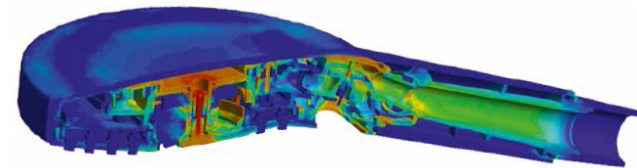# One Day in life... 生活中的一天

- Erke Wang
- CADFEM GmbH
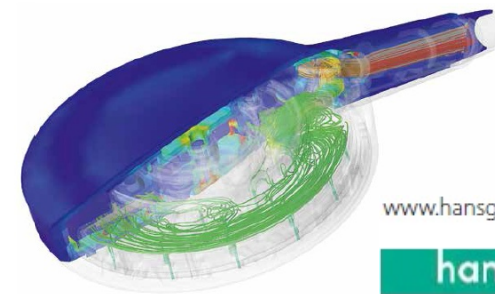
The day begins….

6:30 The day begins….

When showering becomes an experience, it brings the kick for the day
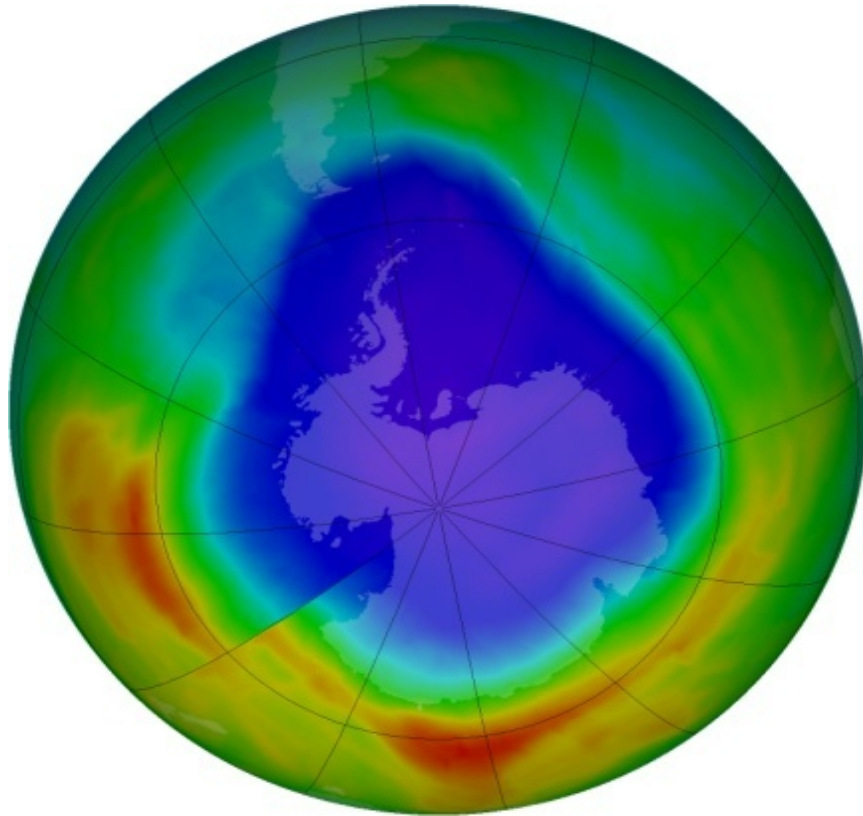

Stress analysis of the shower

www.hansgrohe.de

hansgrohe

Fluid-structure interaction of a shower

Simulation helps the environment protection

The ozone hole on Sept. 22, 2012.
Credit: NASA/Goddard Space Flight Center

Plastic Bottles
- we consume **200 million** plastic bottles/Year
- >**10,000 tons** of Bottles discarded into the environment/Year.

Plastic Bottles Optimization

Krones AG

Optimization of shape and wall thickness

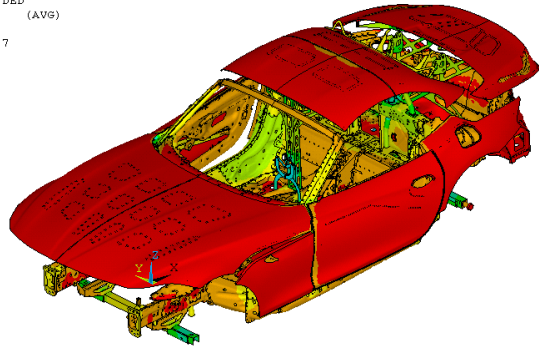Reduction per year = 10.000 tons material
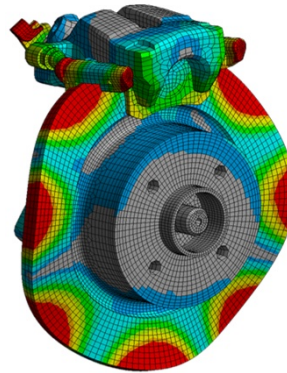
30 million €/year savings for material

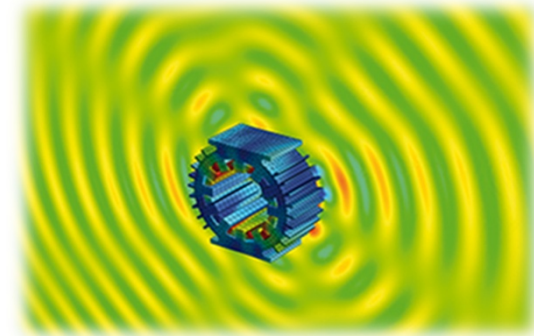# Engineers can help to make a sustainable future

7:30 The journey starts...
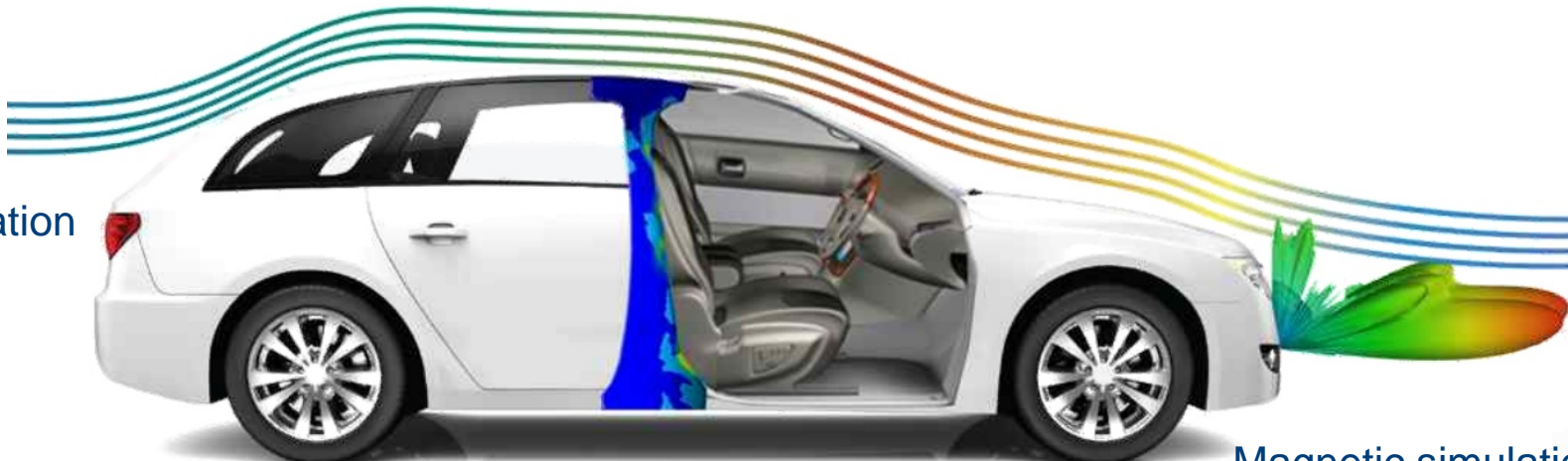

Painting simulation

Dynamics simulation

Acoustics simulation

CFD simulation

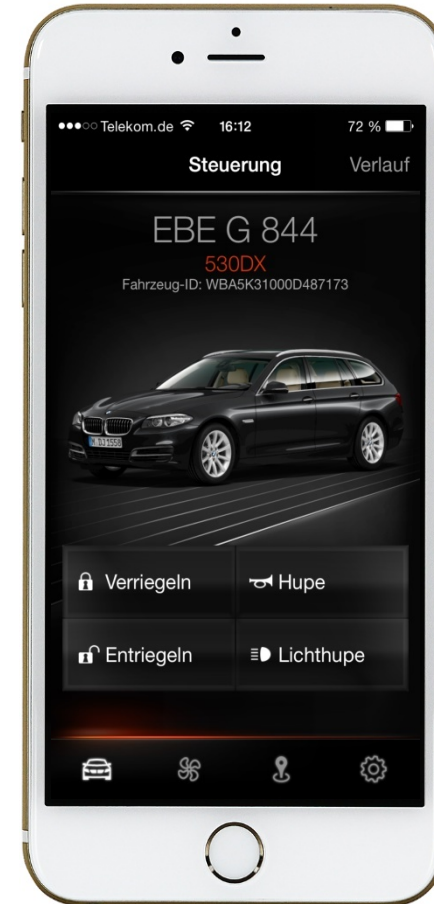Magnetic simulation

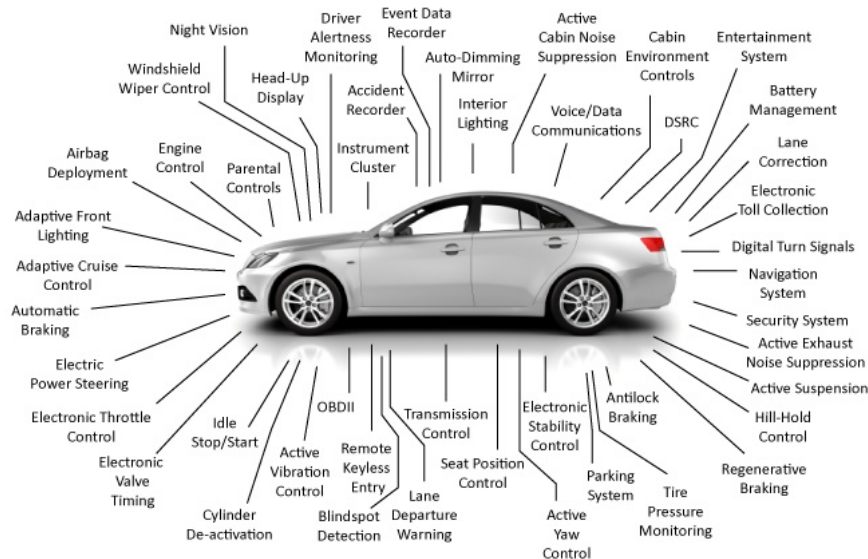Mechanical simulation

7:30 The journey starts...

Sensor simulation
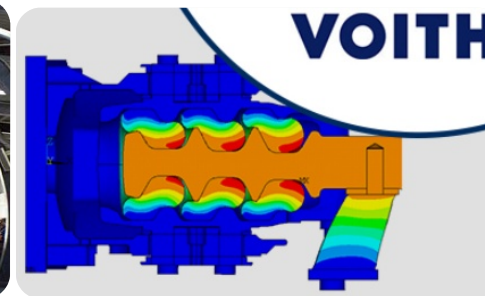

Battery simulation

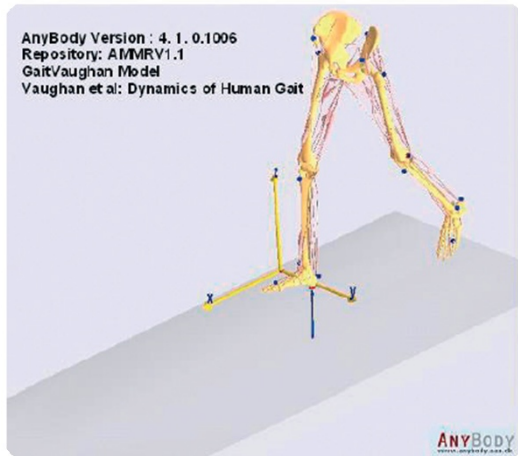Antenna simulation

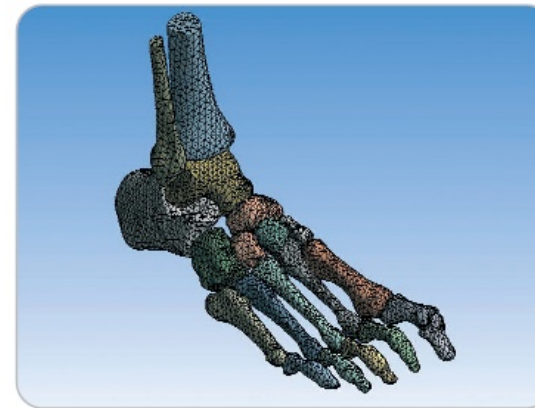# 7:30 The journey starts...

Fatigue simulation

Crash simulation
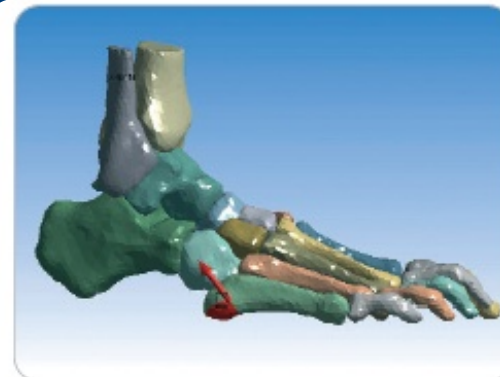
7:30 The journey starts...
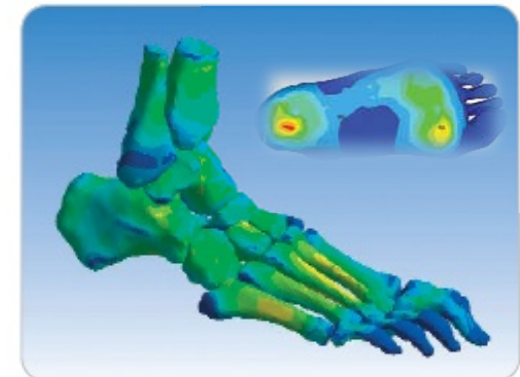

Muskelmodell der Bewegung

Muskelkräfte →

ANSYS Modell für Spannungsanalyse
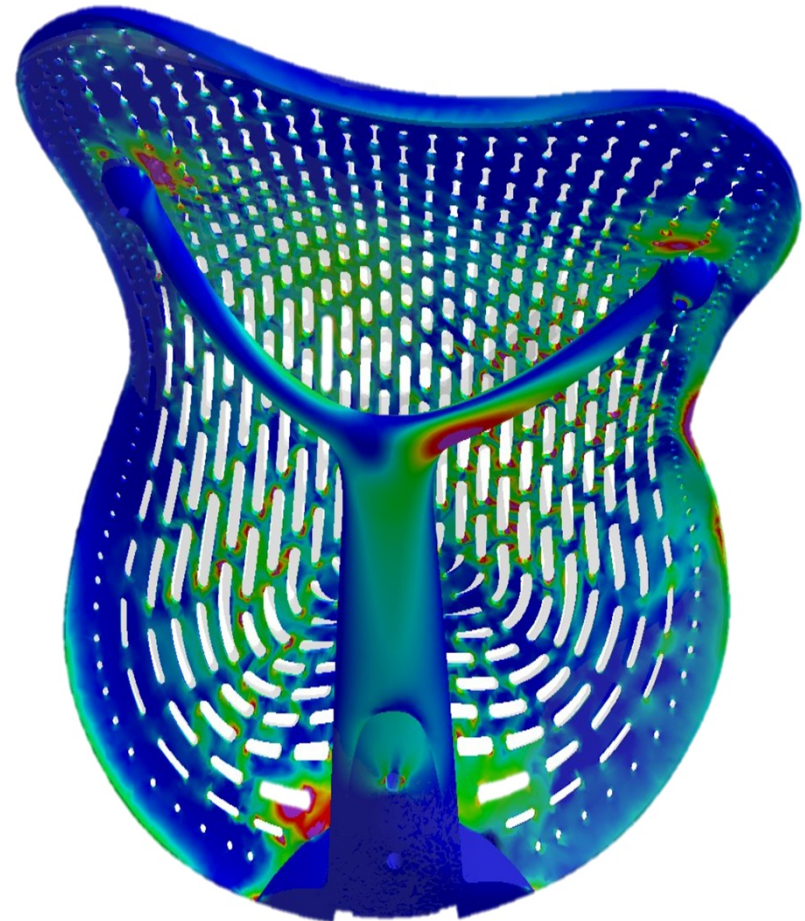
Muskelkräfte aus AnyBody   Spannungsverteilung

Simulation is everywhere from waking up to the Transportation ...

8:00 the work begins....

- To secure products feature virtually
    - Safety
    - Comfor
    - Fatigue

Herman Miller's new award-winning Mirra office chair was developed through virtual prototyping using ANSYS software.

8:00 the work begins….

Contact lens with its Sensor

Inductance:
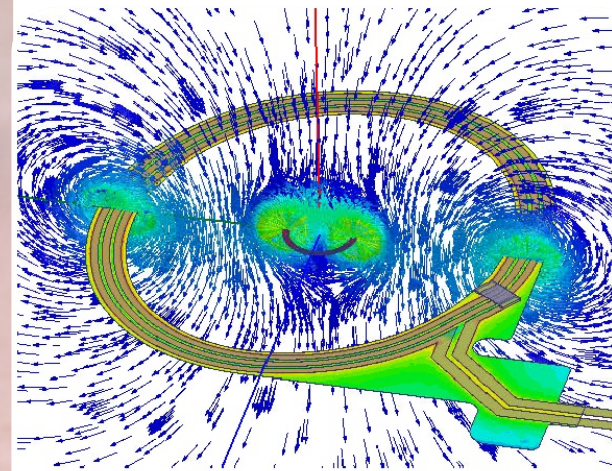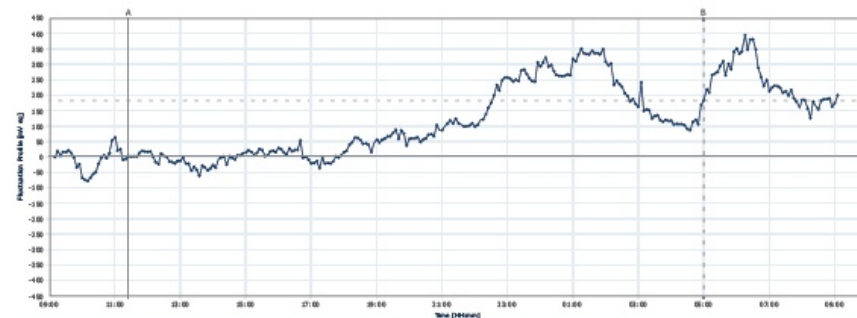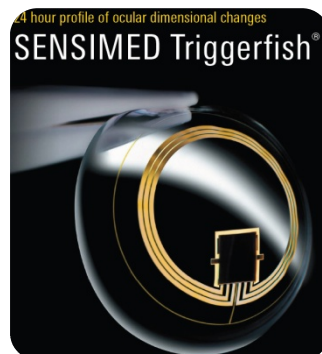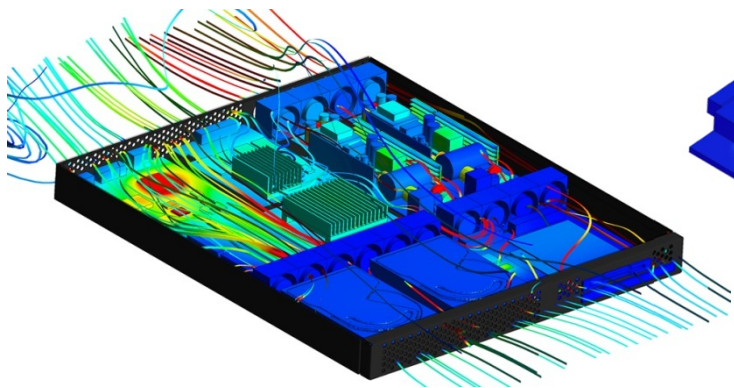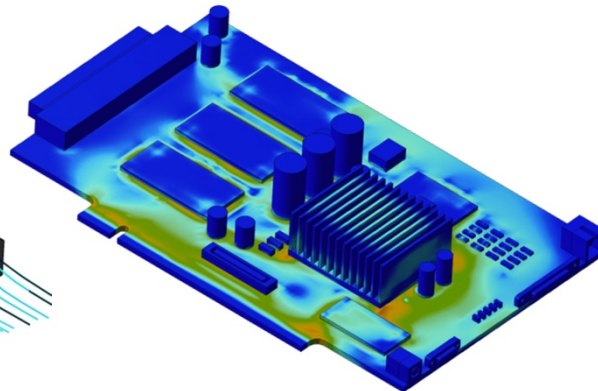Testing / Simulation < 0.8%

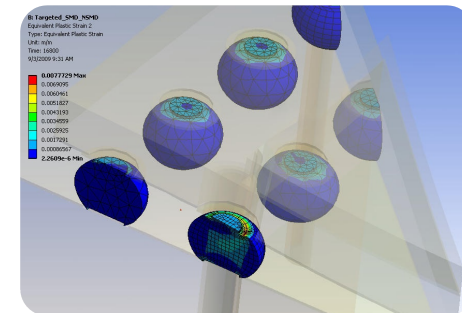Figure 2: Magnetic field around the sensor and its surrounding antenna

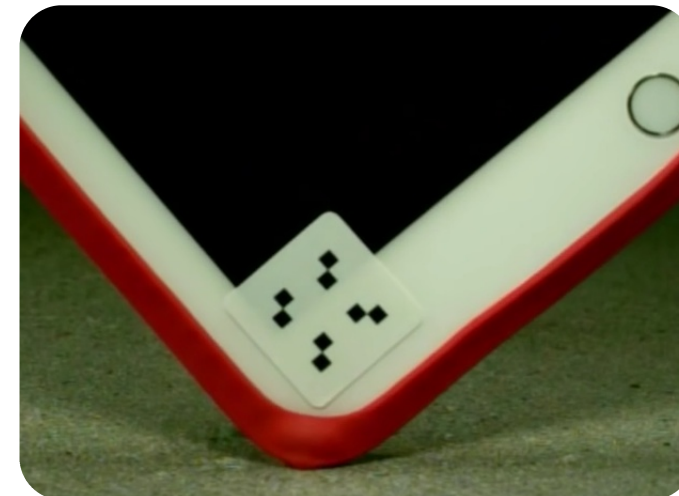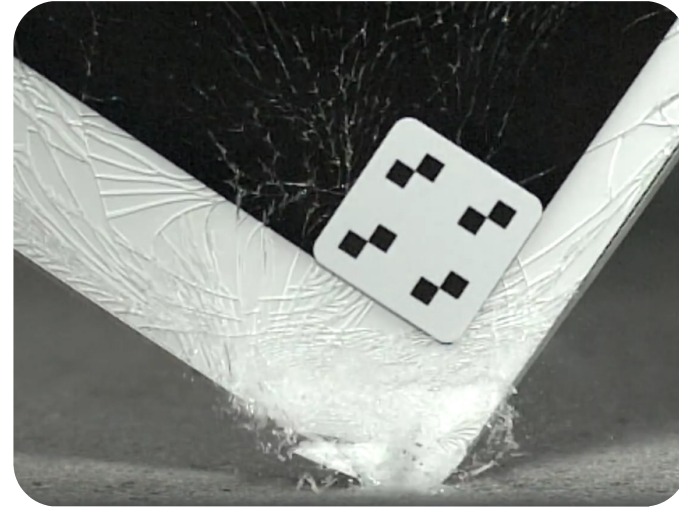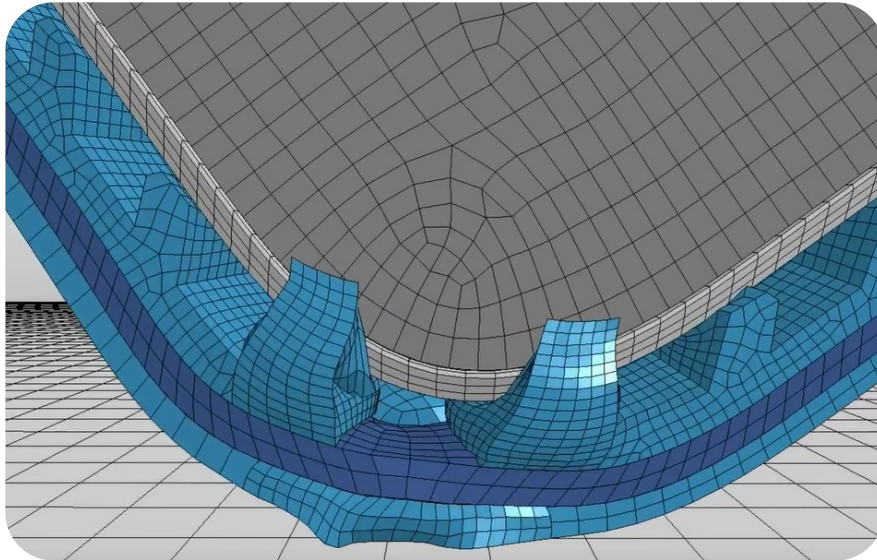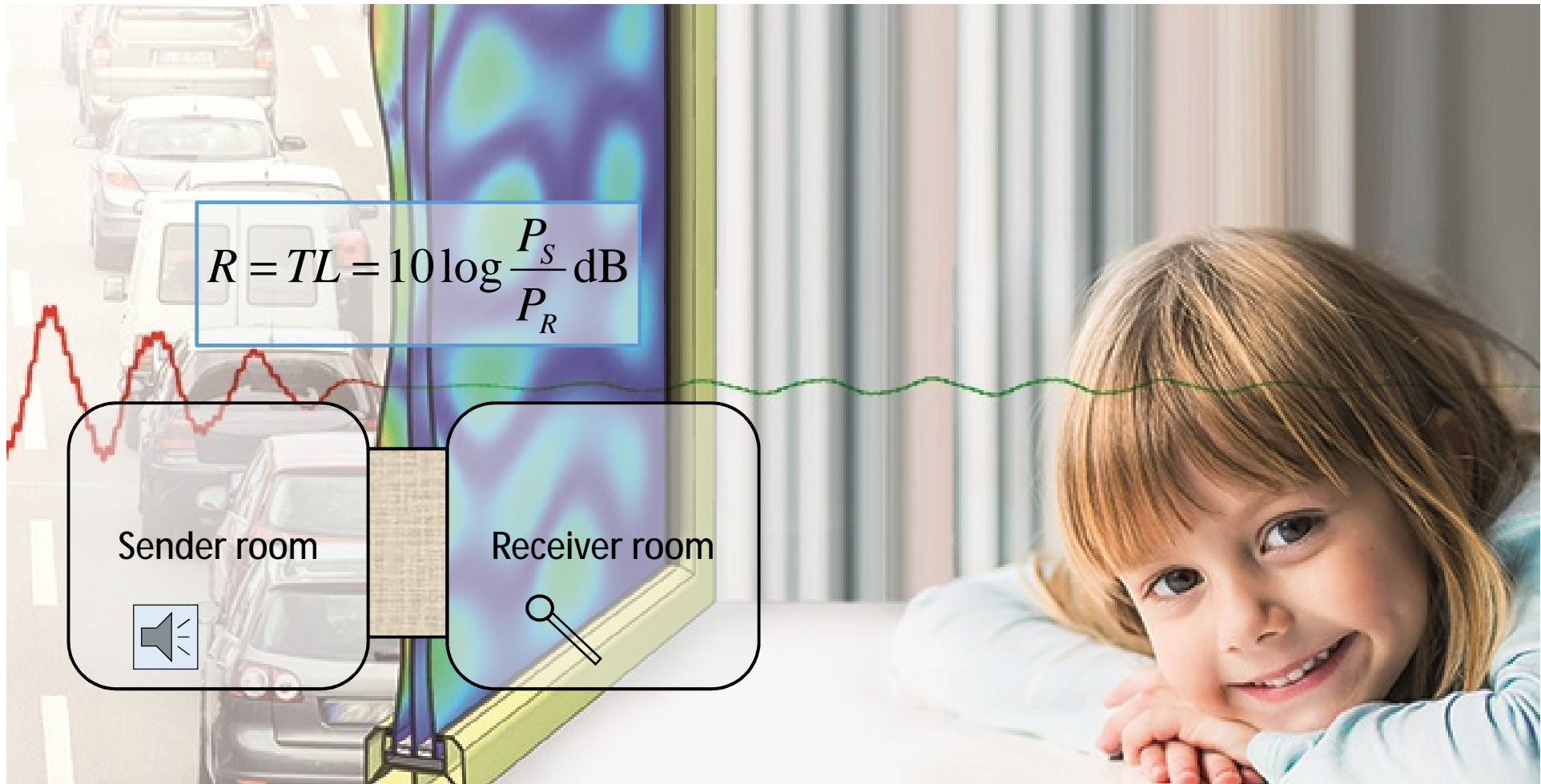# 8:00 the work begins….

Cooling simulation   Thermal-Mechanical simulation   Fatigue simulation

8:00 the work begins....
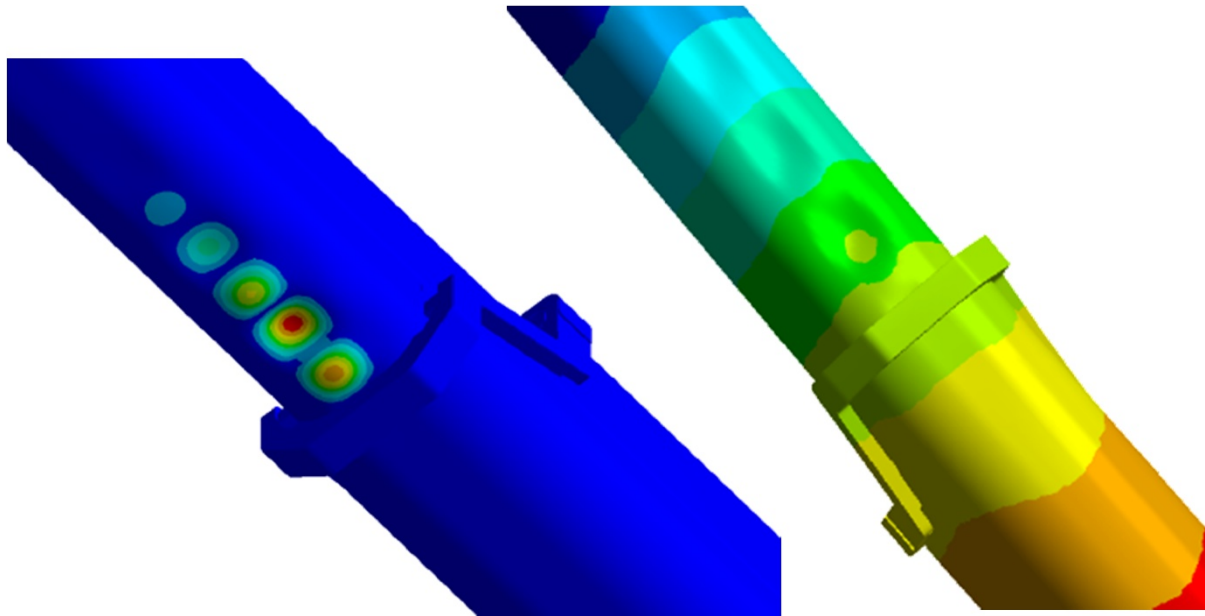
You want to be quiet in office...

$$R = TL = 10\log\frac{P_S}{P_R}\,\text{dB}$$

Sender room

Receiver room

Simulation @ Machine building

10:00 CADFEM Customer: Machine building II

100m working height,
Simulation makes it possible

RUTHMANN
professionals at work

Courtesy: Ruthmann GmbH & Co. KG.

10:00 CADFEM Customer: Machine building III
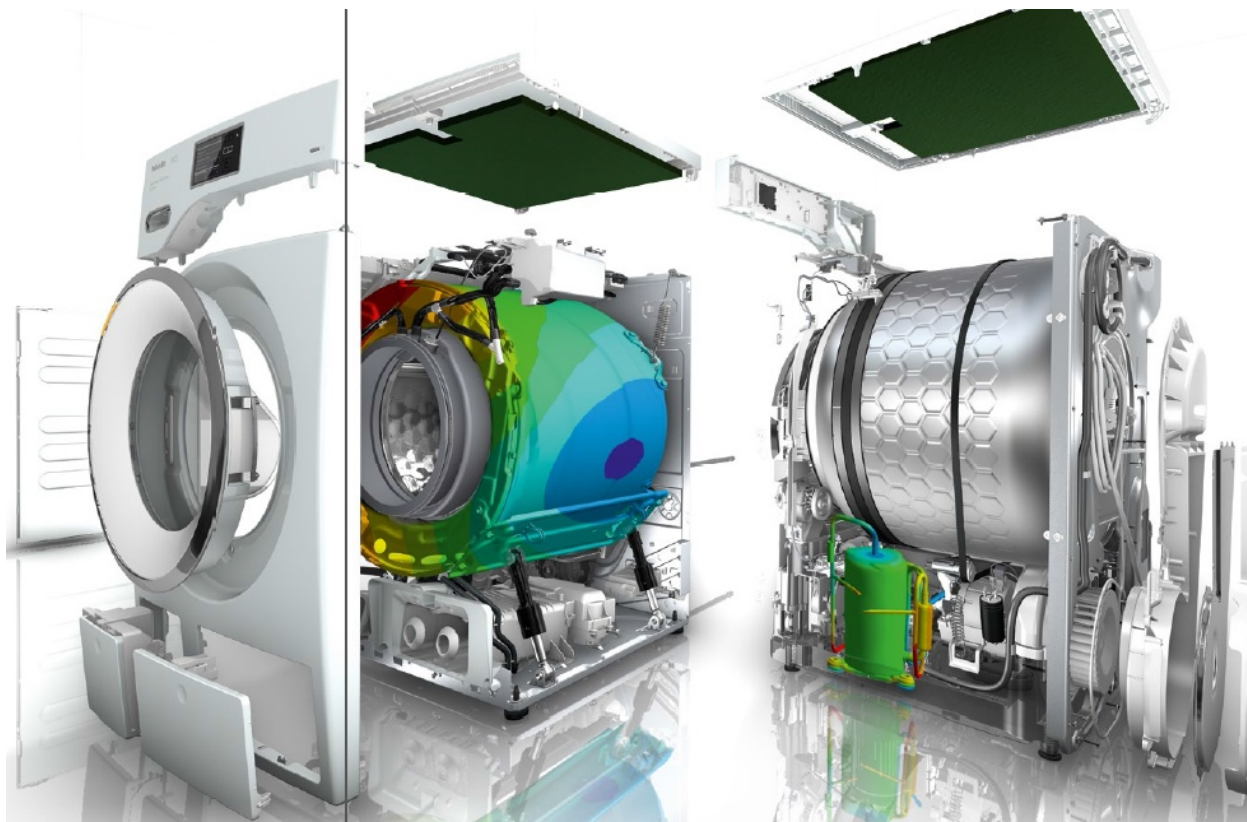
Miele
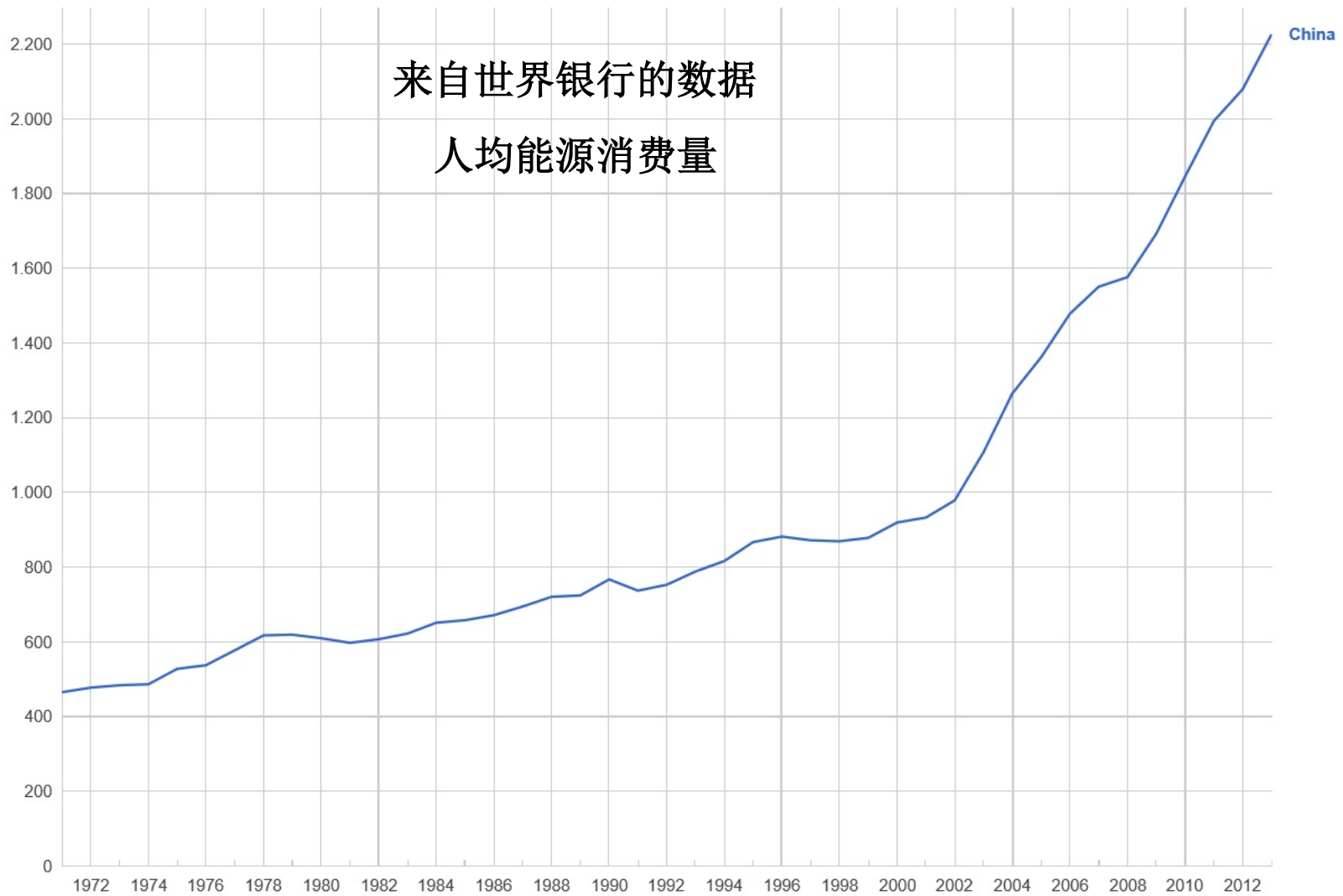**IMMER BESSER**

Due to
- increasing complexity
- increasing diversity
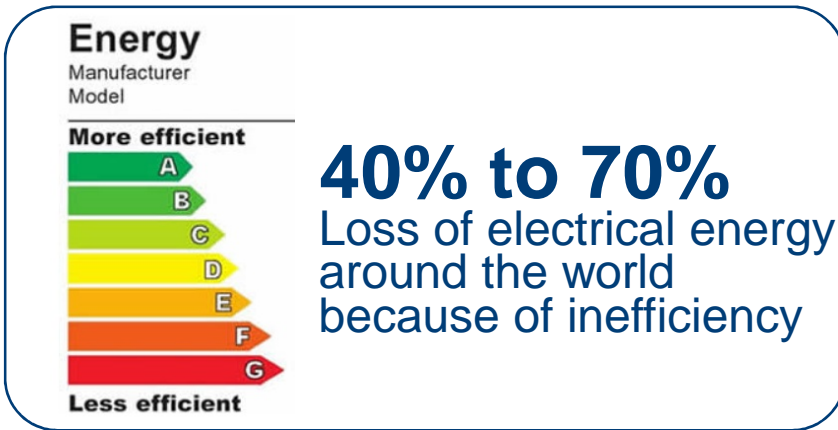- time to market

simulations is indispensable

Simulation is everywhere
from the screen to washroom...
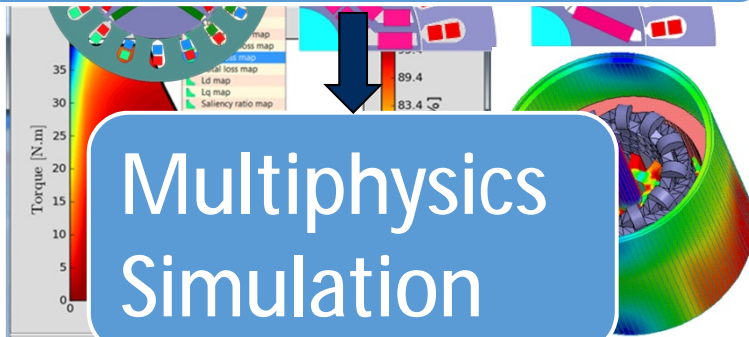
Energy

Energy consumption China

来自世界银行的数据

人均能源消费量

14:00 Challenges in engine development

40% to 70%
Loss of electrical energy around the world because of inefficiency

Old efficiency classes	International efficiency classes	Requirements acc. EU Regulation
	IE4	For future
	IE3	2015 2017
EFF1	IE2	2011
EFF2	IE1	No longer allowed
EFF3	-	No longer allowed

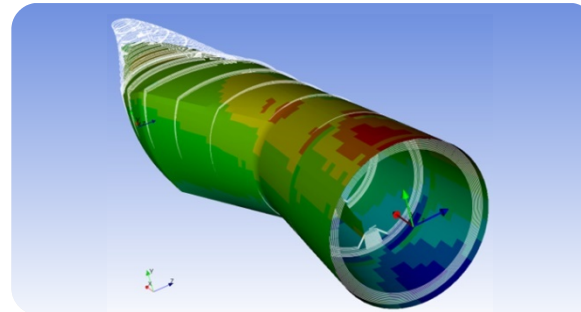Optimization studies with > 1000 of possible designs

Multiphysics Simulation

Electromagnetic effects:
- Ørated capacity
- ØCogging torque / torque
- Ølosses
- ØChoice of permanent magnets
- Ømaterial consumption
- Øcontrol circuit
- Ødielectric strength
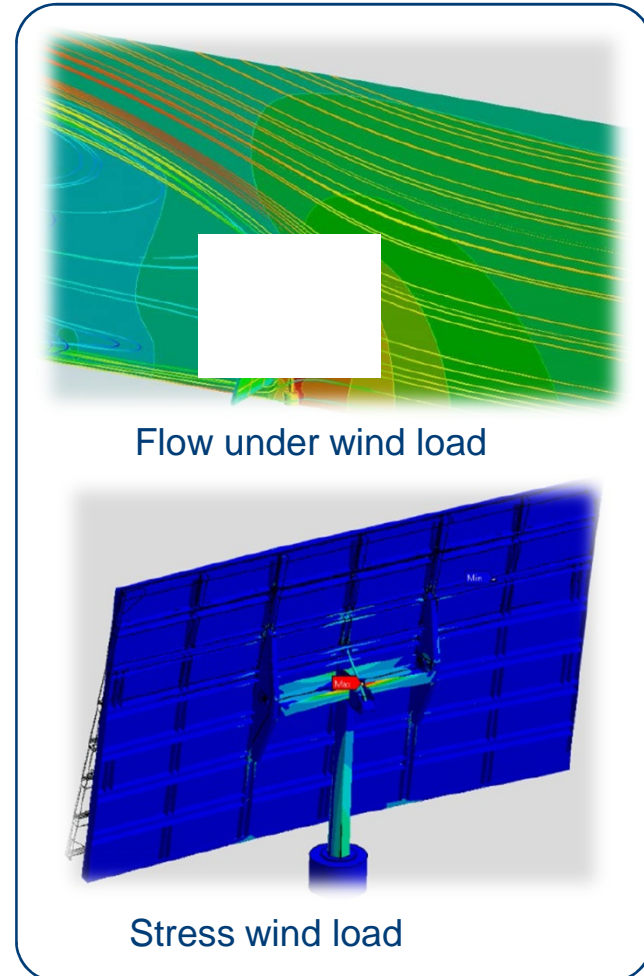
15:00 the Wind & Solar Energy....

Wind energy

15:00 the Wind & Solar Energy....

Solar energy

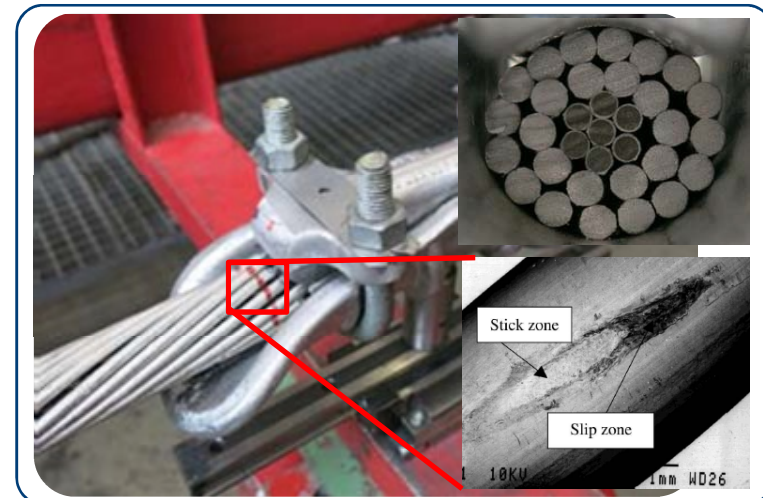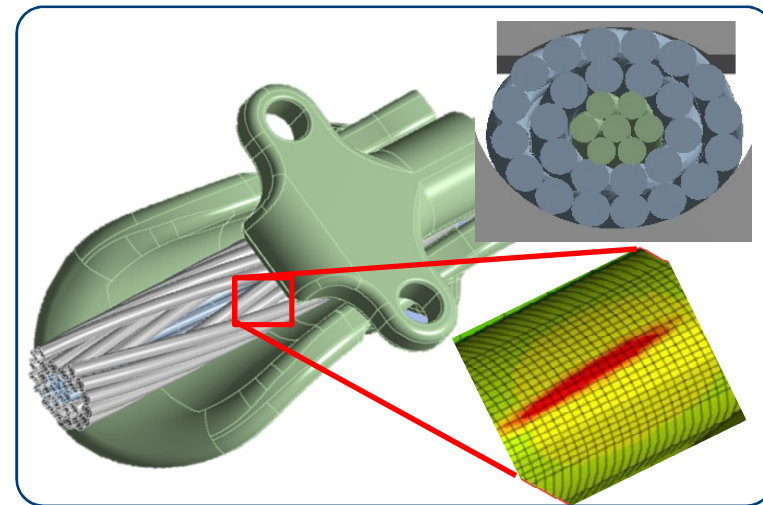Fluid-structure interaction of a photovoltaic under wind load

Simulation makes a good product a fantastic product

Flow under wind load

Stress wind load
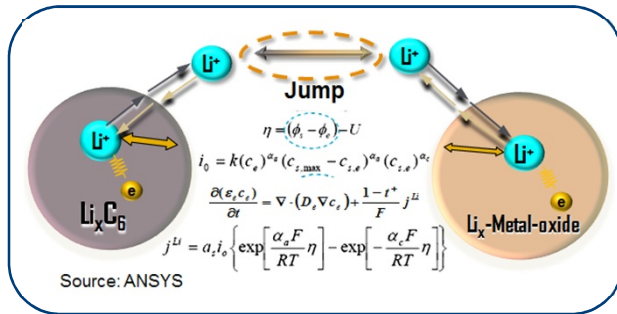
15:00 the Wind & Solar Energy....

Energy transportation à overhead line

Design of overhead conductors in clamping to the supporting clamps
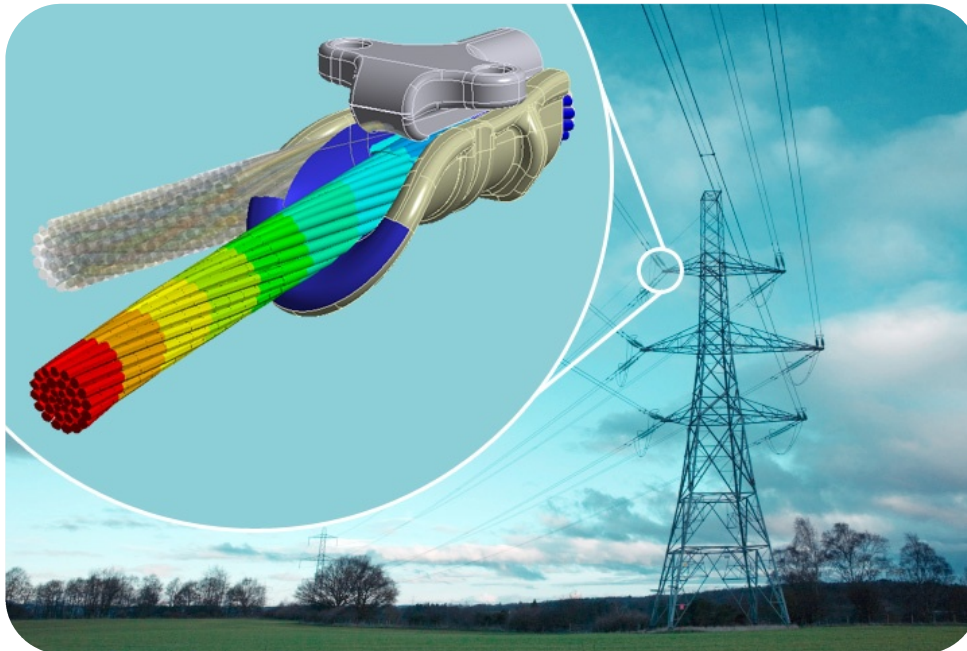
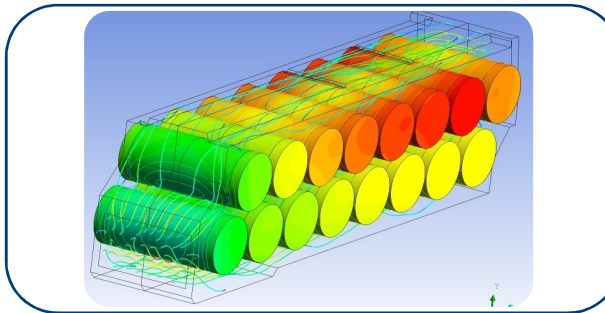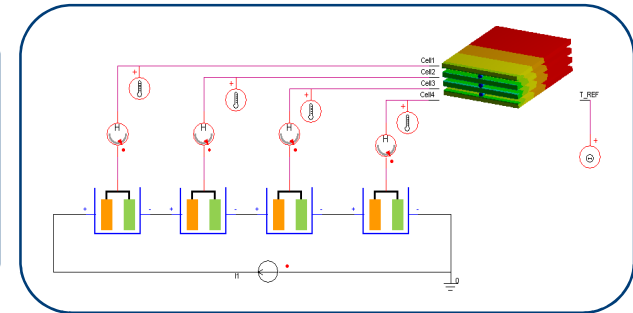# 16:00 Battery simulation....

Cell-Simulation

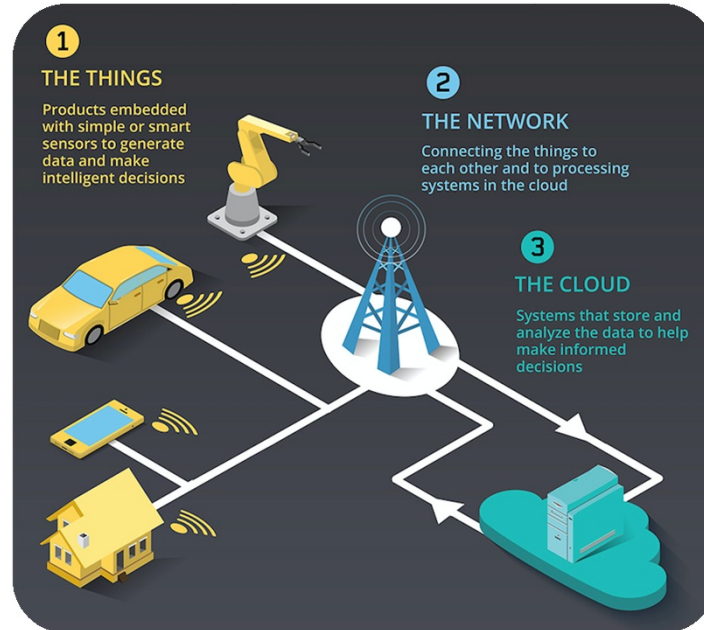Source: ANSYS

Pack-Simulation

System-Simulation

Future Industry

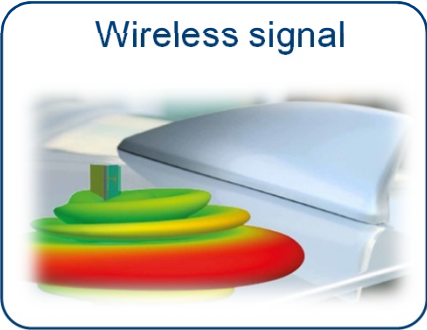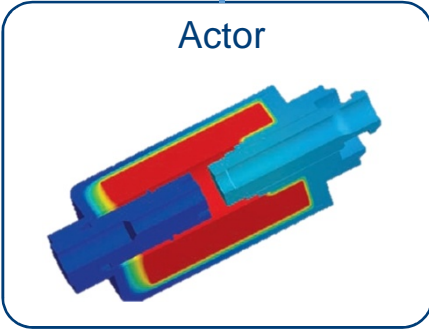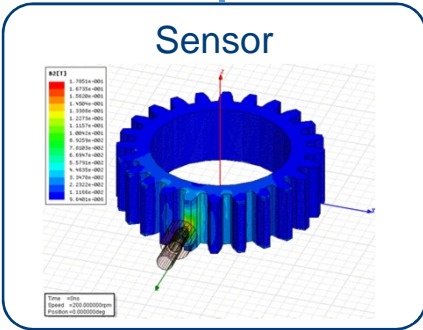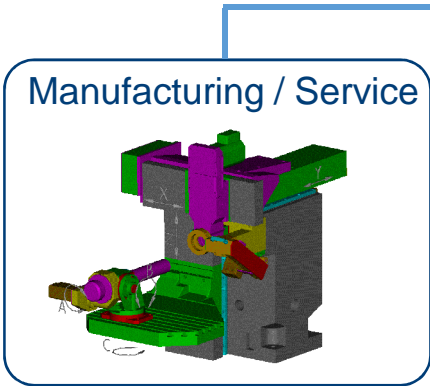- Additive manufacturing
- Industry 4.0
- IIoT

17:30 the Industry 4.0 and IIoT begins....
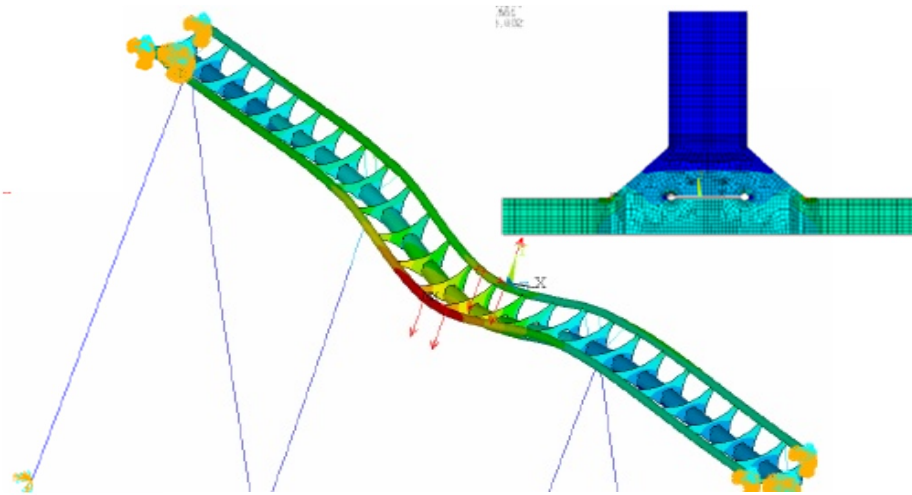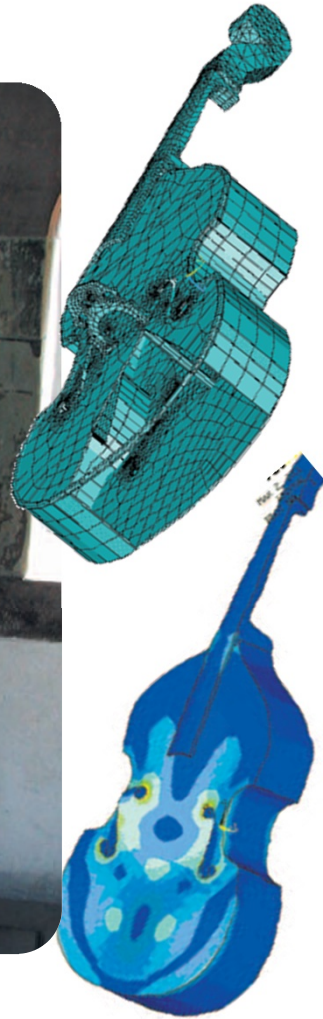

Simulation in the product development

Simulation in the product manufacture
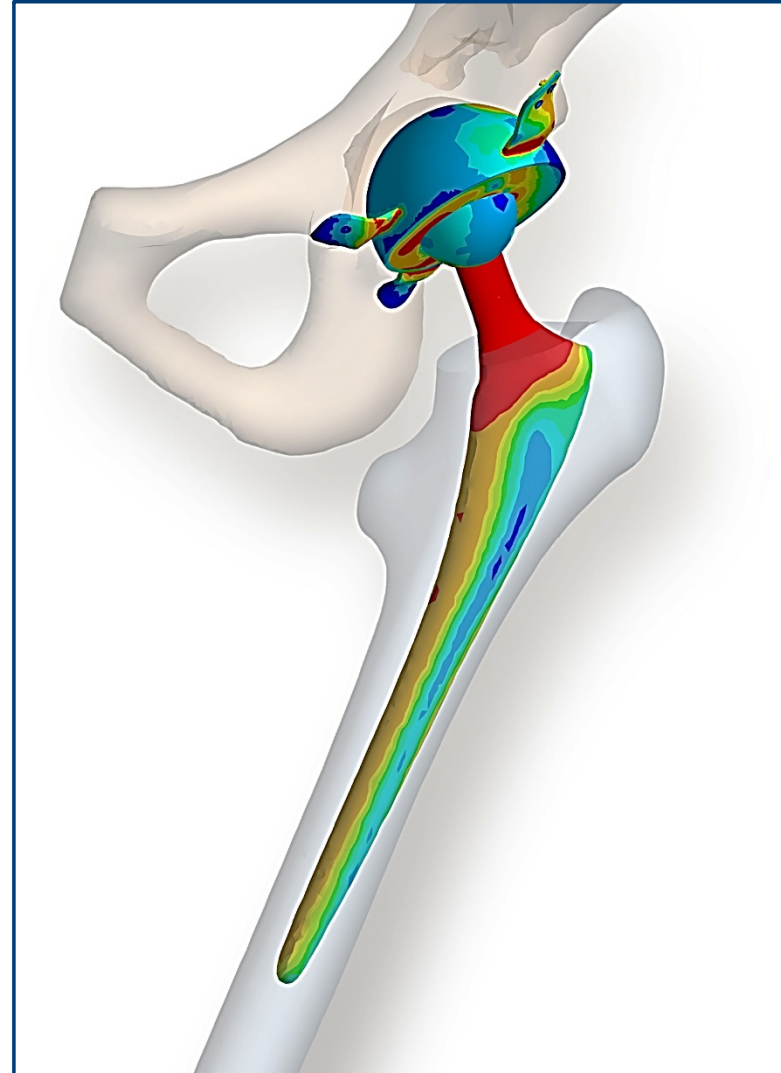
Simulation in the product monitoring

Manufacturing / Service	Sensor	Actor	Wireless signal

Simulation after work...

18:00, At the end of a successful workday

Engineering the better life quality

ANSYS用户会议
德国
美国
日本
法国
波兰
意大利
瑞士
奥地利
捷克
斯洛伐克
爱尔兰
巴西
苏联
中国

感谢聆听