ENERGY EFFICIENCY AT SCANIA

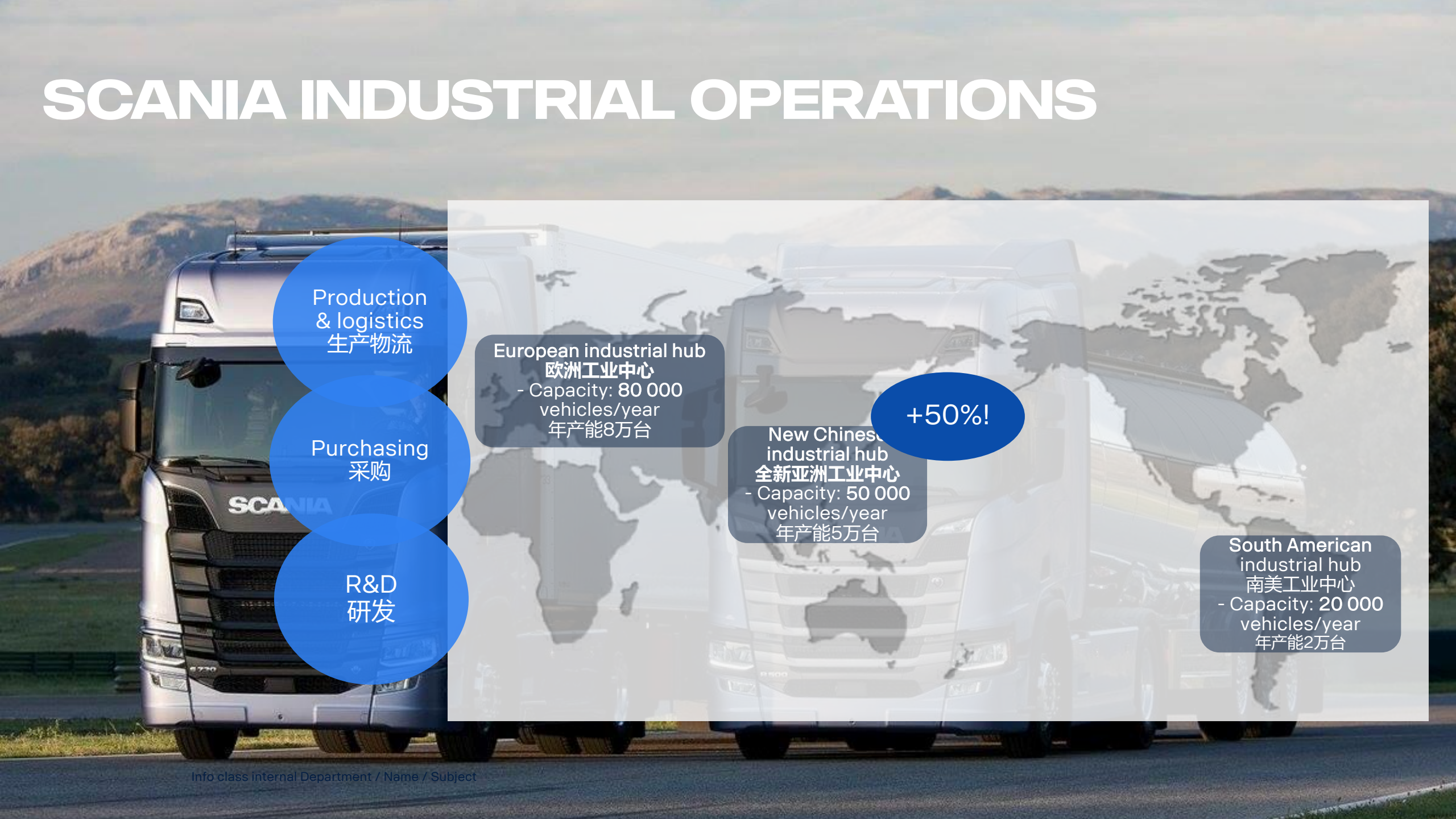
SCANIA

DRIVE THE SHIFT
TOWARDS A SUSTAINABLE TRANSPORT SYSTEM
向可持续交通运输系统转变

Scania purpose is drive the shift towards a sustainable transport system, creating a world of mobility that is better for business, society and the environment.

斯堪尼亚的目标是向可持续交通运输转变，为商业 社会和环境更好的创造可持续的移动世界

SCANIA INDUSTRIAL OPERATIONS



SCANIA RUGAO PLANT
斯堪尼亚如皋工厂

800 000 m2 land area
80万平米占地面积

370 000 m2 building area
37万建筑面积

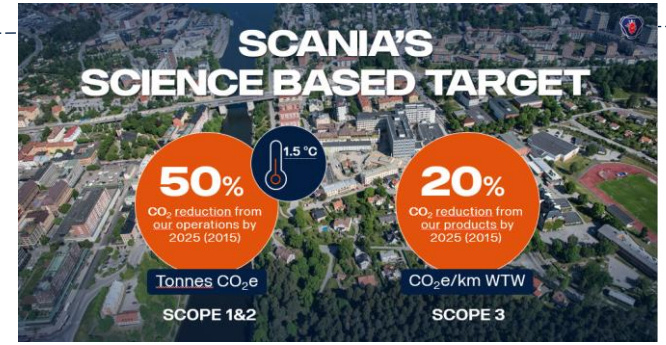
50 000 Units / year 年产能5万台

- Chassis assembly 底盘总装
- Cab assembly 驾驶室总装
- BiW 白车身
- Paint shop 油漆车间
- Complete power train assembly
  完整动力链总装
- R&D 研发
- Head office 总部办公室
- Around 350 local suppliers
  约350家本地供应商

The holistic view of energy saving in production

Organizational level

Global targets



Other global targets:

- Water reduction
- Waste reduction
- 100% fossil free electricity
- 25% energy reduction every decade

China targets

Well aligned strategic direction

- "Most efficient Scania factory"
- "Zero emission factory"

Organizational targets and way of working

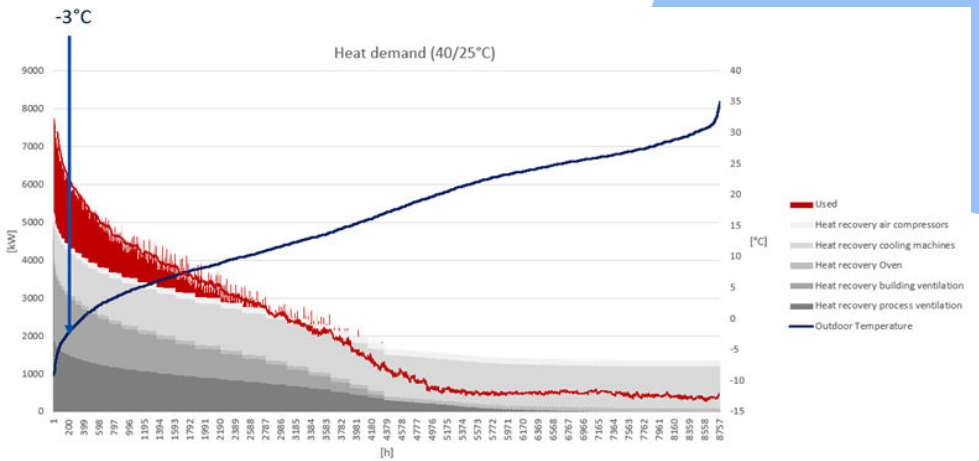
- Standardized working process to incorporate Energy Efficiency during machine investments.
- Train the trainer concept to establish local energy expert group
- Continuous energy awareness training for new employees and project leaders.

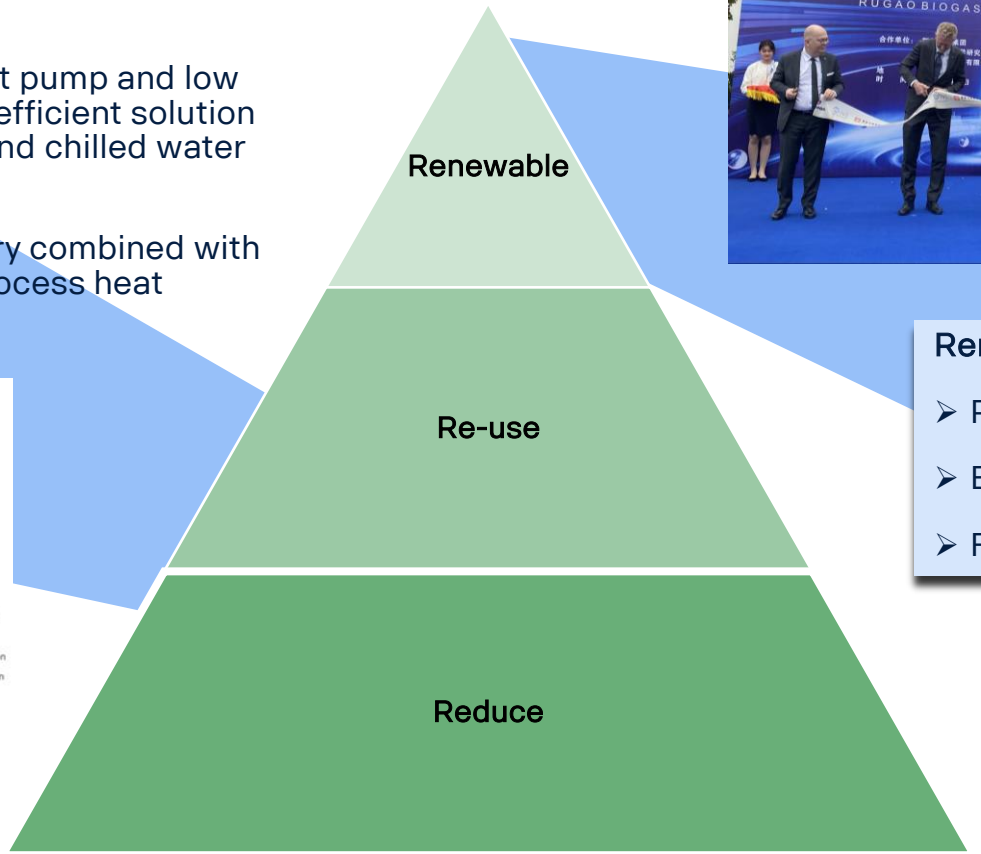
Pre-study	RFQ work	Quotation work	Projecting	Test/delivery
• Energy consequence analysis	• Scania technical standards • Power saving mode	• Energy evaluation • Life cycle cost	• Follow up and evaluate technical concepts	• Test functions • Education

Site level

Site level, example media room 1:

- Media supply system design (Electrical, Heating, cooling, compressed air)
  - Common shared systems for facility and process to reduce net operating cost
  - High temperature cooling system combined with heat pump and low temperature hot water system. High COP factor and efficient solution since several process consumers will consume hot and chilled water simultaneously
  - Centralized air compressor system with heat recovery combined with high temperature hot water system, to be used by process heat consumers all year around





Renewable energy

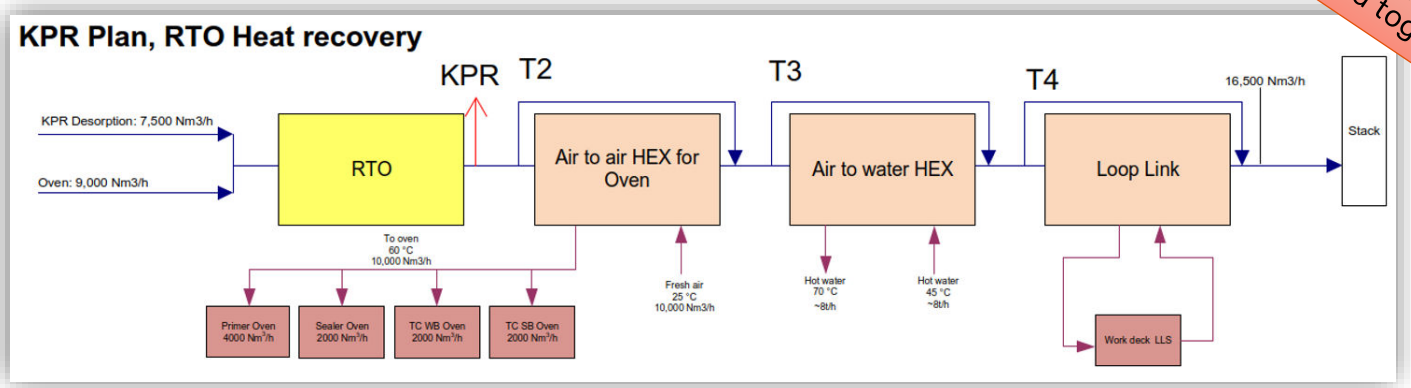
- PV-panels
- Biogas project
- Fossil free electricity

Workshop level example

Workshop level, example Cab Paintshop:

- Energy reduce
  - Optimized process ventilation design, fan and motor drives with inverters
    - 2000MWh energy savings
- Demand driven energy use,
  - Elimination of energy waste: Software and hardware intelligence (eco-mode)
  - 50-80% less energy waste during downtime, maintenance stops and weekends.
- Energy reuse, energy circularity
  - VOC treatment: KPR+RTO combination with heat recovery, with different exergy levels.
  - 30-50% less heat used from primary energy sources

State of the art design developed together with Dürr



Process level, examples

Change from wet cleaning to dry cleaning

- LCA show 50% less energy then wet cleaning
- Investment cost also lower

Robot painting booths (Cab Paintshop)

- 70% less heating and cooling energy with recirculated process air in automatic painting booths

- Paint distribution system, replacement of several pneumatic pumps to electric pumps → reduced compressed air consumption (Cab Paintshop)
  - 1 200m^3/h compressed air savings (corresponds to a mid sized air compressor)
  - Total efficiency is ten times higher in a electric pumps compared to pneumatic pump

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Summary

- Vision – targets – high level commitment
- Competence sharing – structured way of working
- Well designed technical concepts - supplier engagement

- Well defined business cases with pay back between 0,5-3y.
- Good starting point for future uncertainties.
- State of the art technical concepts for energy saving.
- Saving energy is saving money!