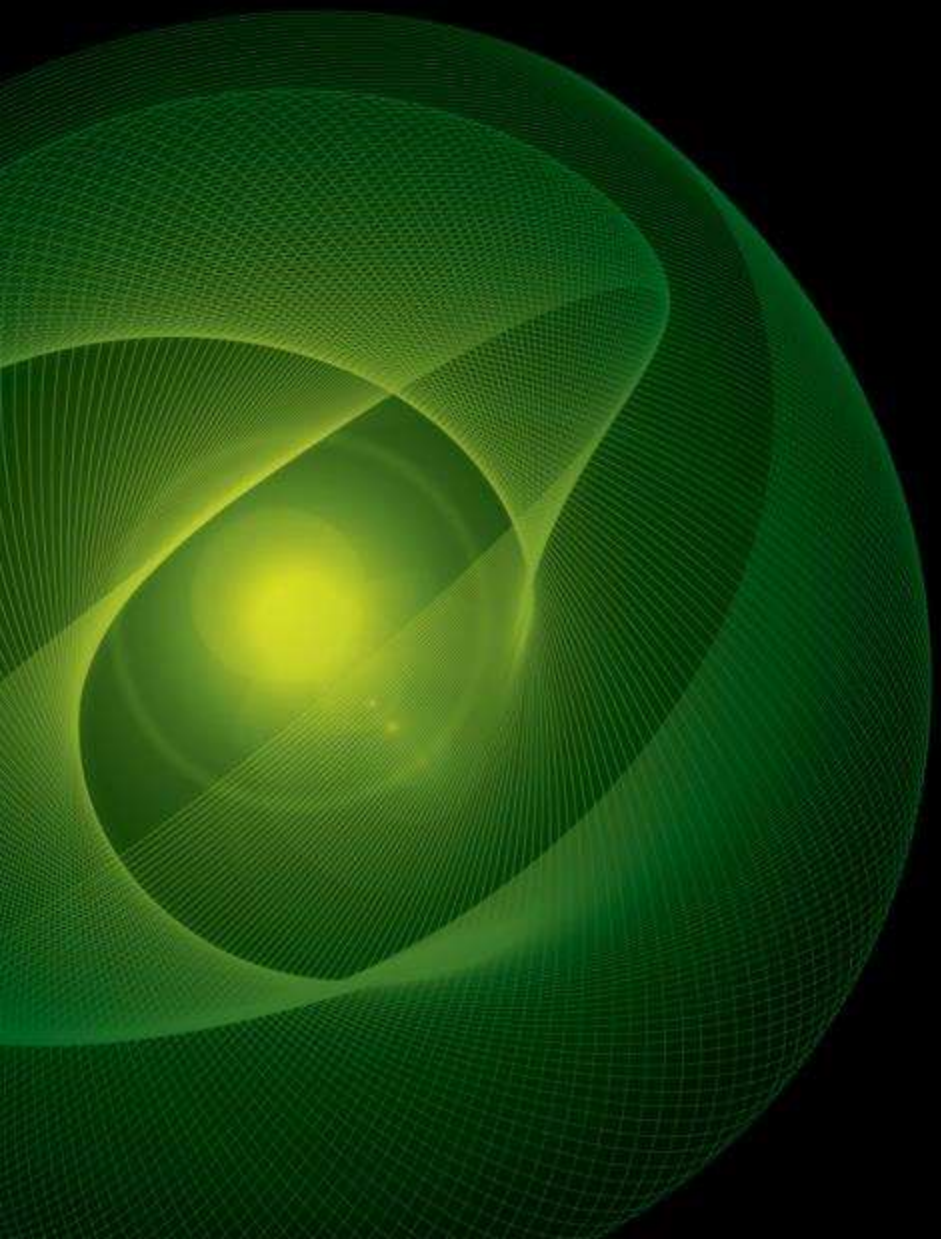


Intelligent Power Conversion for smarter distributed
- storage
- generation
- consumption

of energy

Ole Jakob Sørdalen

@ Smartgridkonferansen, Trondheim, 10.09.2013

ELTEK: A TECHNOLOGY LEADER

- 100% focus on power electronics
- Strong R&D with more than 100 dedicated power specialists
- First to launch commercial High Efficiency rectifiers

A GREEN REVOLUTION IN DC PO

ELTEK always on

WHAT IS POWER CONVERSION?

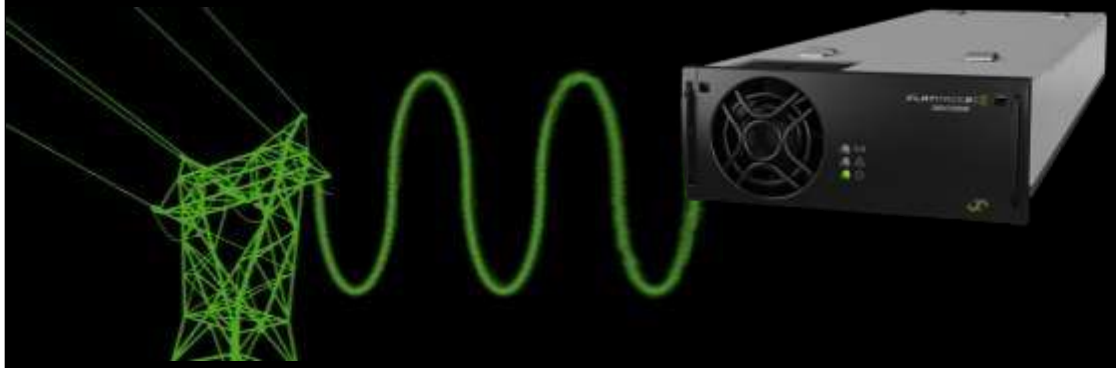
Power conversion equipment

- Mains
- Solar panels
- Batteries
- Unstable DC sources…

- Critical electronic equipment
- Batteries
- Mains

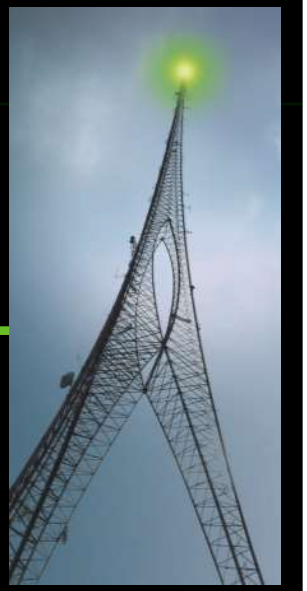
- AC → DC (rectifiers)
- DC → AC (inverters)
- DC → DC (converters)

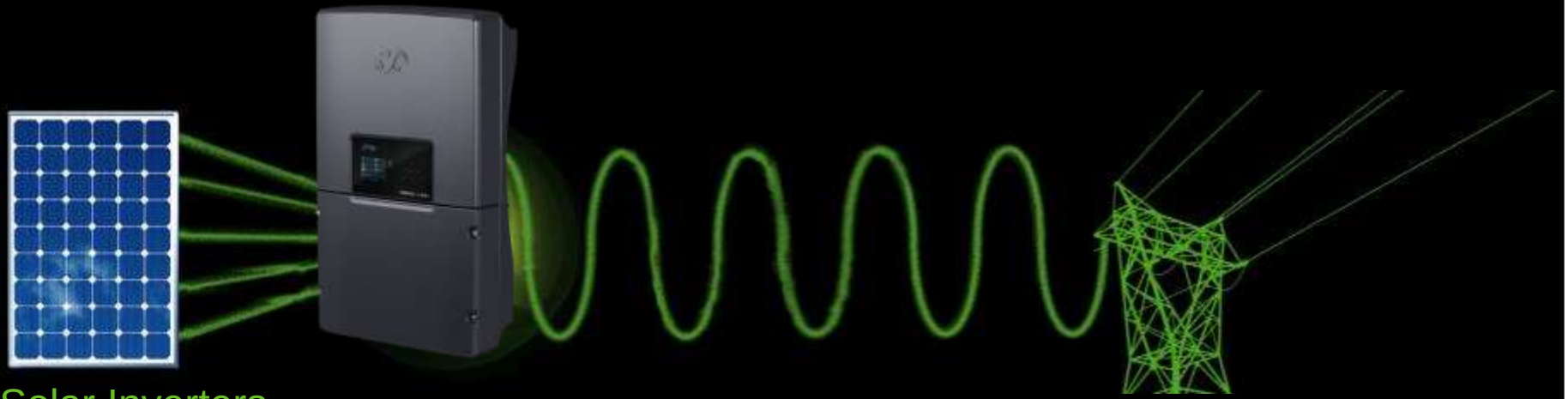
POWER CONVERSION EXAMPLES



Telecom

Battery

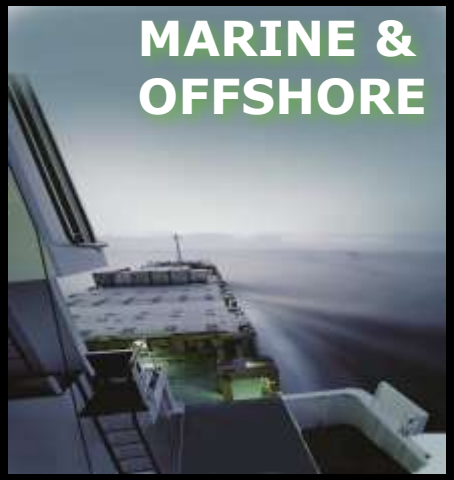




Solar Inverters

ELTEK always on

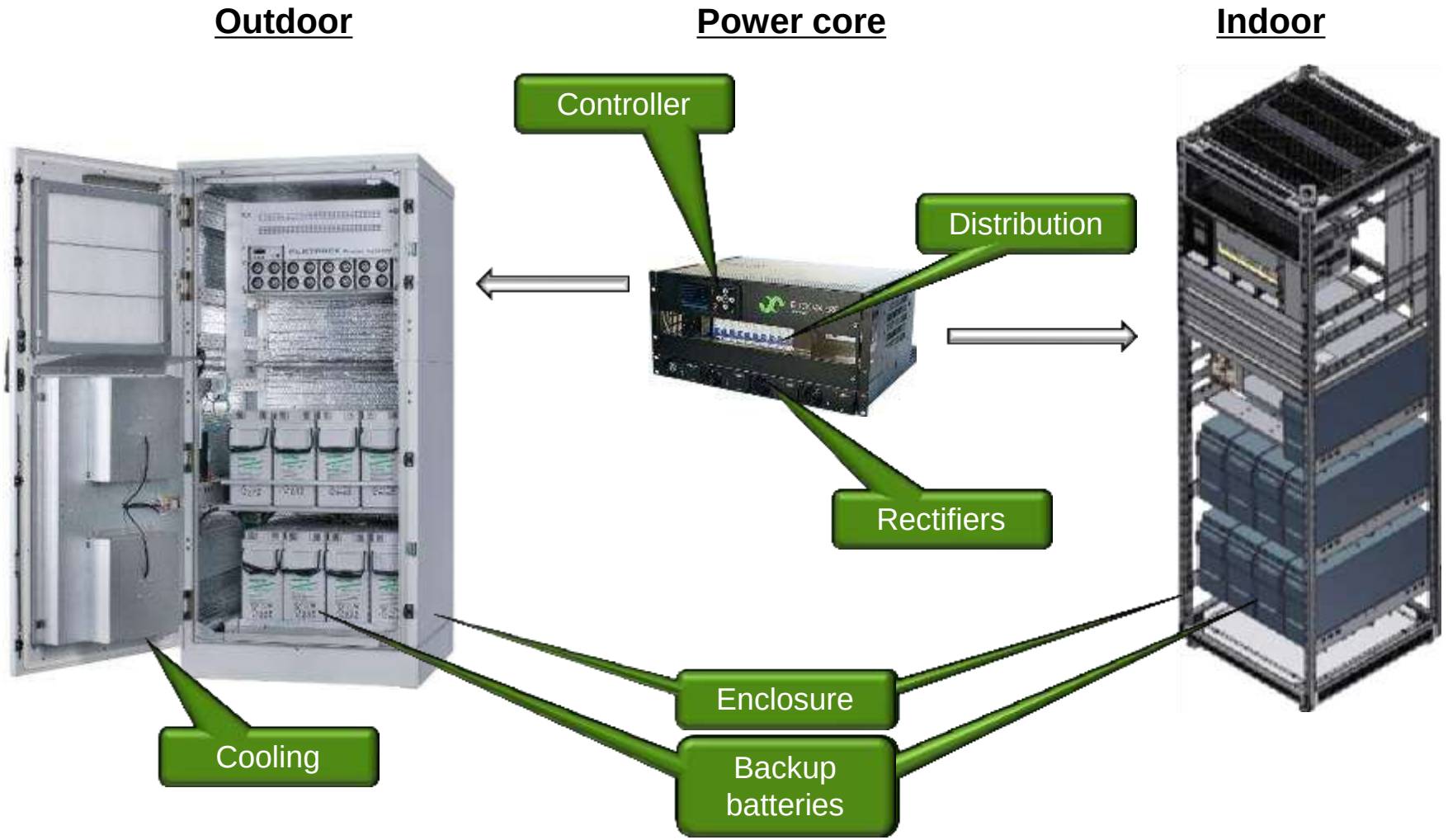
POWER SOLUTIONS IN SEVERAL SECTORS



ELTEK always on

Deliverables to Telecom and Industrial customers

Modules → Power Cores → Systems



Smartpack2 – Web Server - User interface

ELTEK always on

LOCAL PRESENCE – GLOBAL REACH

ONE BRAND
SALES IN MORE THAN 100 COUNTRIES
OFFICES IN 30 COUNTRIES
2400 EMPLOYEES

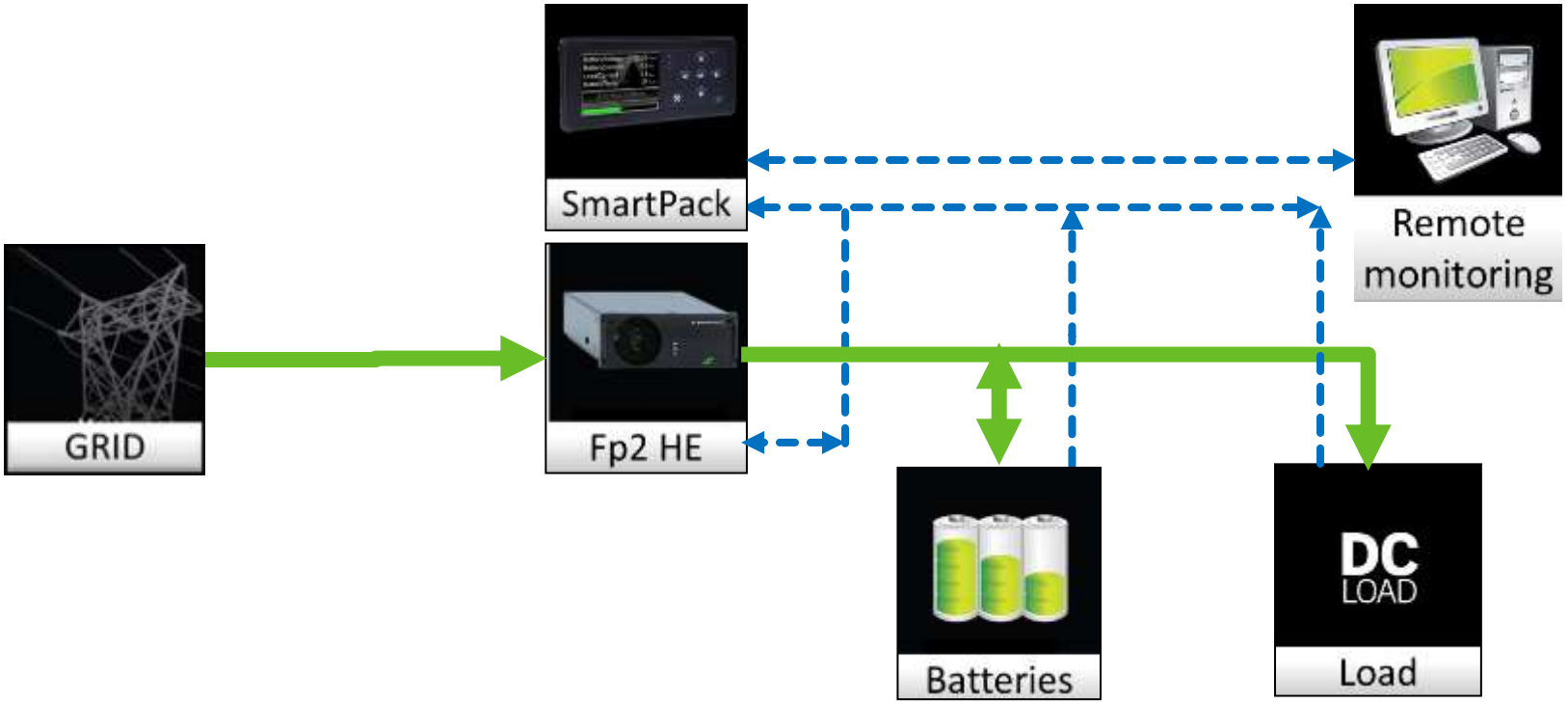
ELTEK always on

Eltek's products are significant for a smarter & greener grid

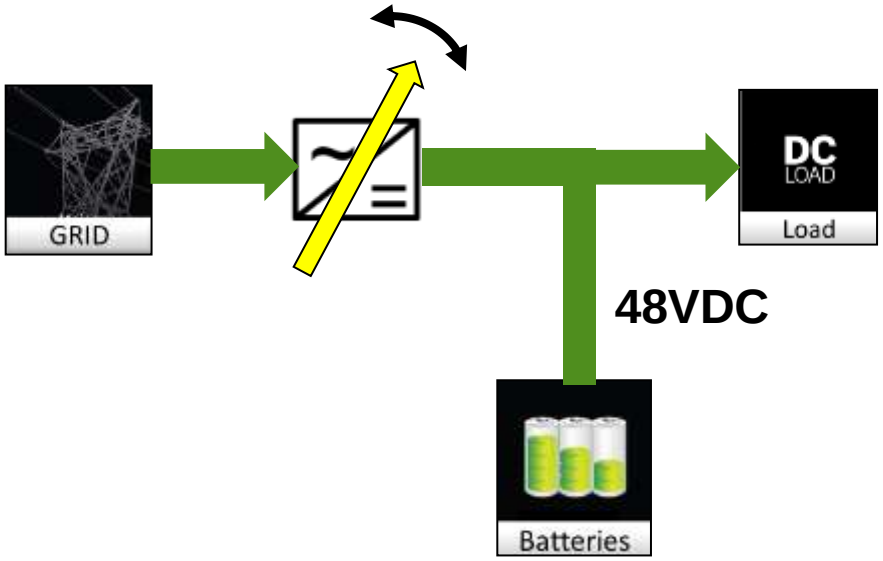
- Telecom loads: ca 2% of global energy consumption
  - "The Internet could consume as much as 10 percent of global energy supply by 2020", ref Alcatel-Lucent, 2012
- Eltek makes telecom more efficient:
  - Installed HE systems have saved pr Aug 2012:
    - 554 Million kWh
    - 398000 tons of CO2
    - USD 66 million
- Currently installed power capacity: 5-10GW

Typically with storage → Flexibility!!

Typical structure of a power system



Simplified structure, and opportunities

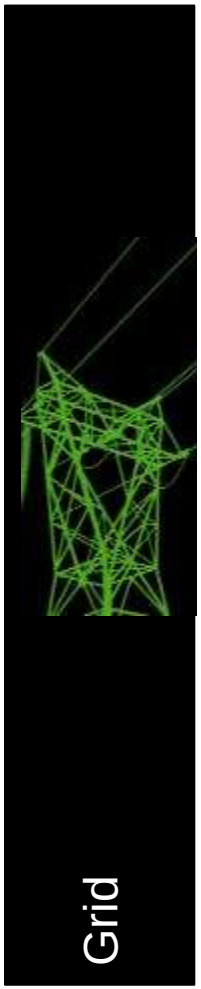


Adjusting the power conversion can provide various services

Structure relevant for various systems:

- Telecom base stations
- Telecom central offices
- Data centres

R&D project: Power conversion technologies to enable Smart Grids



Local generation

Solar panels

Fuel cells

Wind

Environmental friendly power generation

DC/DC

Real-time market incentives

DC/AC

Local conversion & optimization

DC/AC

Local load

Local storage

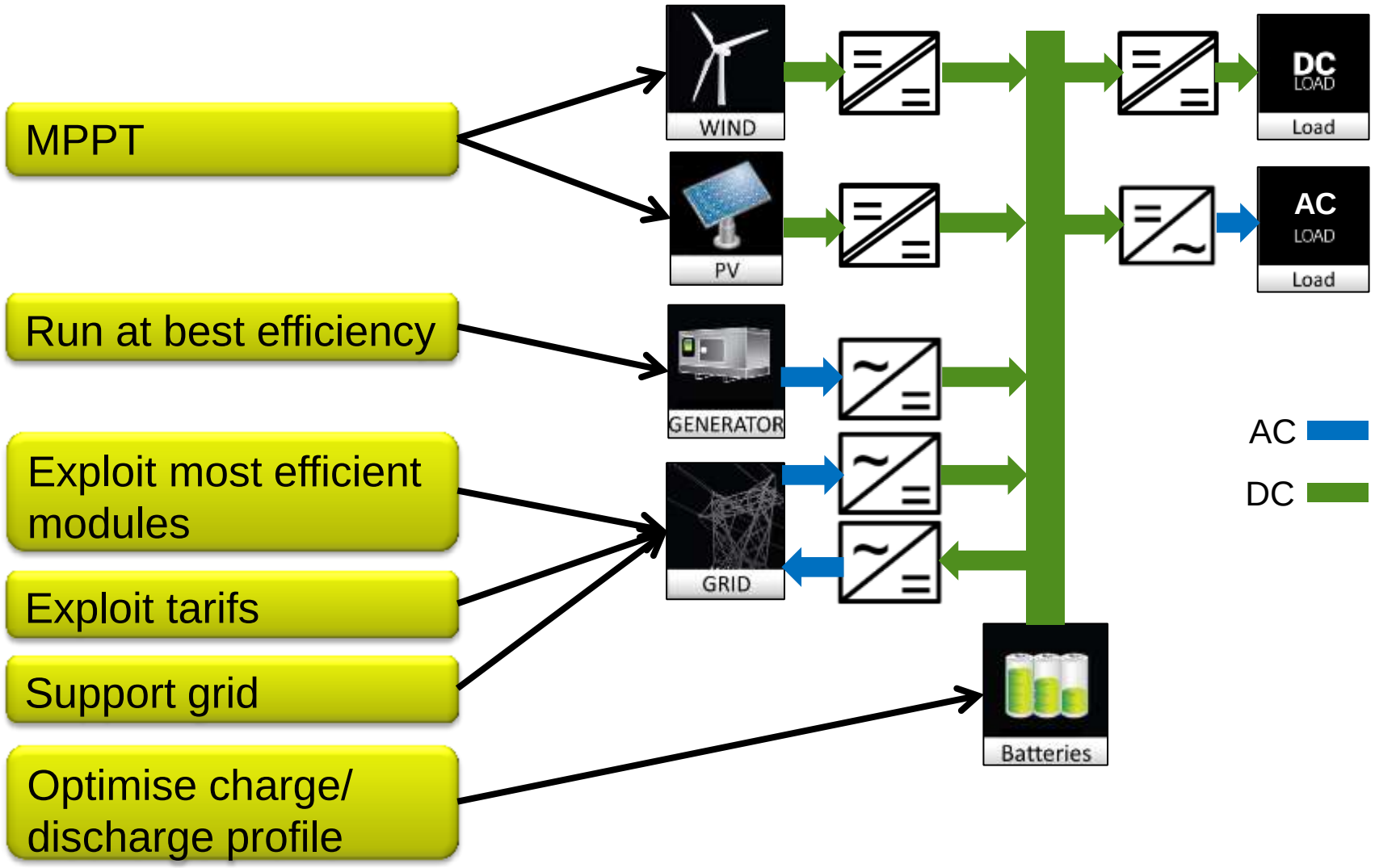
Batteries

Supported by:

The Research Council of Norway

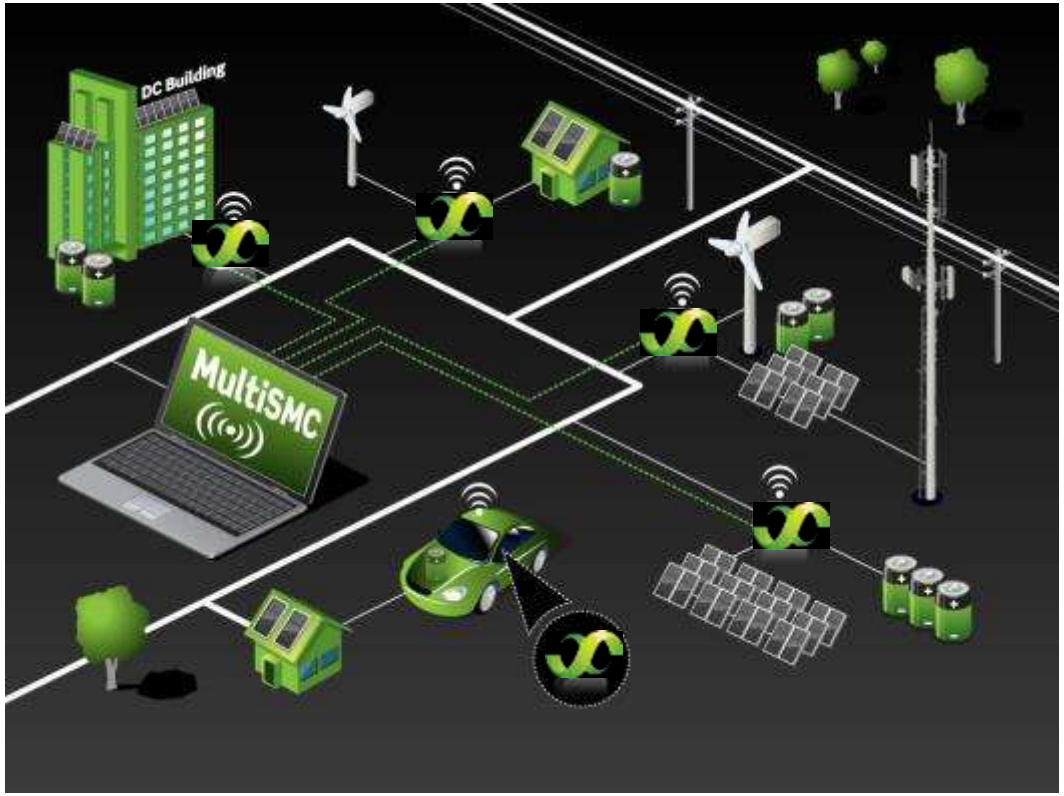
ELTEK always on

The local solution can be distributed with ‘smartness’ at various levels



Distributed «smart grid enablers» can be monitored and optimised

Multisite Monitoring and Control System (MultiSMC)



For various storage applications:

- Aggregate capacity
- Allocate power & storage services optimally
- Ensure ‘interoperability’ with various systems

Collaboration ensures competence & quality for smart grid technology development

NTNU

- Power: Power electronics and systems
- Cybernetics: Advanced control

agder energi nett

teknova

UNIVERSITY OF AGDER

- Electricity in Smart Village Skarpnes
- Solar power to grid

SINTEF

smartgrid The Norwegian Smartgrid Centre

CPES
Center for Power Electronics Systems

The Research Council of Norway

ELTEK always on