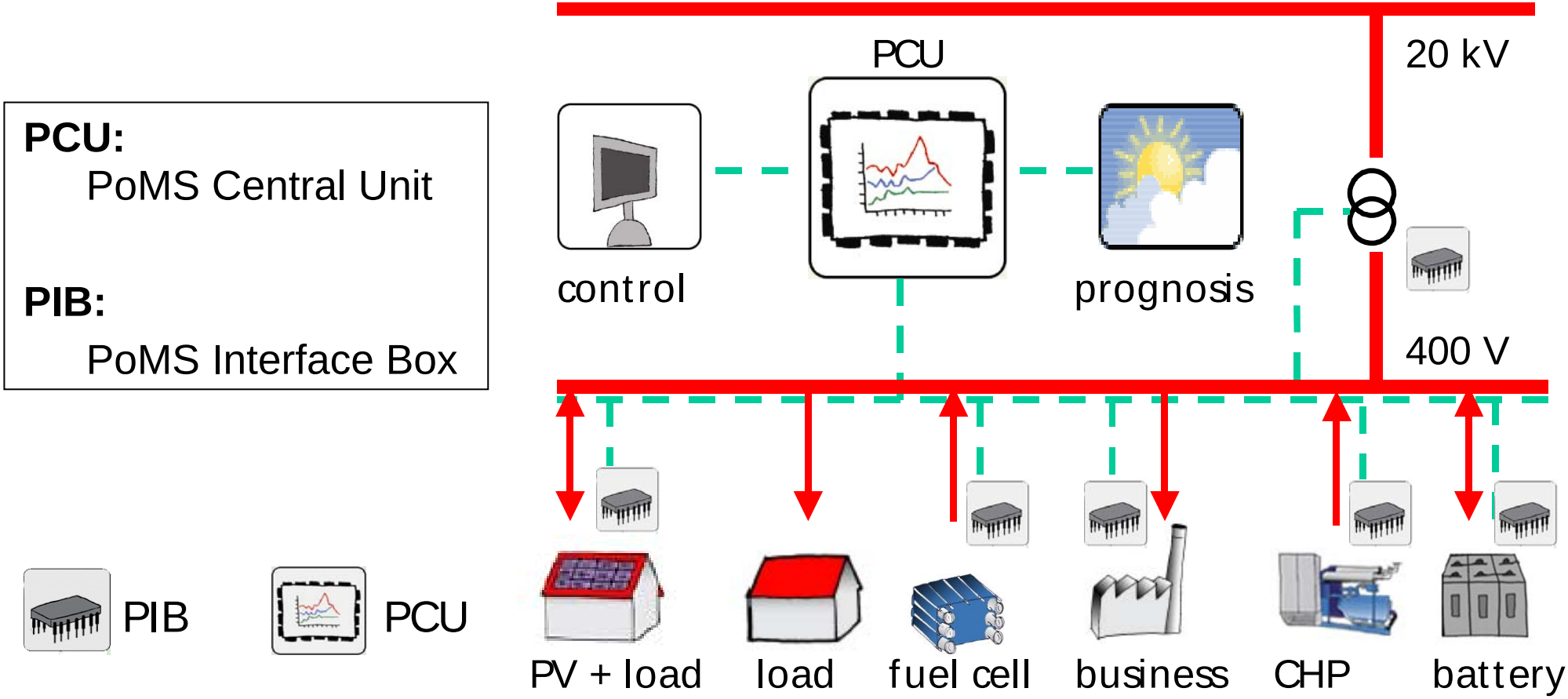
Management system for LV grids - Functional Principle

PCU:
PoMS Central Unit

PIB:
PoMS Interface Box



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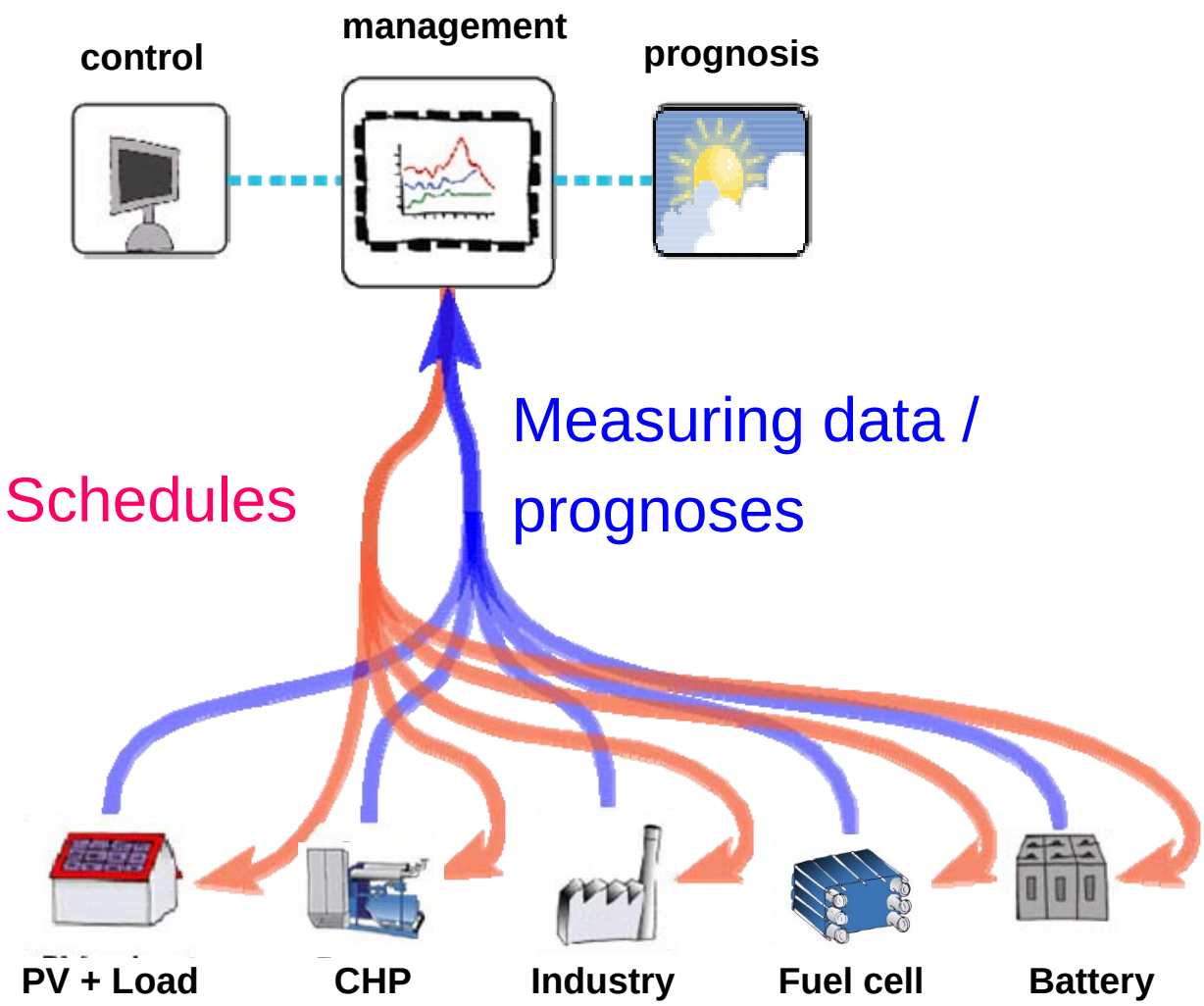
Regular mode

- PIBs send measuring data and prognoses to PCU
- PCU generates schedules for opti-mized operation
- PCU distributes schedules to PIBs, e.g. load tariffs



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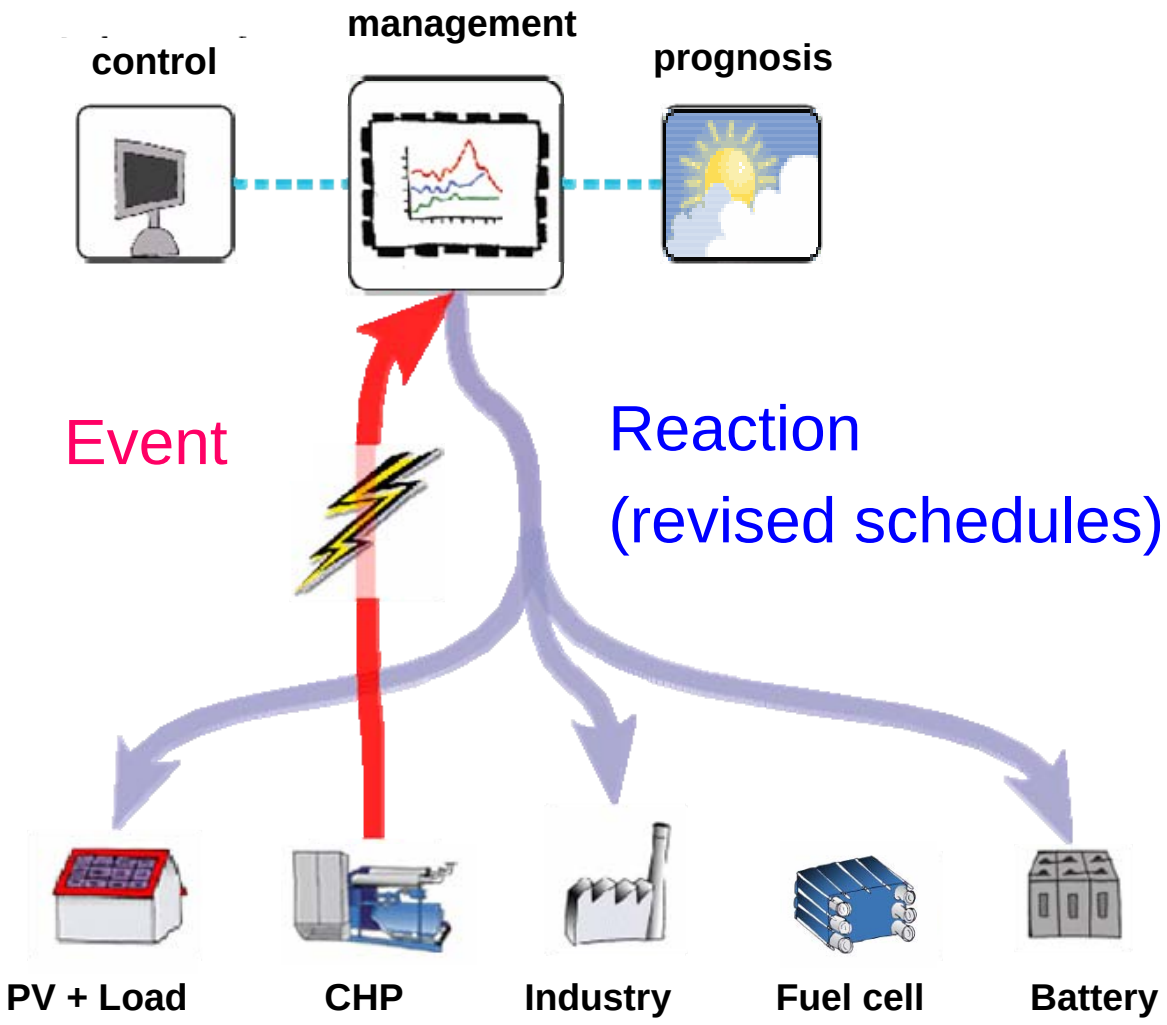
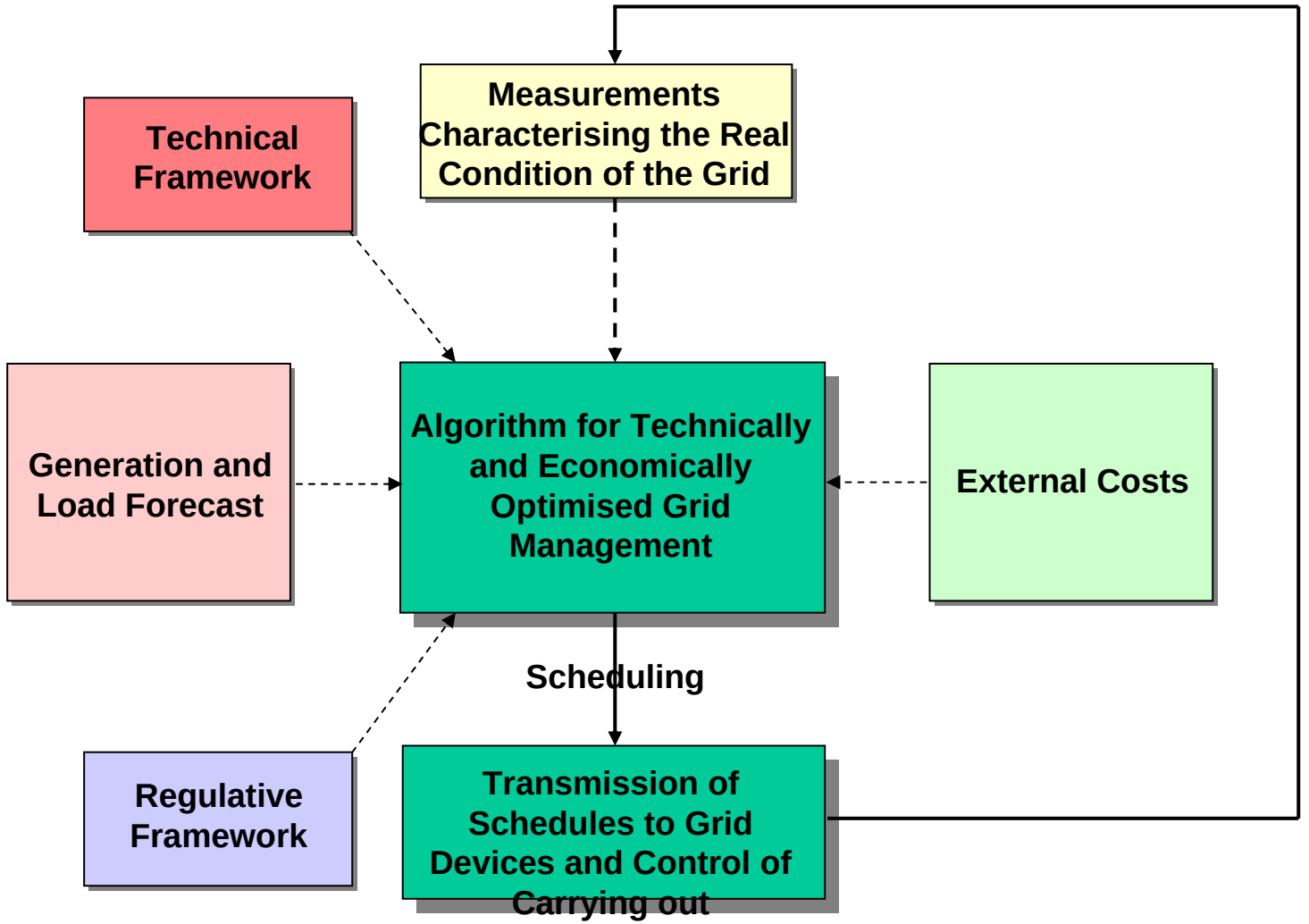
Exception mode

- Some device reports unforeseen event, load or PV-generation
- PCU generates correction strategy
- PCU distributes corrected schedules and tariffs



Management system for LV grids - logical principle



Separate Control Loop: Power Quality Control

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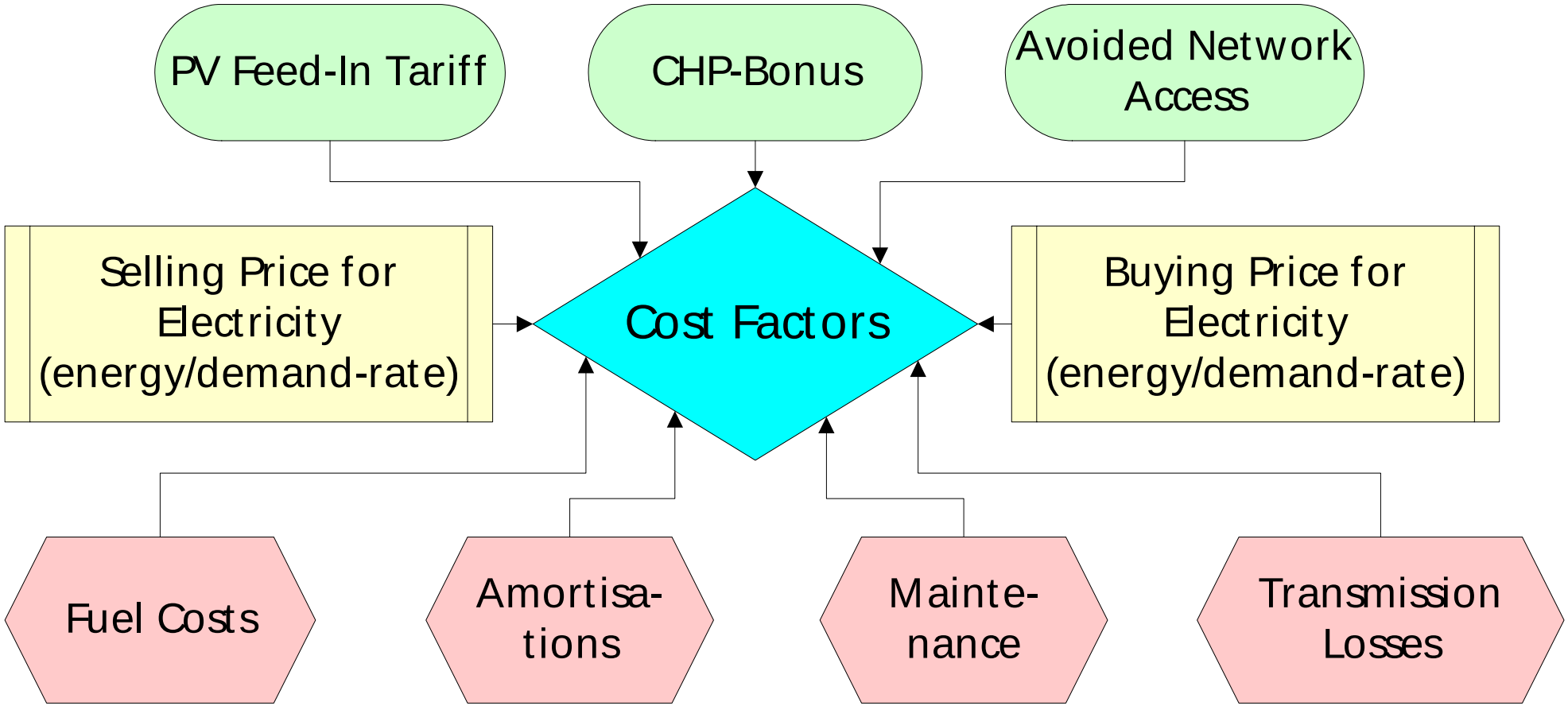
Cost situation in detail



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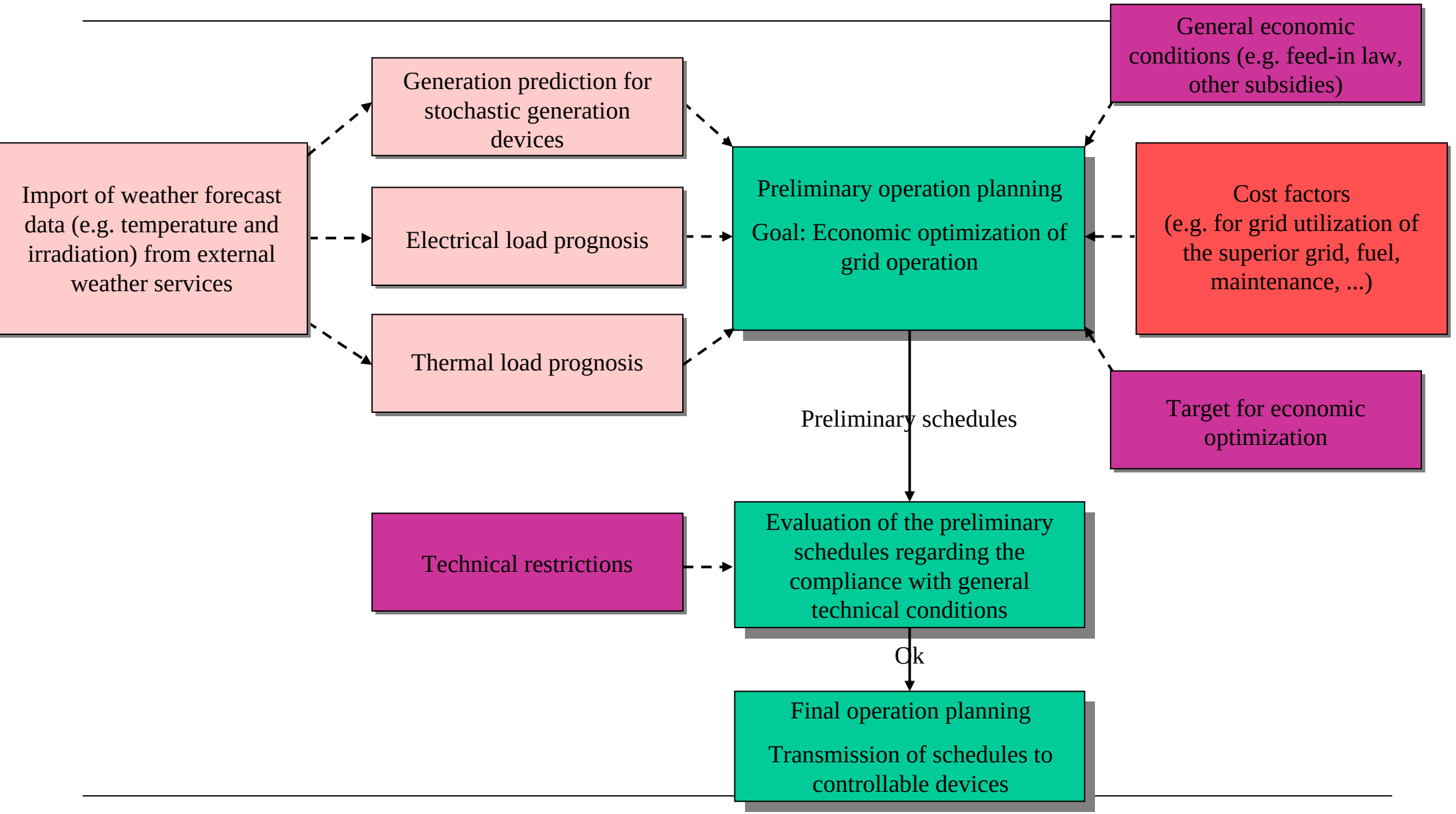

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Compensation of prognoses uncertainties by using an „Intraday-Control“

Measuring data on the current situation of the grid and the components

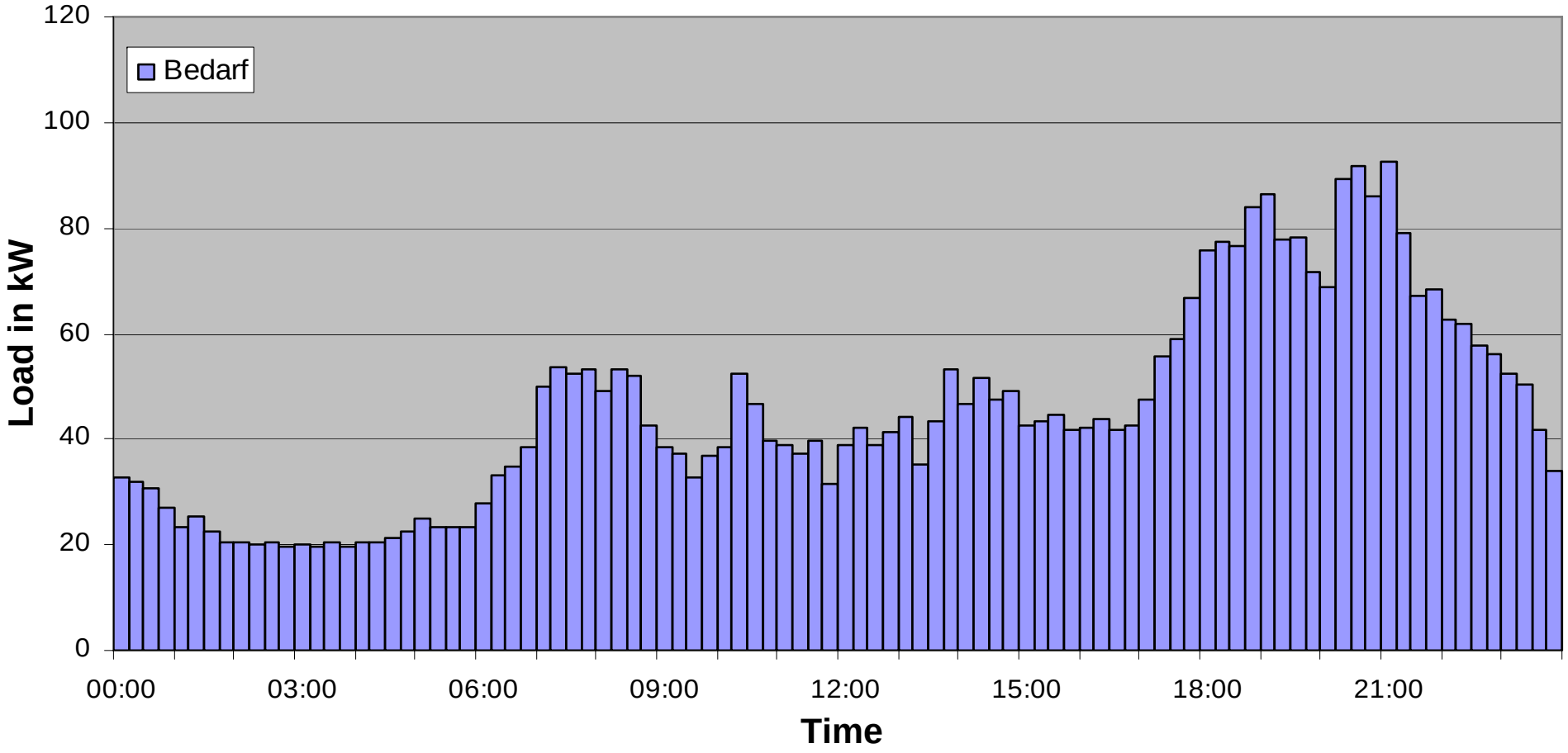
Algorithm for improving the voltage quality in the electricity grid

Economic analysis and optimisation of testsite operation

Most important goals:

- Active and Passive Peak-Shaving (Battery and Load Management with dynamic Tariffs)
- Minimisation of HT-supply
- Minimisation of reverse feeding

Typical daily load profile in „Am Steinweg“ (20.01.2003)



Source: MVV Energie: measurement data of load demand and CHP and PV-feeding in 2003

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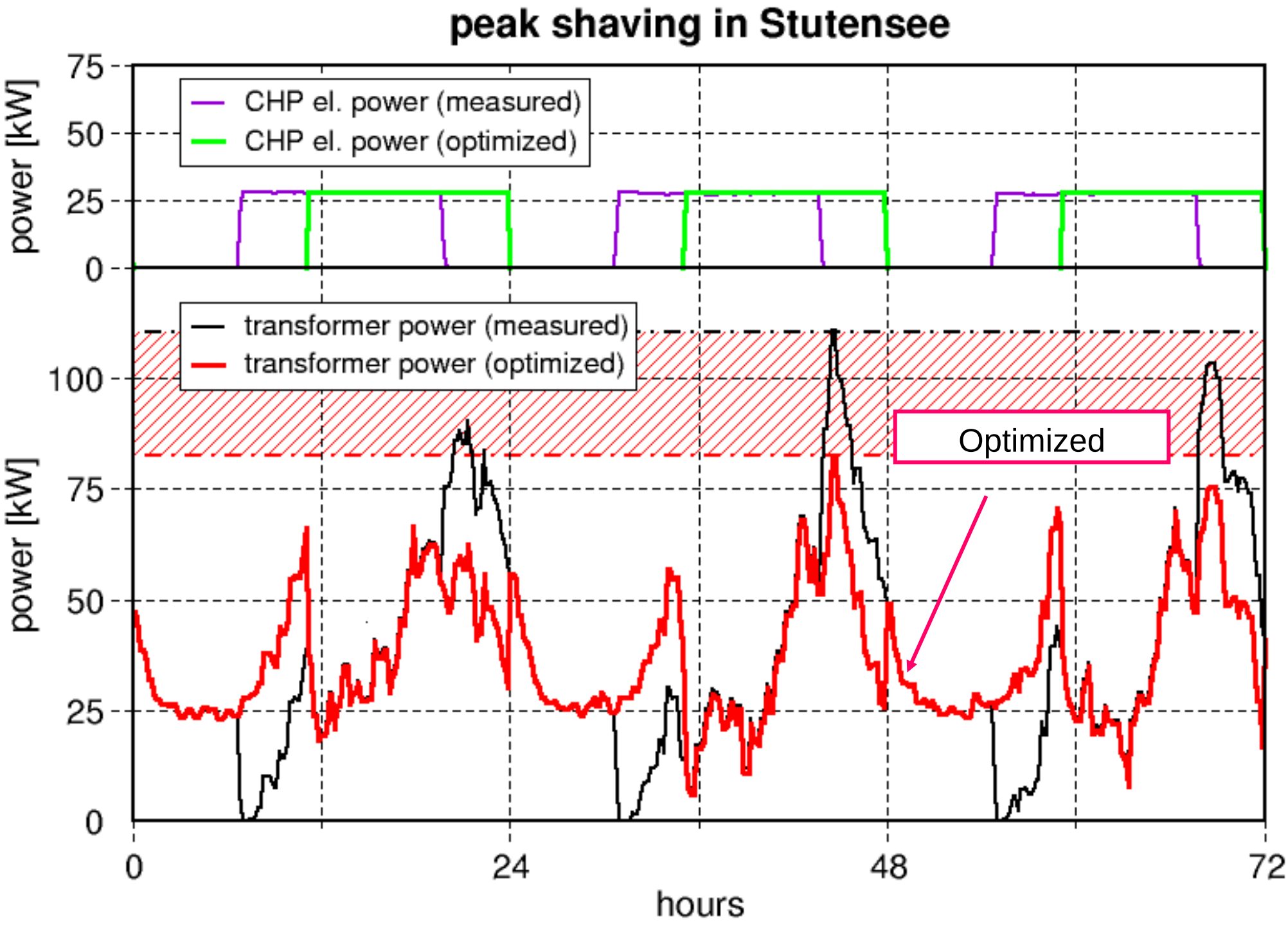
peak shaving in Stutensee
power [kW]
75
50
25
0
CHP el. power (measured)
CHP el. power (optimized)
transformer power (measured)
transformer power (optimized)
100
75
50
25
0
power [kW]
Optimized
0
24
48
72
hours

»PoMS« - Hardware, Networking

Central PCU (POMS Central Unit) :
Industrial-PC

Local PIBs (POMS Interface Boxes) :

„Embedded Systems“ with operation system and network capability

PIB – Exterior View

PIB – Interior View

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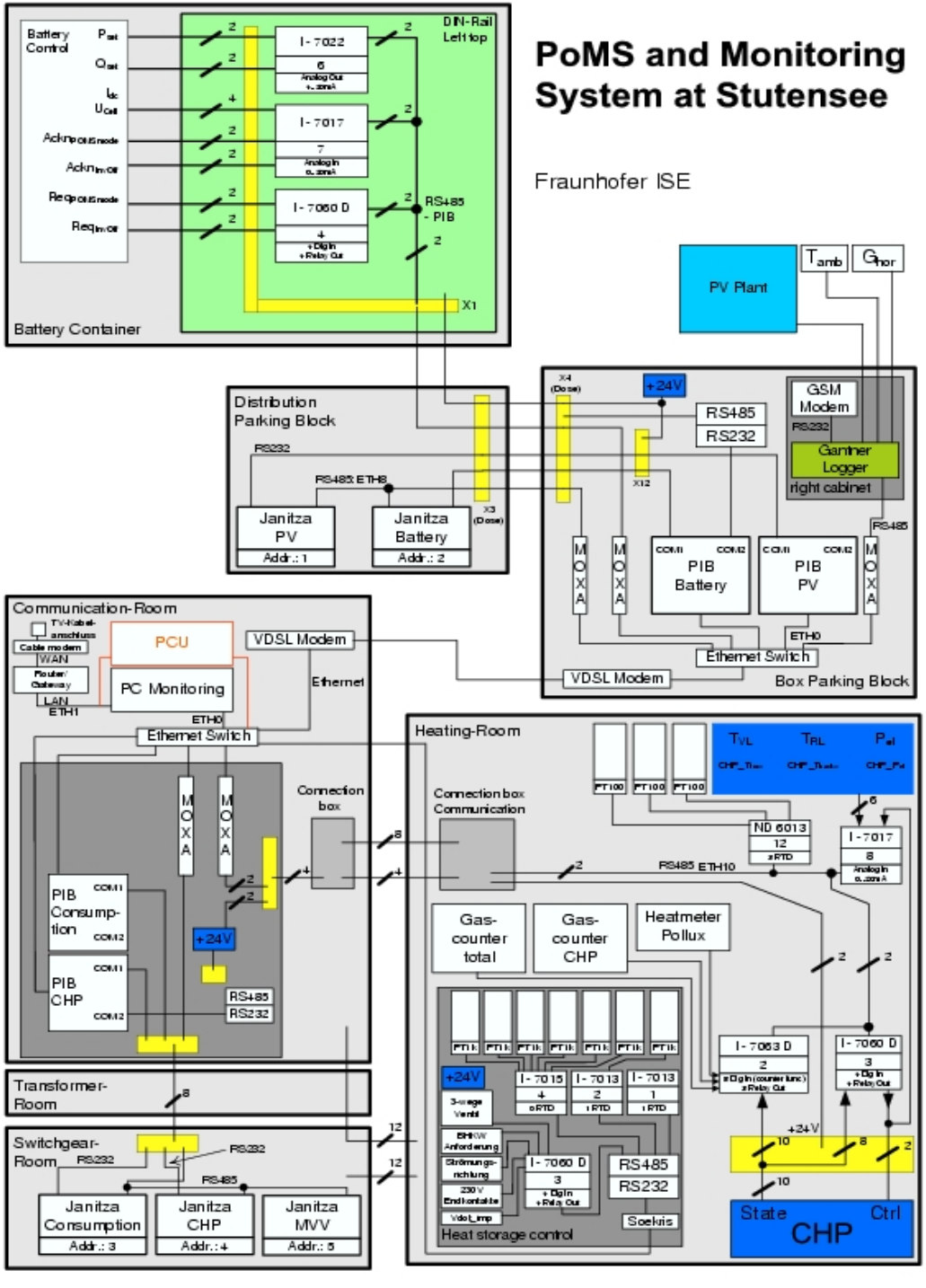
POMS Communication Plan

- IP based infrastructure, VDSL Modem, ComServers
- Janitza RS485 power measurement
- ICP IO Devices based on RS485
- PIB-devices Embedded Linux Devices
- UARTS control systems
- Gateway to Mbus (Heat Metering) and EIB (Multi-Tariff-System) possible



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MVV Energie: CoGen Unit with Heat Storage Device

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Load coverage [kW]
POMS Operation
at Testsite “Am Steinweg”
CHP
CHP+PV
CHP+PV+BAT
LOAD
TRAFO
120
110
100
90
80
70
60
50
40
30
20
10
0
−10
−20

Features and Options of PoMS

- networked operation system (PCU and PIB), IP based and scalable communication
- power flow, power quality and load management
- real time optimization: economic and ecologic aspects
- load and generation prognosis
- load management by active signal
- remote administration, web visualization

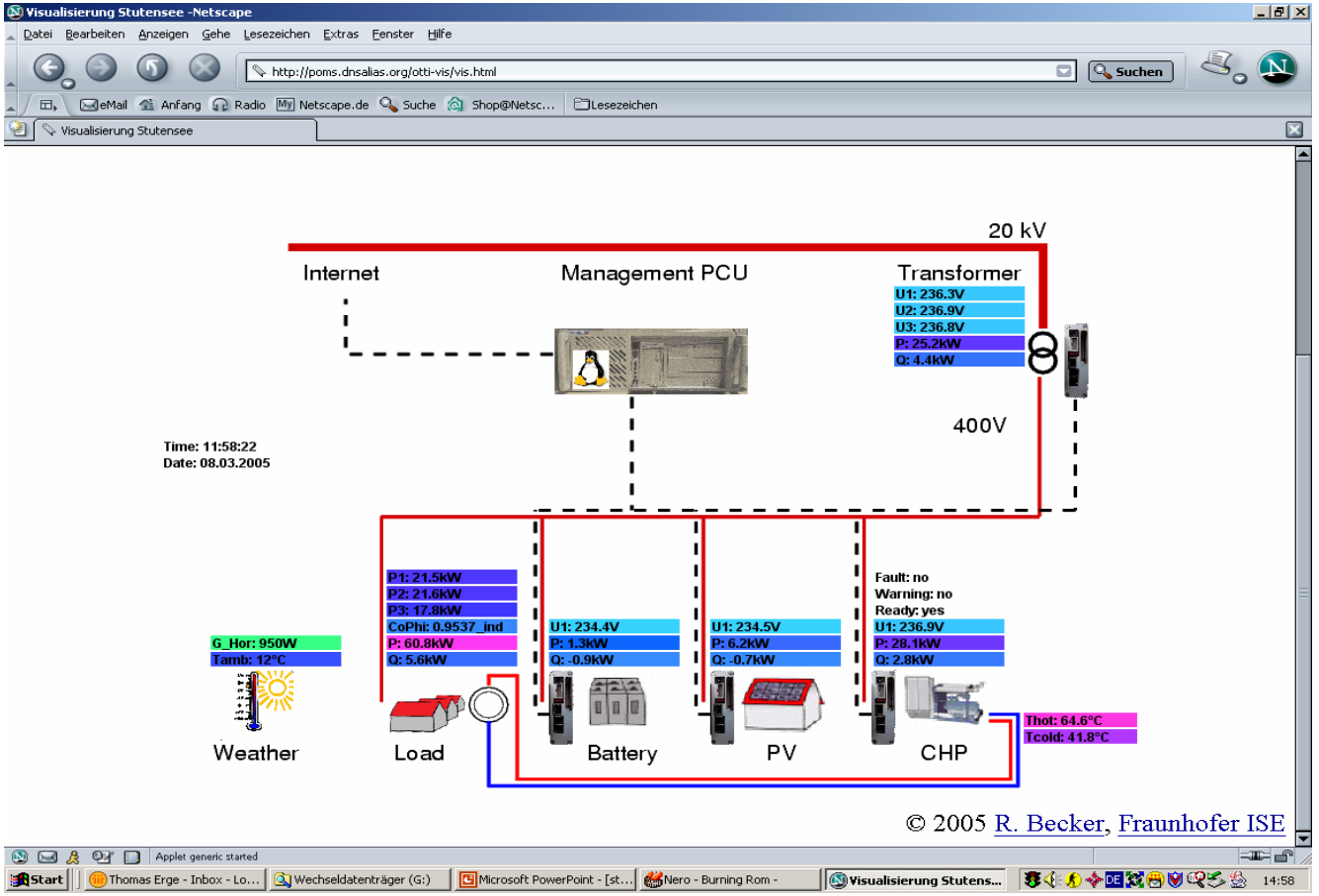
Features and Options of PoMS

- flexible integration of standard communication protocols
- PQ recording, integrated monitoring, event messages
- local optimization procedures: heat and power management with thermal storage devices
- Local dynamic tariff generation with communication to metering systems

MVV Energie “Am Steinweg”: POMS-Visualisation of Operation

- *Internet based system (JAVA)*

- *Autonomous control function and network integration*



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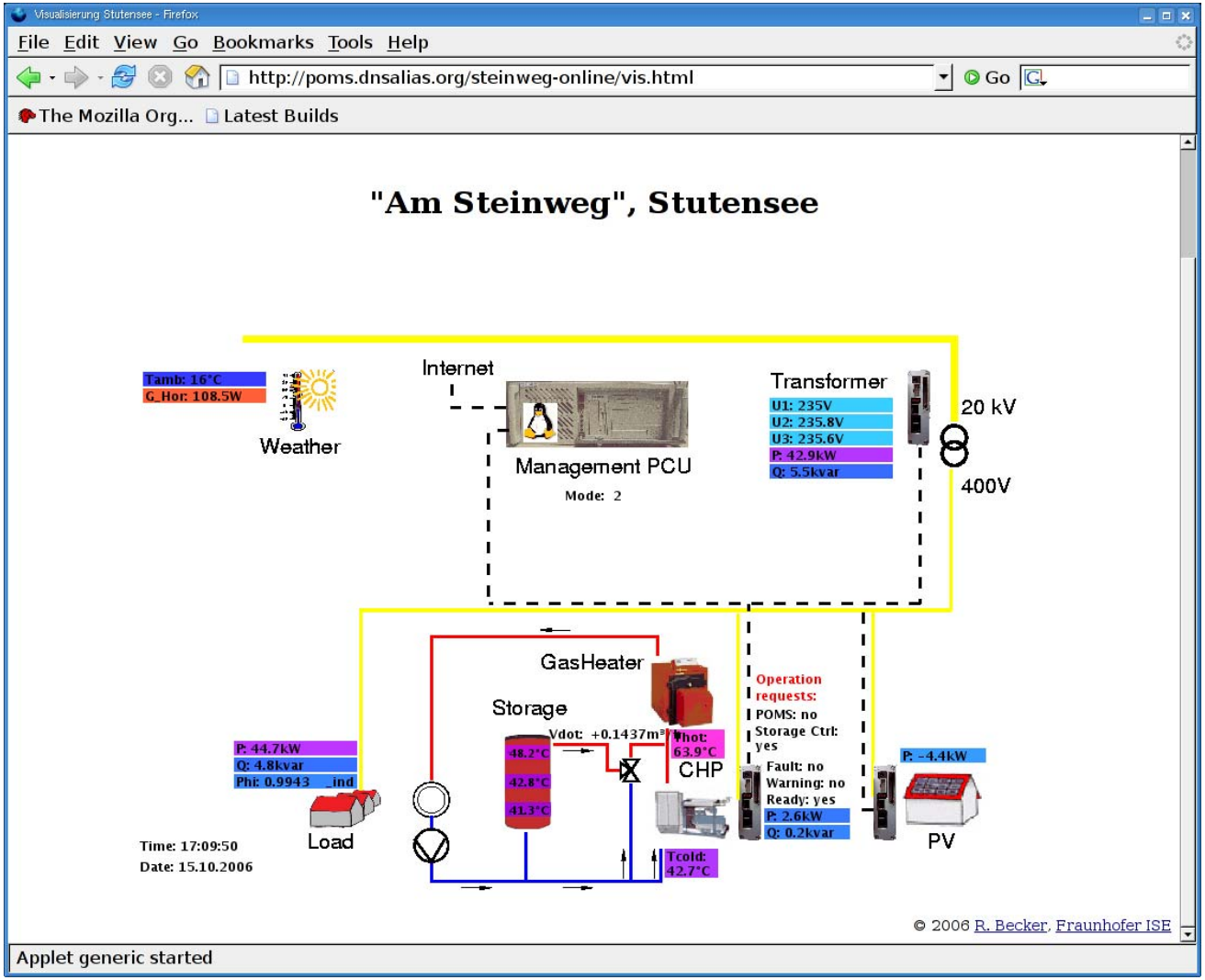
Thermal Capacity

- *Integration of Thermal Capacity*

- *Thermo-electric Optimization of CoGen Plants*



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Thank you for your interest!

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