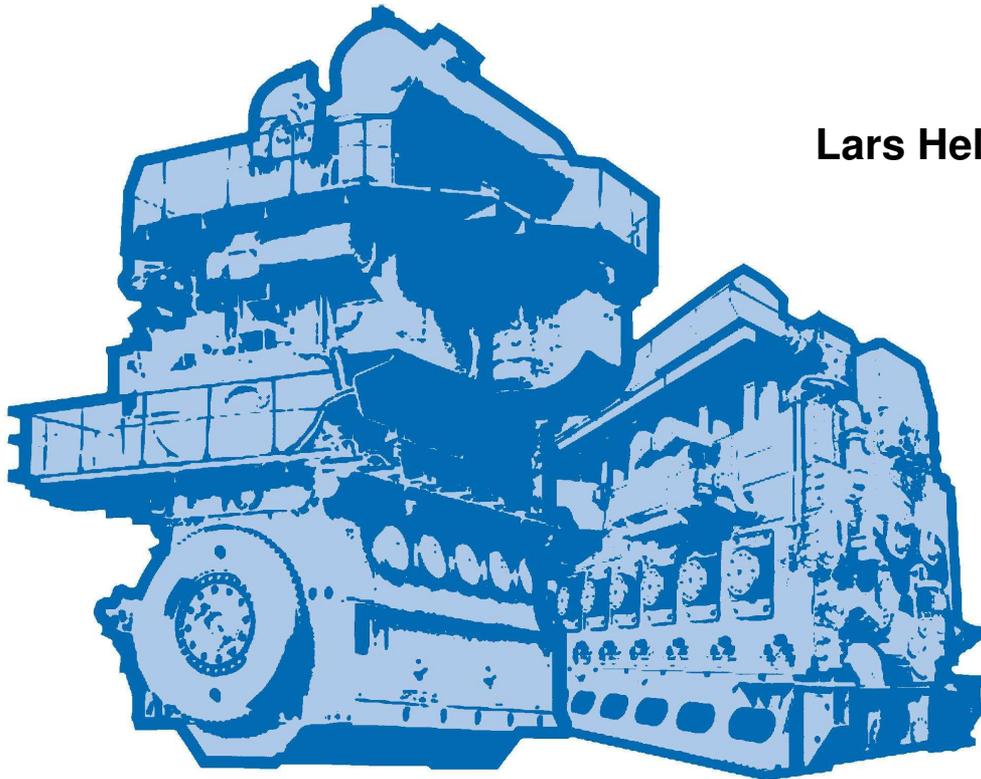


# Engine Division - TripleE



**Lars Hellberg, Group Vice President, Engine**  
**Trieste, Italy 31 May 2005**

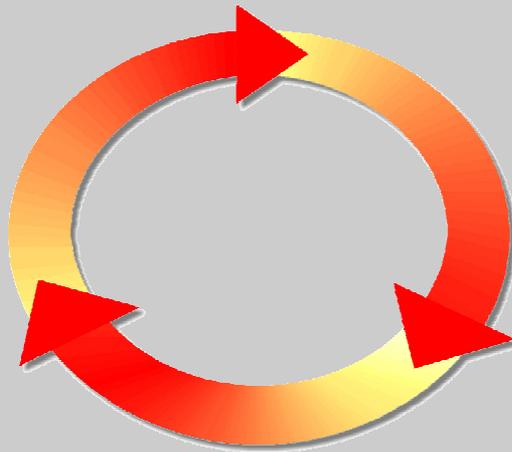
# My scope for today presentation

- ❑ **Triple E for Excellence**
- ❑ **Technology leadership**
- ❑ **Flexible Manufacturing**
- ❑ **Excellent suppliers relations**

... the initiative-driven program to take Wärtsilä Engine Division to sustainable world-class performance by the end of 2006

## ENERGY

Capture opportunities and make things happen!



## EXCITEMENT

We feel highly motivated about what we do and how we do it!

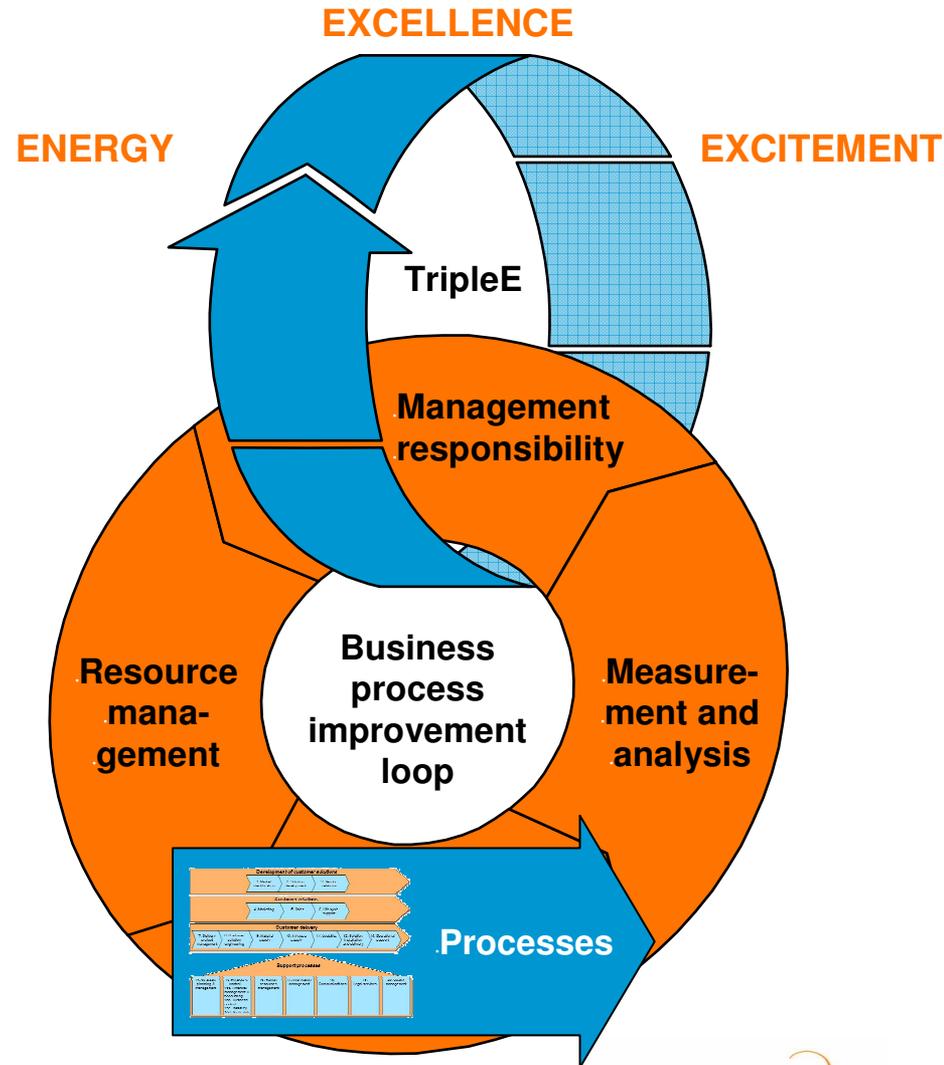
## EXCELLENCE

Do things better than anyone else in our industry!



# TripleE - stimulates our journey to world-class

- Reaching the targets will require a **step-change in the business process** improvement loop
- **Line management is responsible for driving** TripleE initiatives
- **Transparent tracking** of initiative progress through milestones and KPI development
  - People
  - Quality
  - Cost
  - Delivery



# Triple E - Link our KPI's to "DuPont"

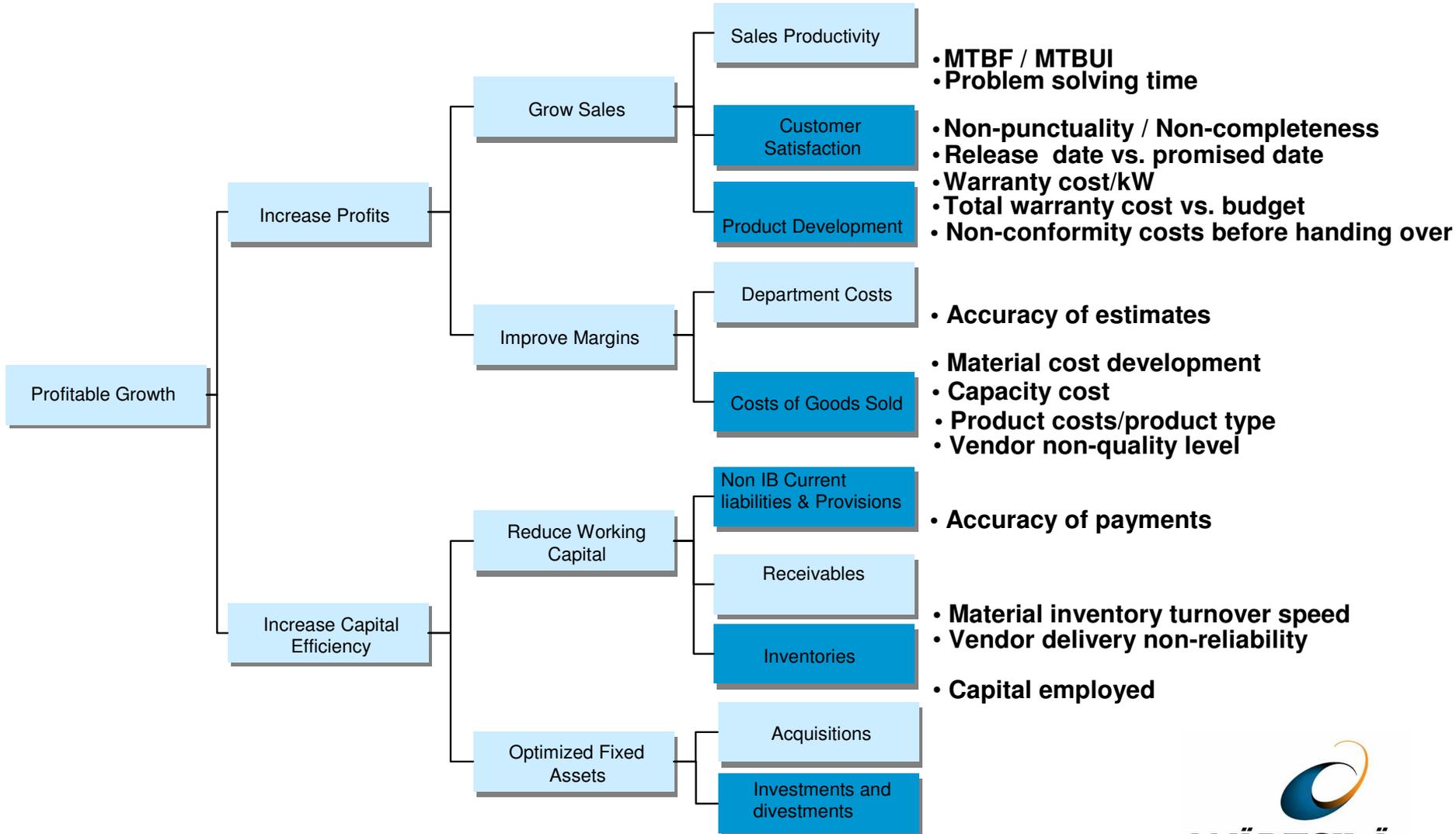
Sustainable profitable growth

Drivers

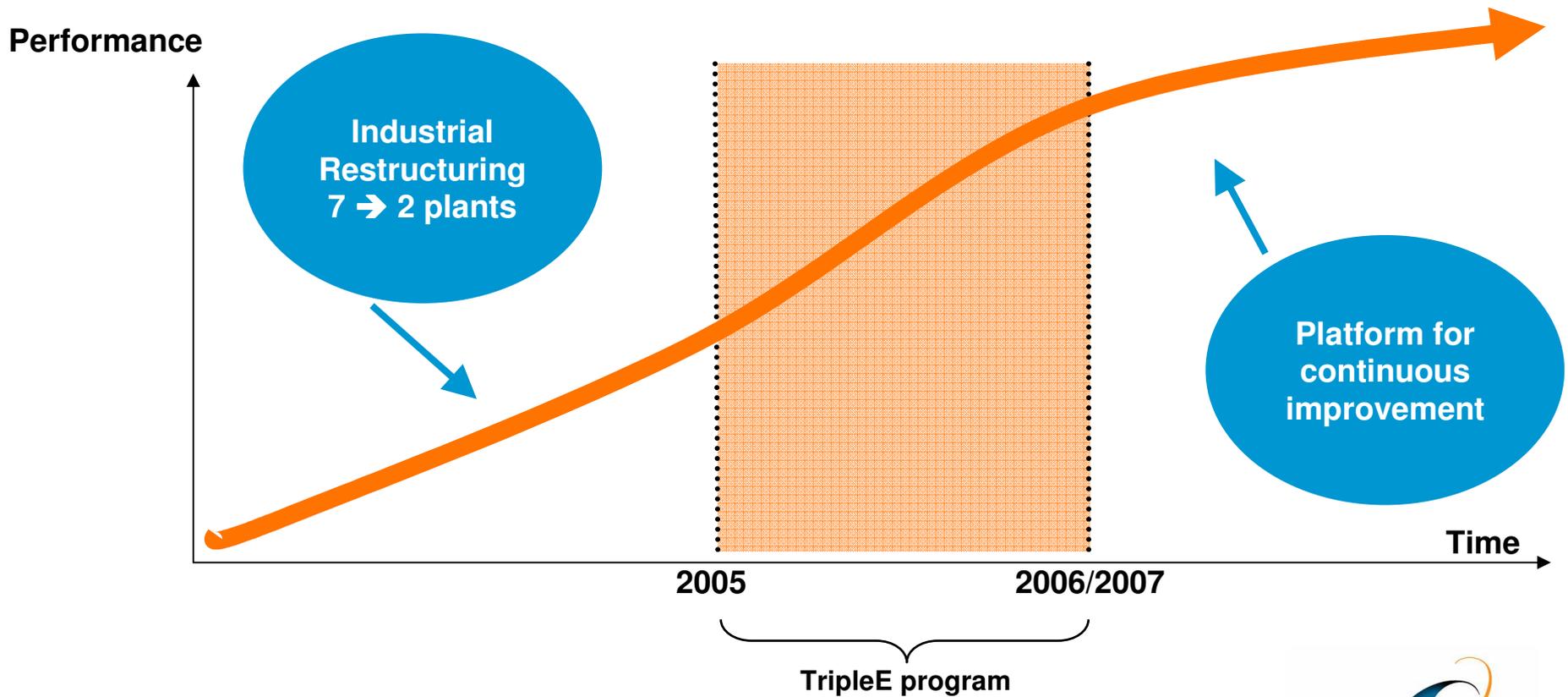
Levers

Sublevers

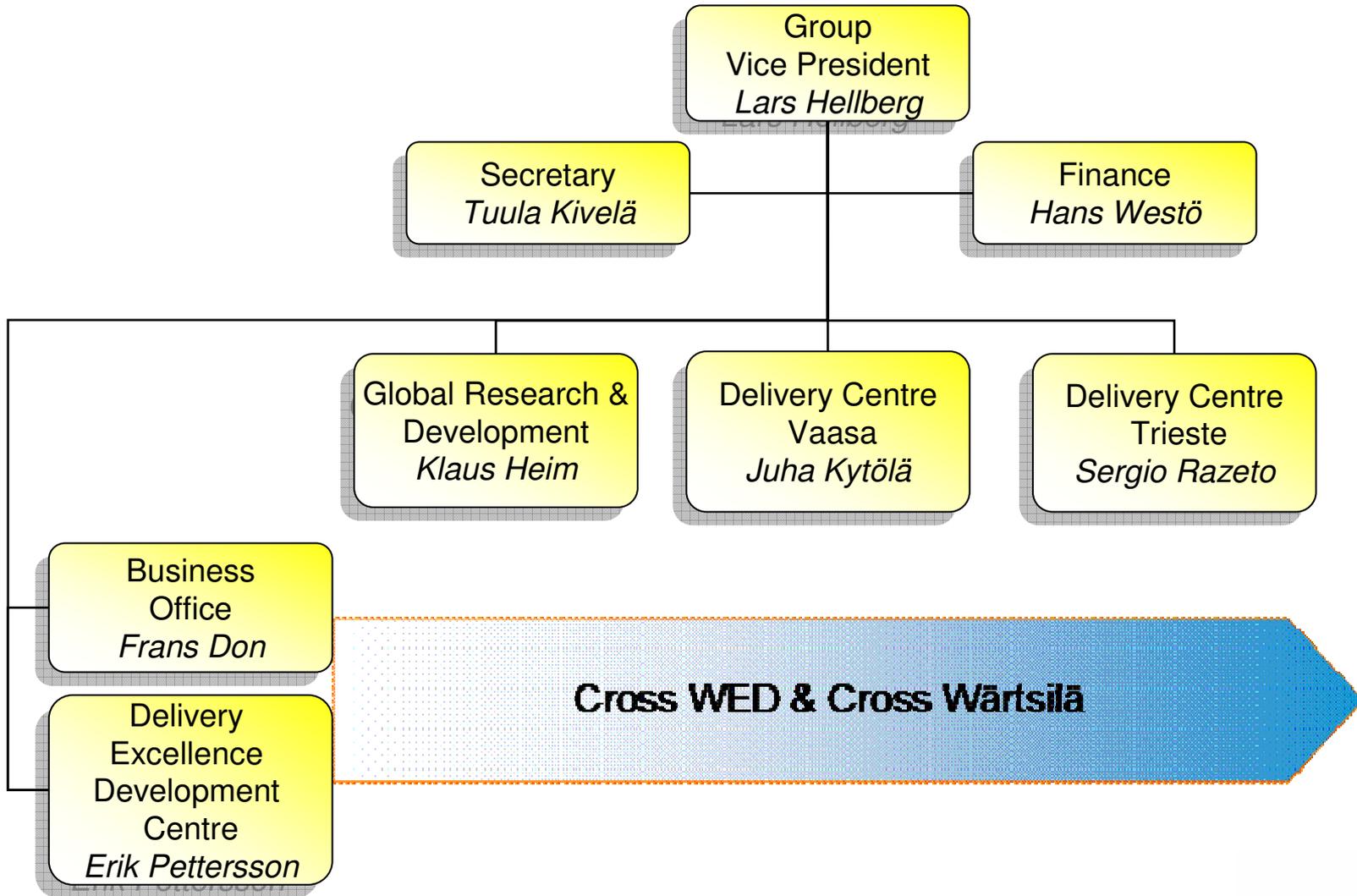
Kpi's



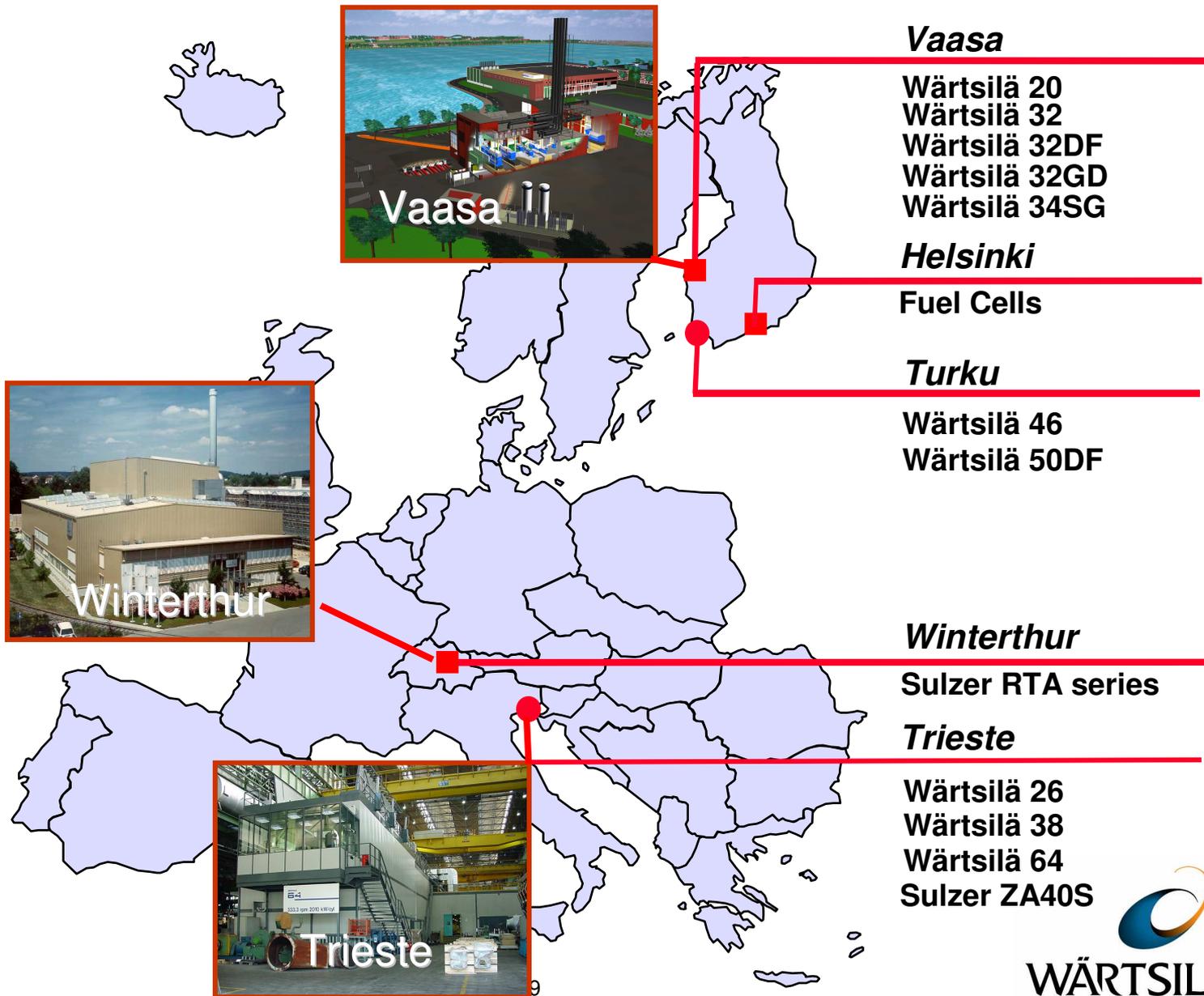
# TripleE - Delivers an additional step change

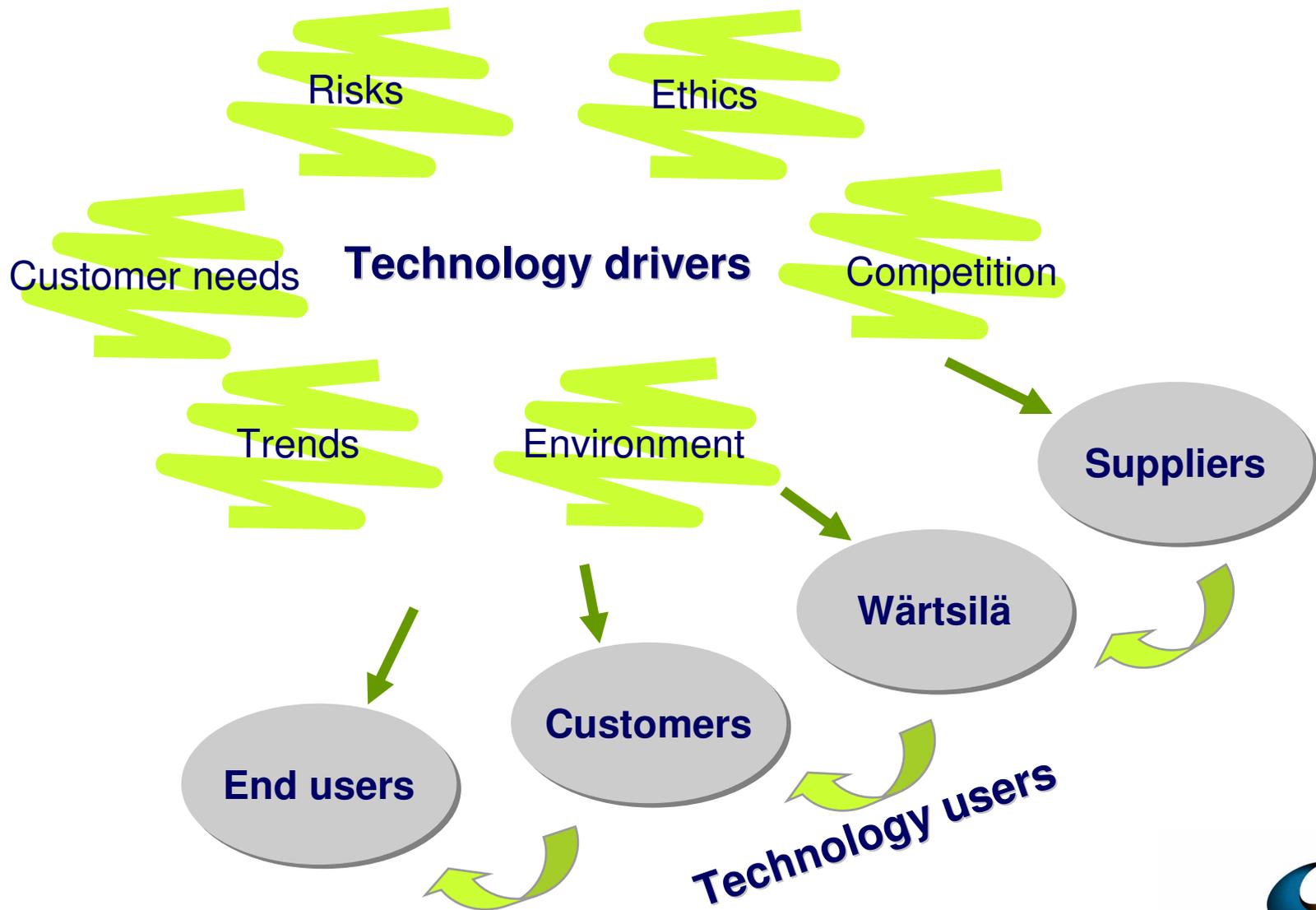






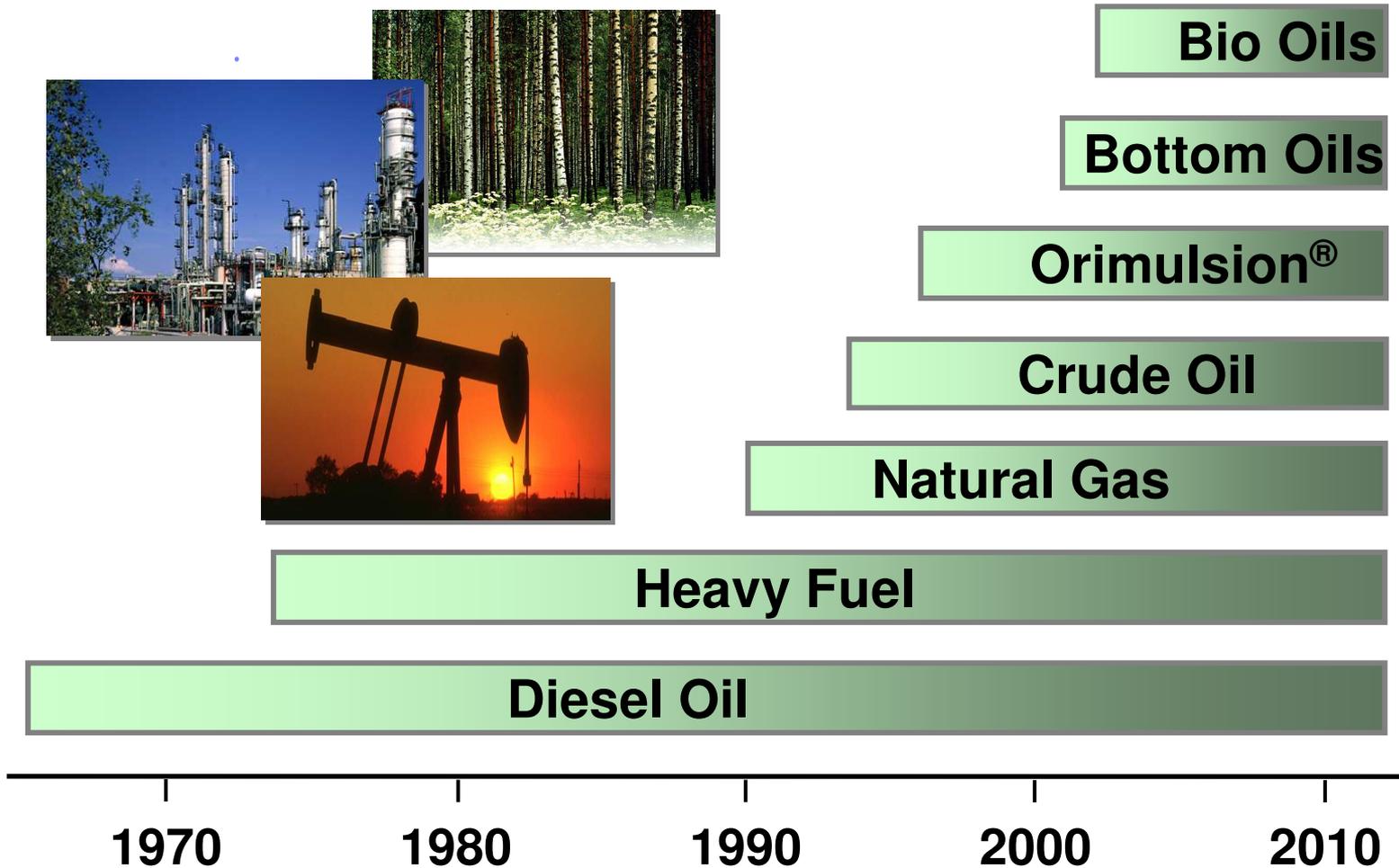
# Wärtsilä R&D units



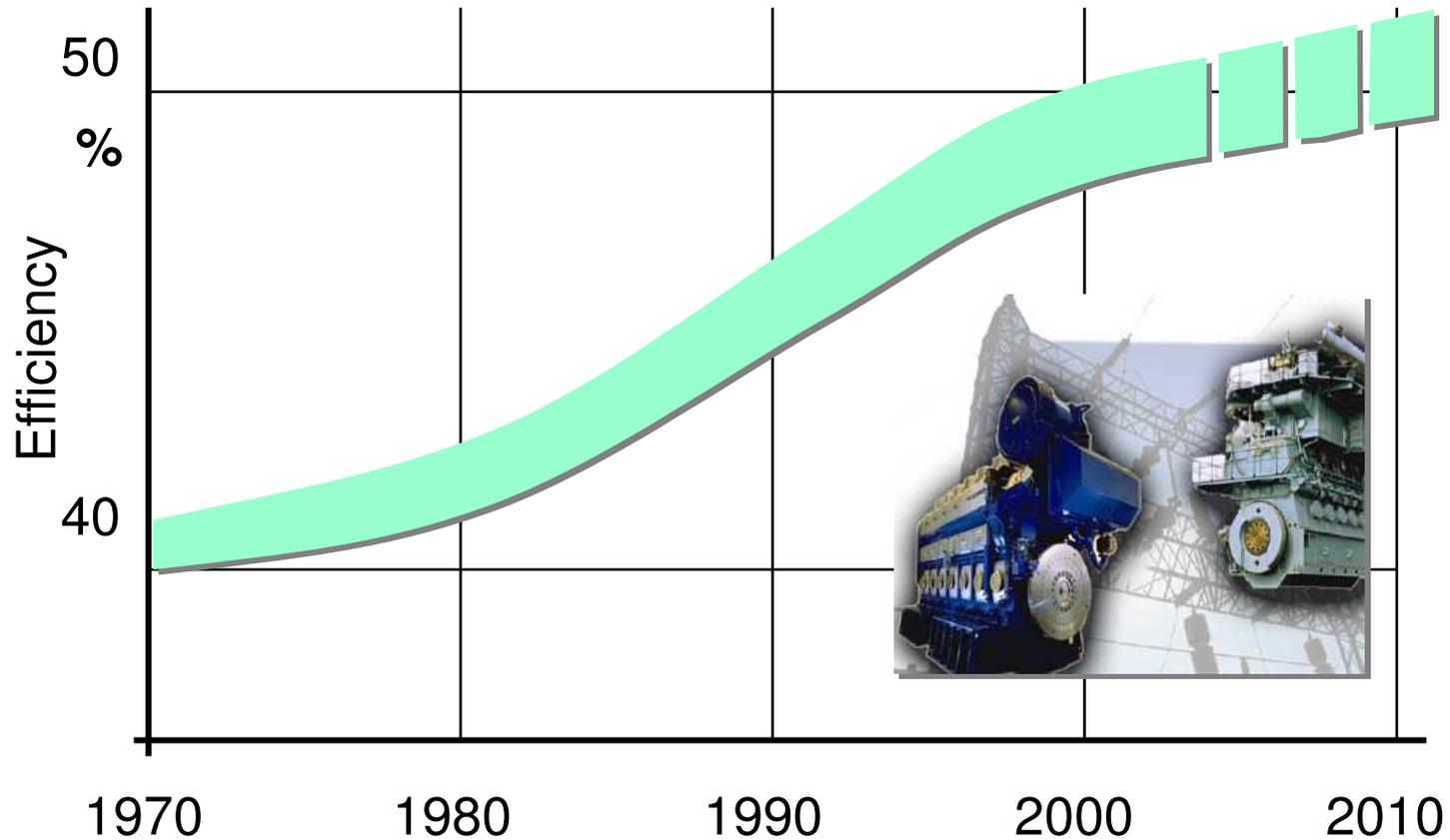


# Global fuel versatility needs

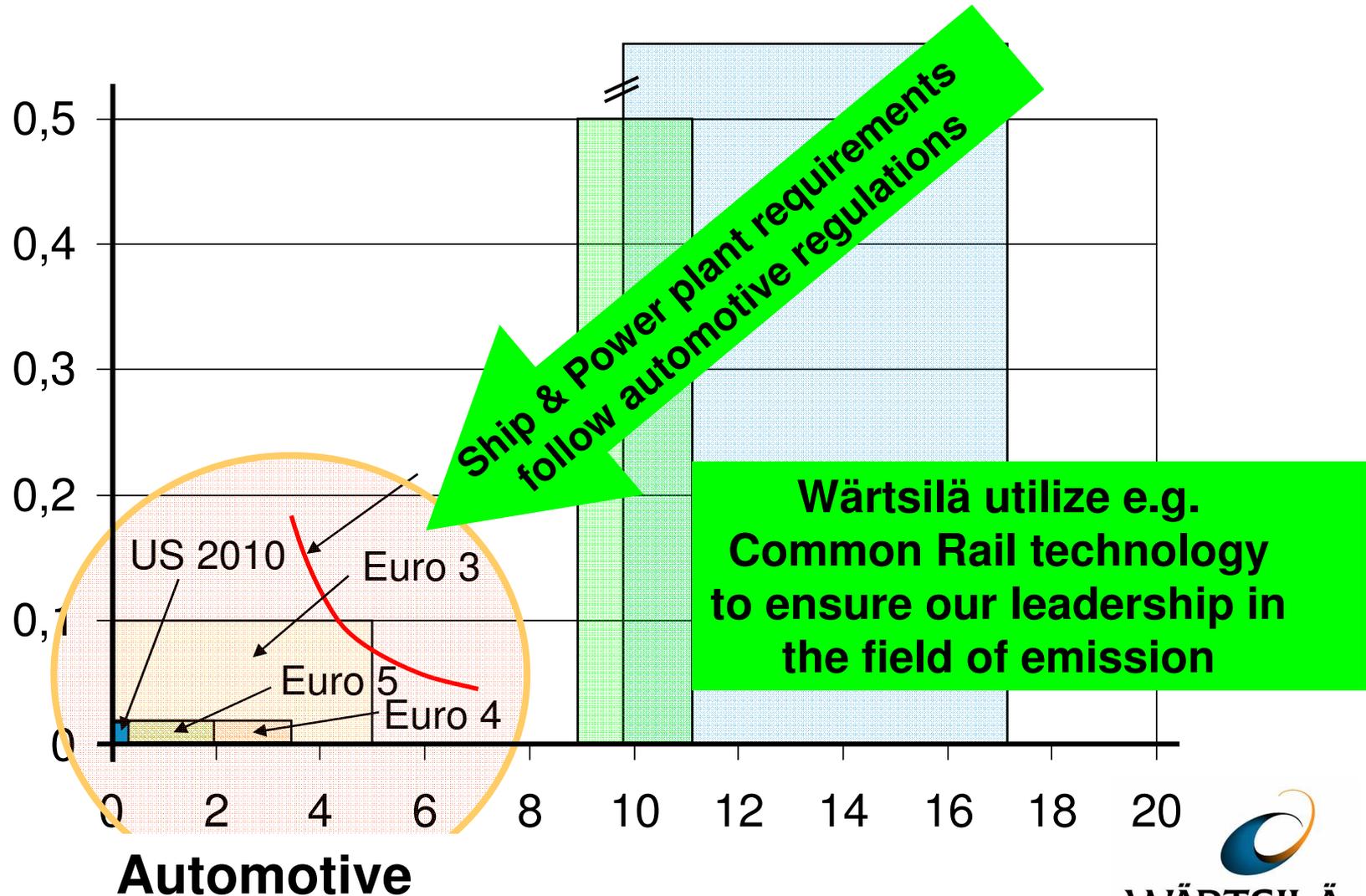
→ available Wärtsilä engine technology



# Efficiency development of Wärtsilä engines



# Environmental: Legal regulations

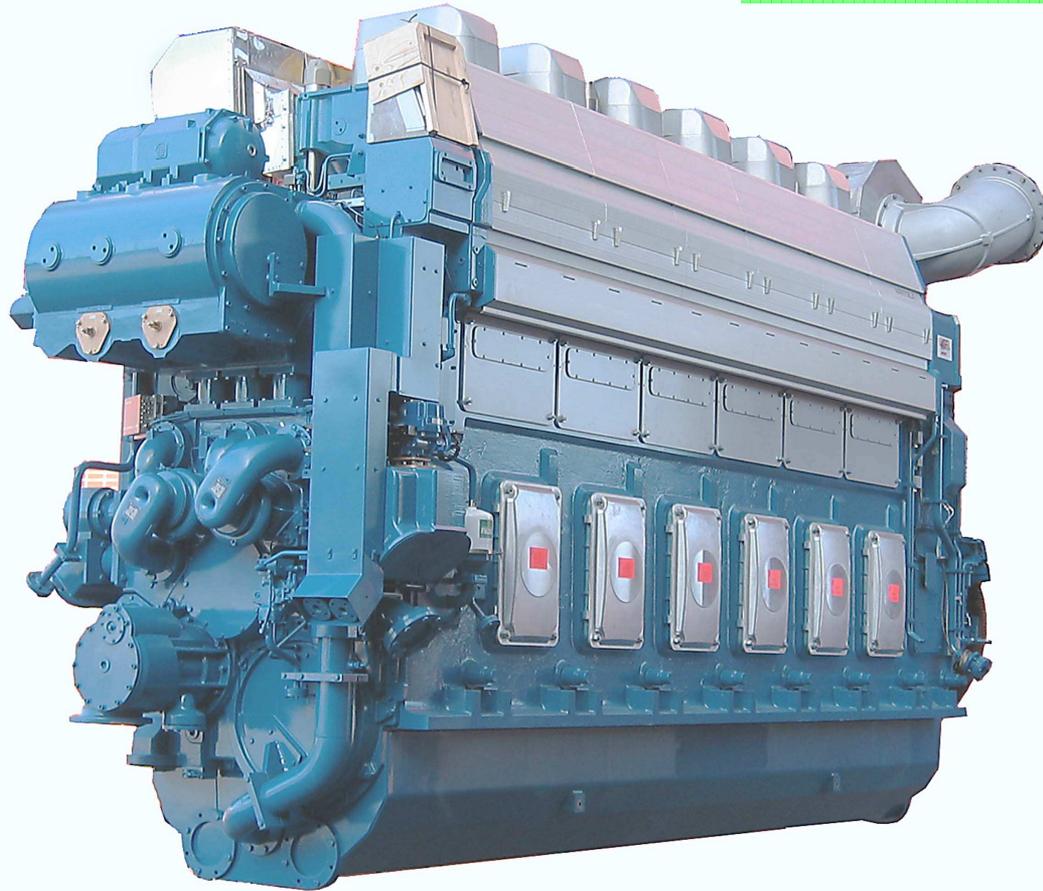


# The new 4-stroke engine generation – Wärtsilä 46F

## Common Rail Technology

**Power** 1250 kW/cyl  
**Speed** 600 rpm  
**BMEP** 25,9 bar

*Design for  
manufacturing →  
reduced cost to  
support profitable  
growth*



# The new 2-stroke engine generation – RT-flex 2-stroke

## Rail unit & WECS

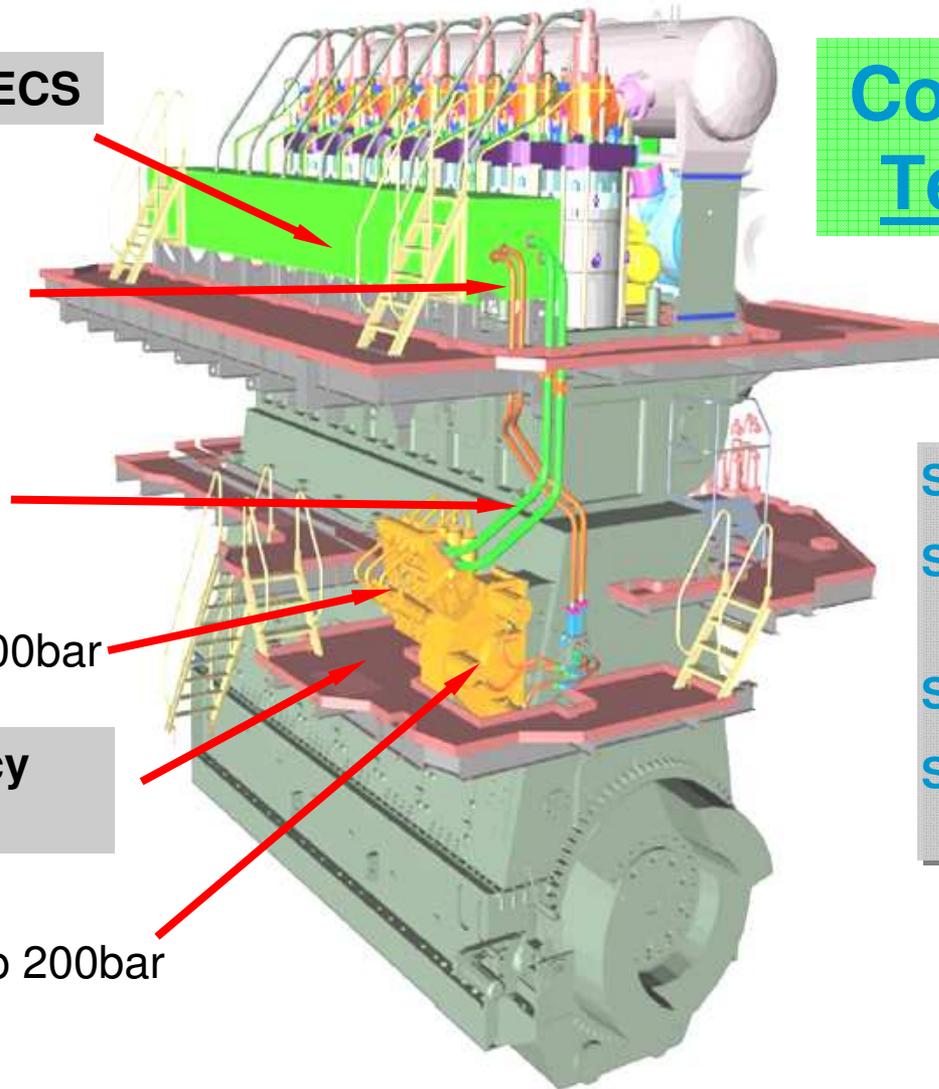
Redundant servo oil supply lines

Redundant fuel oil supply lines

Fuel pump 1000bar

High efficiency Supply unit

Servo oil pump 200bar



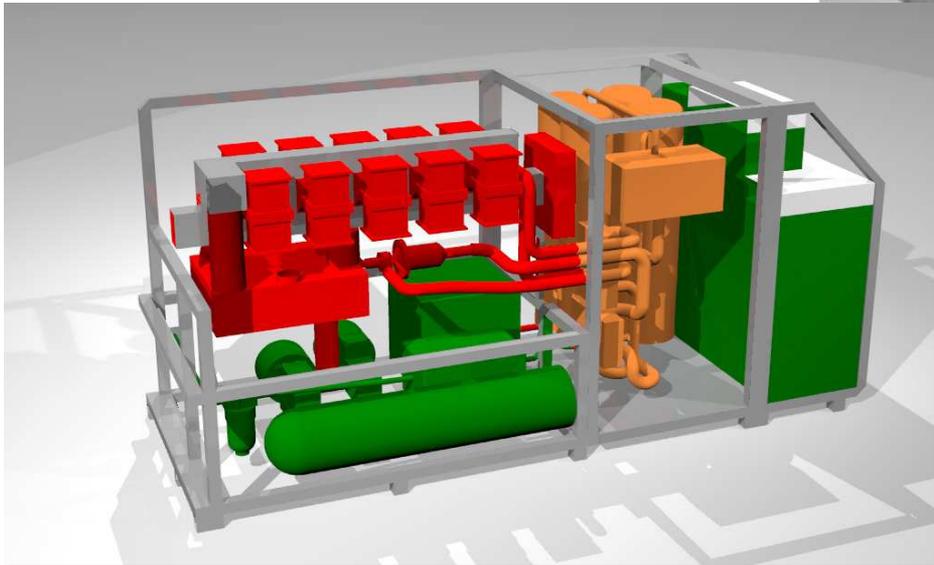
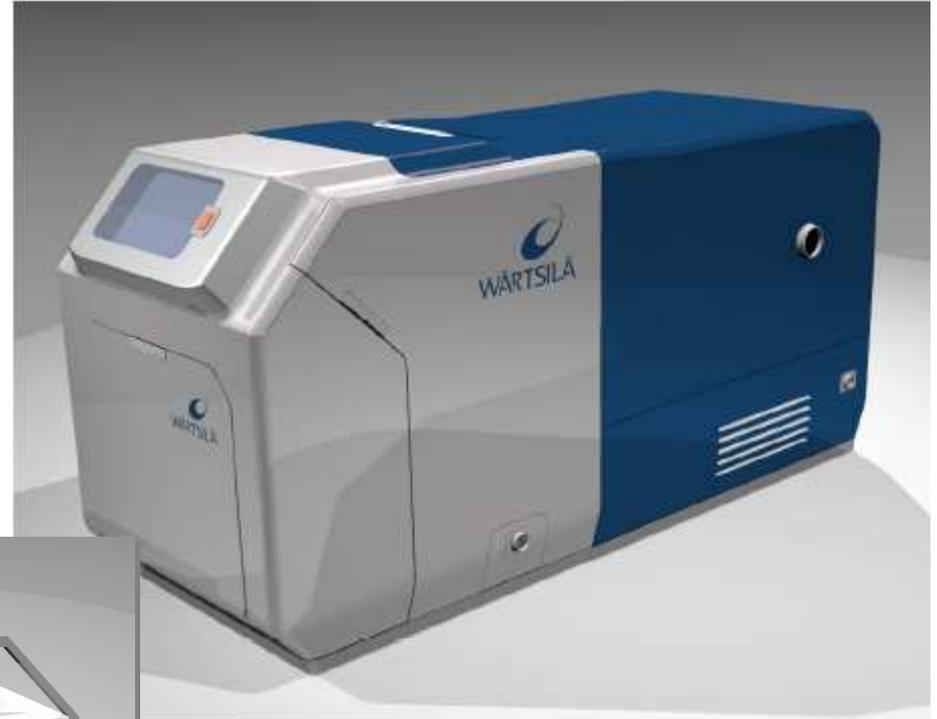
## Common Rail Technology

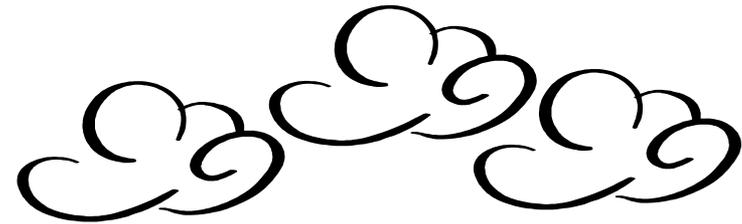
- Size 0: RT-flex50
- Size I: RT-flex58T-B  
RT-flex60C
- Size II: RT-flex68T-B
- Size IV: RT-flex84T-D  
RT-flex96C

# Wärtsilä Fuel Cell program to support future market requests

## Commercial applications

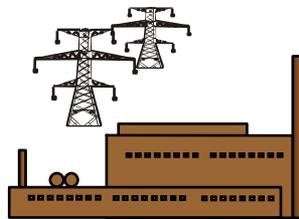
- Stationary
- Marine





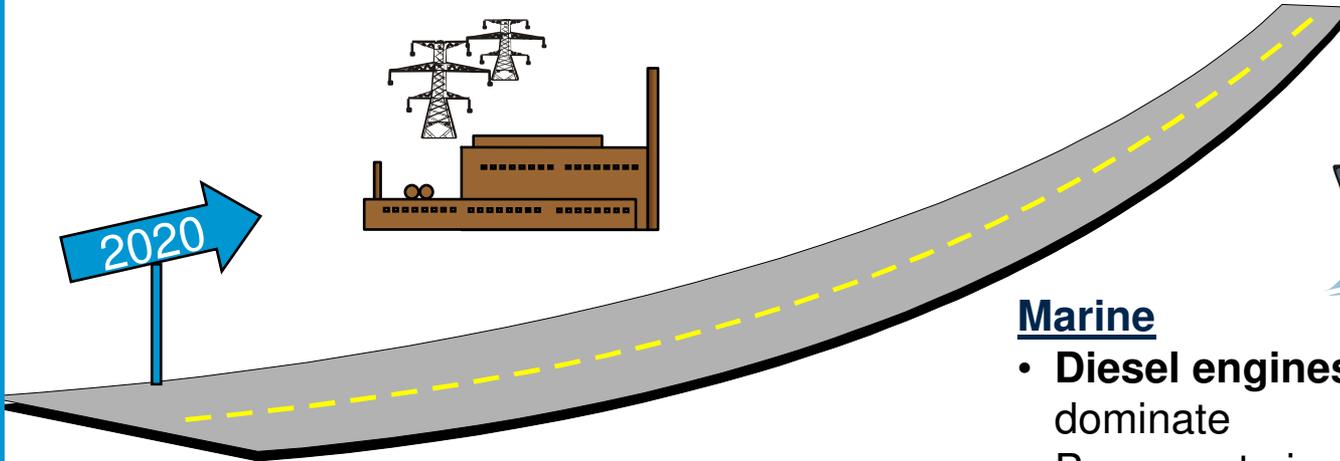
## Power plant

- **Demand** for electricity growing (2 % / annually)
- **Natural gas** preferred fuel



## General concerns

- **Global warming** (CO<sub>2</sub>)
- **Air pollution** (developing countries)
- **Increased demand** for energy
- **Increase of energy prices**



## Marine

- **Diesel engines** will continue to dominate
- Pressure to improve fuel quality and **reduce emissions**

# Wärtsilä Manufacturing units

FLEXIBLE MANUFACTURING

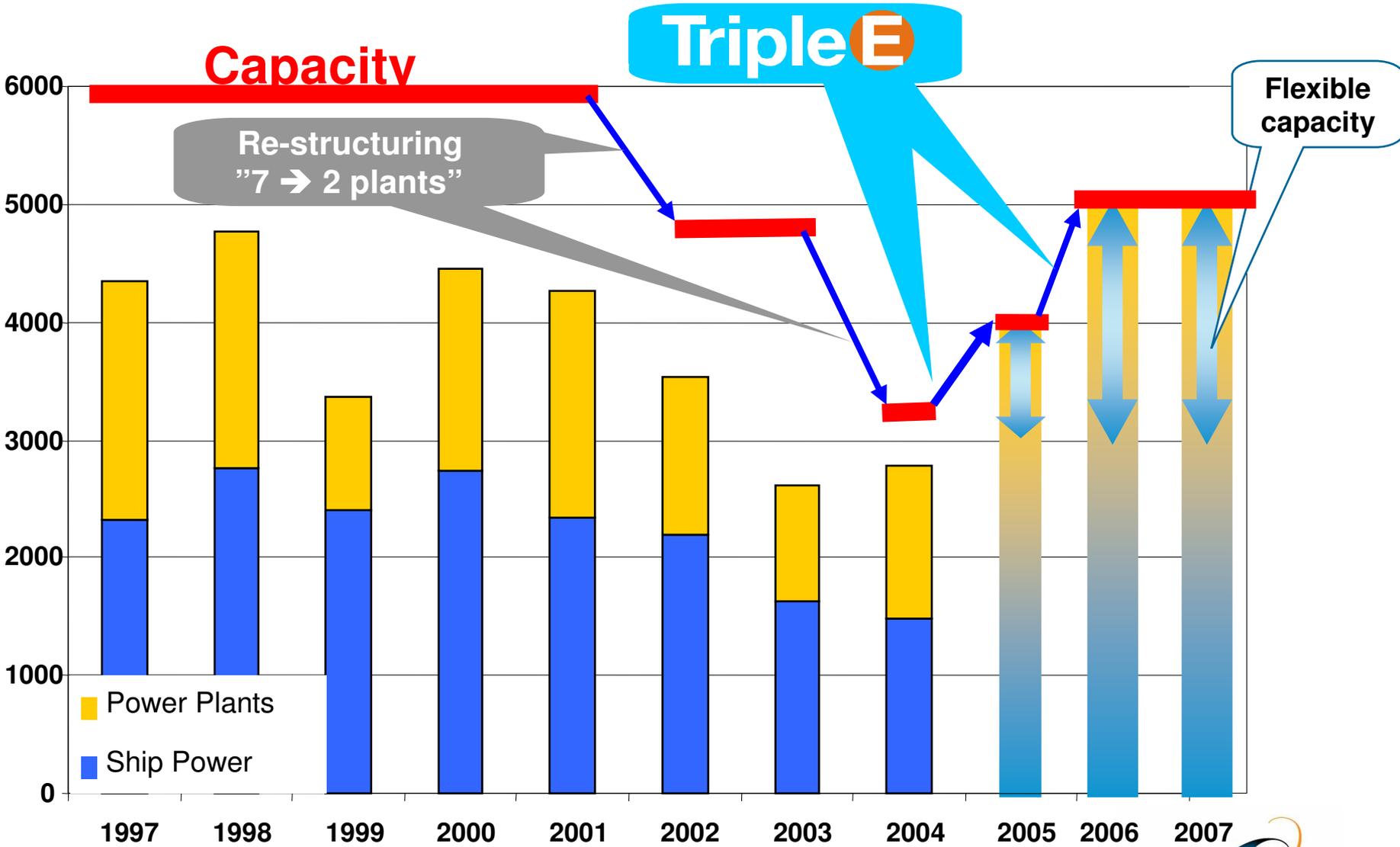
Wärtsilä 20  
Wärtsilä 32  
Wärtsilä 32DF  
Wärtsilä 32GD  
Wärtsilä 34SG



Wärtsilä 26  
Wärtsilä 38  
Wärtsilä 46  
Wärtsilä 50 DF  
Wärtsilä 64  
Sulzer ZA 40S

# Capacity level MW 1997-2007

FLEXIBLE MANUFACTURING

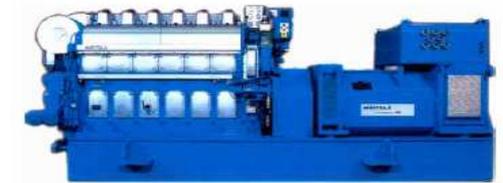
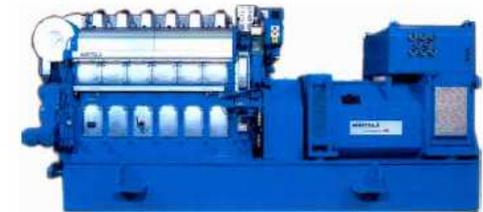
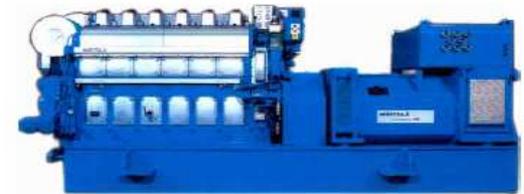


Wärtsilä has signed a JV Contract with **Shanghai Marine Diesel Engine Research Institute (SMDERI)** which is an affiliate of China Shipbuilding Industry Corporation (CSIC) to **produce Wärtsilä Auxpac W20 gensets** as from second quarter 2006.

FLEXIBLE MANUFACTURING



Lingang



# The new Corporate Supply Management team

as from June 1:st



- a) A lean corporate supply management organization to drive realization of group-wide synergies
- b) Unification of divisional strategic sourcing, operational and project purchasing activities under divisional Supply Management
- c) Key Objectives → Excellent supplier relations with a lean supplier base including emerging markets focus to ensure world class cost management and quality deliveries on time!

# Our commitment → OUR Triple E program!

