



**KONGSBERG**  
AUTOMOTIVE



## Commercial Vehicles

*How to create a competitive edge*

# Agenda

- ▶ **Key facts Commercial Vehicles Systems**
- ▶ **Global trends and key drivers**
- ▶ **Our approach to create competitive edge**



# Commercial Vehicles Systems (CVS)



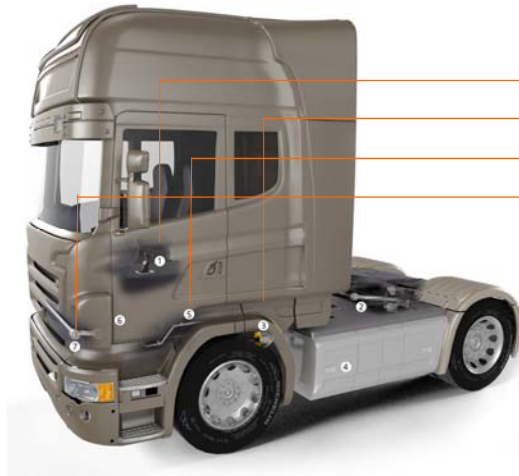
Our mission

Improving  
driving comfort



# Commercial Vehicle Systems – business segment overview

*- product portfolio*



- Gearshift Systems
- Clutch Actuation Systems
- Fluid Transfer Systems
- Stabilizers

Gearshift



Stabilizers



Clutch Actuation



Couplings



Fluid Transfer Systems



# Market leader positions at the leading OEMs



- Gearshift Systems
- Vehicle Dynamics
- Clutch Actuation Systems
- Couplings
- Fluid Systems
- Rods

**LEADING POSITIONS IN ALL SEGMENTS**

Market Segments			
Product Range	Customer Examples	Market Position Europe	Market Position World wide
Gearshift Systems	Volvo, Daimler, MAN, VW, Scania, DAF, Hyundai	No 1	
Clutch Actuation Systems	Volvo, Scania, Daimler, RVI, DAF, Hyundai	No 1	No 1/2
Vehicle Dynamics	Volvo, Scania, DAF	No 2	
Fluid Systems	Volvo, RVI, Daimler, DAF, Ford, UTEC, ITEC, Martin Rea, Cooper, TI		No 1/2
Couplings	Volvo, Scania, Iveco, Wabco, Knorr-Bremse, Schmitz	No 1	



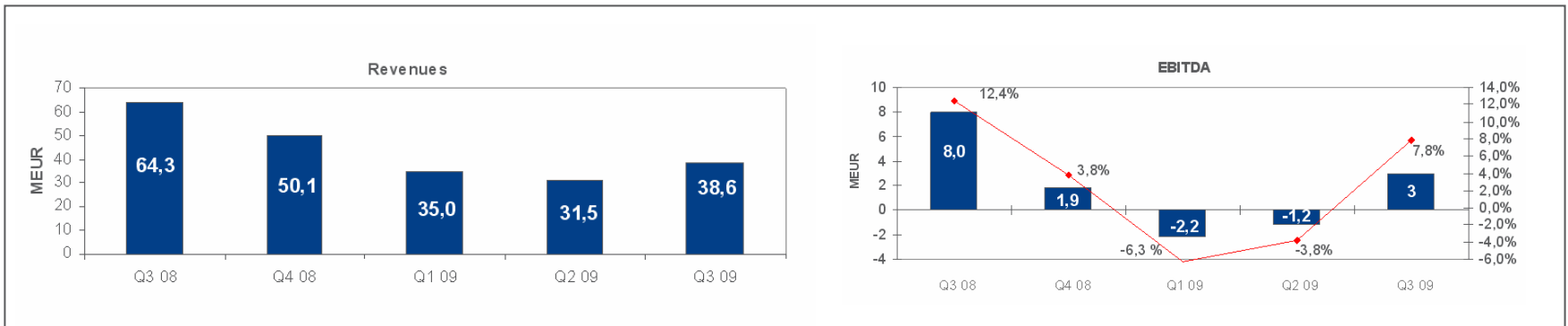
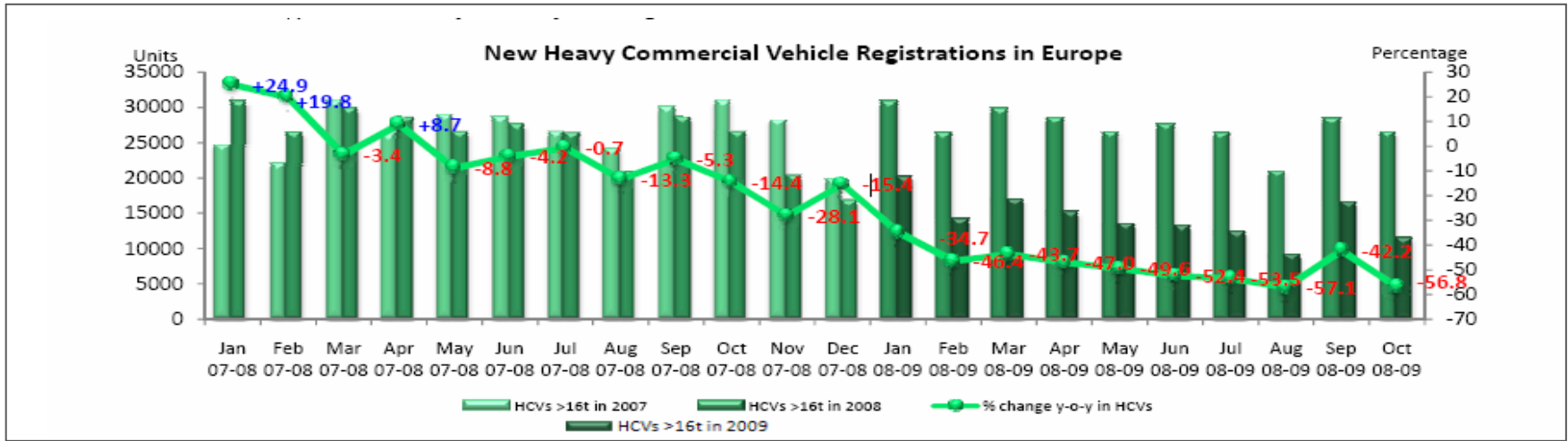


# GLOBAL TRENDS AND KEY DRIVERS



# Sharpest downturn ever in the market

## CVS delivered 8% EBITDA in Q3



# Global heavy duty truck trends

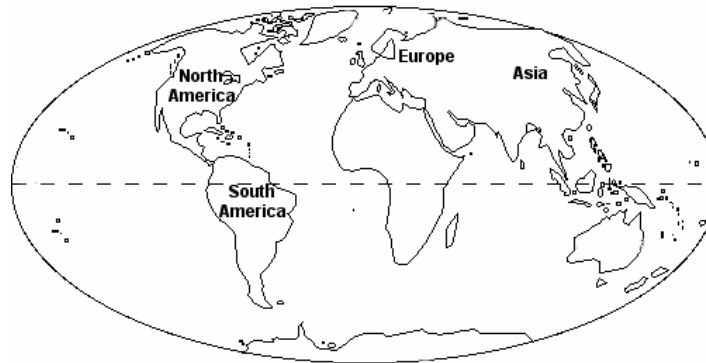
## NORTH AMERICA

- Big fleet owners
- Focus on vehicle cost
- Driver availability



## EUROPE

- Technology driver
- Safety and comfort
- Performance
- Emissions



## SOUTH AMERICA

- Emerging markets
- Infra structure
- Follows EU standard



## ASIA

- Emerging markets
- Basic vehicles
- Fragmented
- Infra structure



# EU sets the pace



## **EUROPE**

- Technology driver
- Safety and comfort
- Performance
- Emissions



## **ASIA**

- Emerging markets
- Basic vehicles
- Fragmented
- Infra structure



## **NORTH AMERICA**

- Big fleet owners
- Focus on vehicle cost
- Driver availability



## **SOUTH AMERICA**

- Emerging markets
- Infra structure
- Shift to EU standard

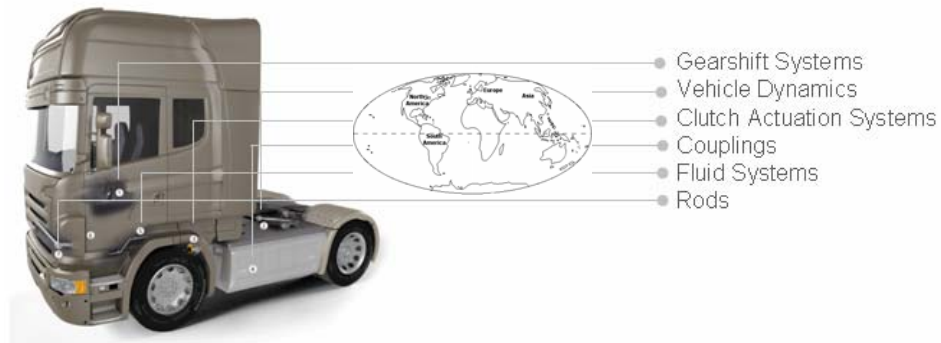


European trucks are preferred for their durability, reliability, low emissions and comfort.



# CVS market strategy – main direction

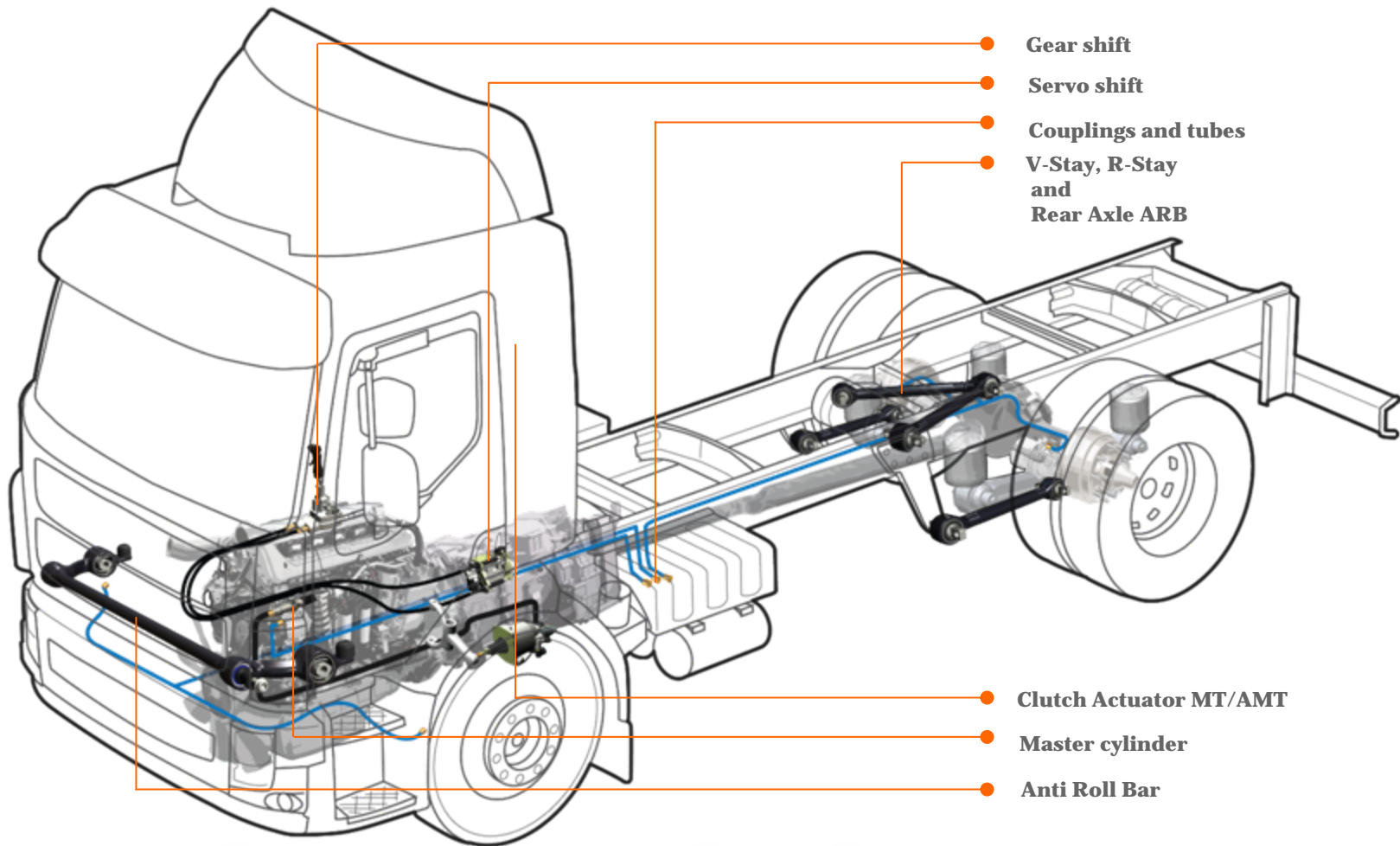
**Innovate and strengthen our position in EU**



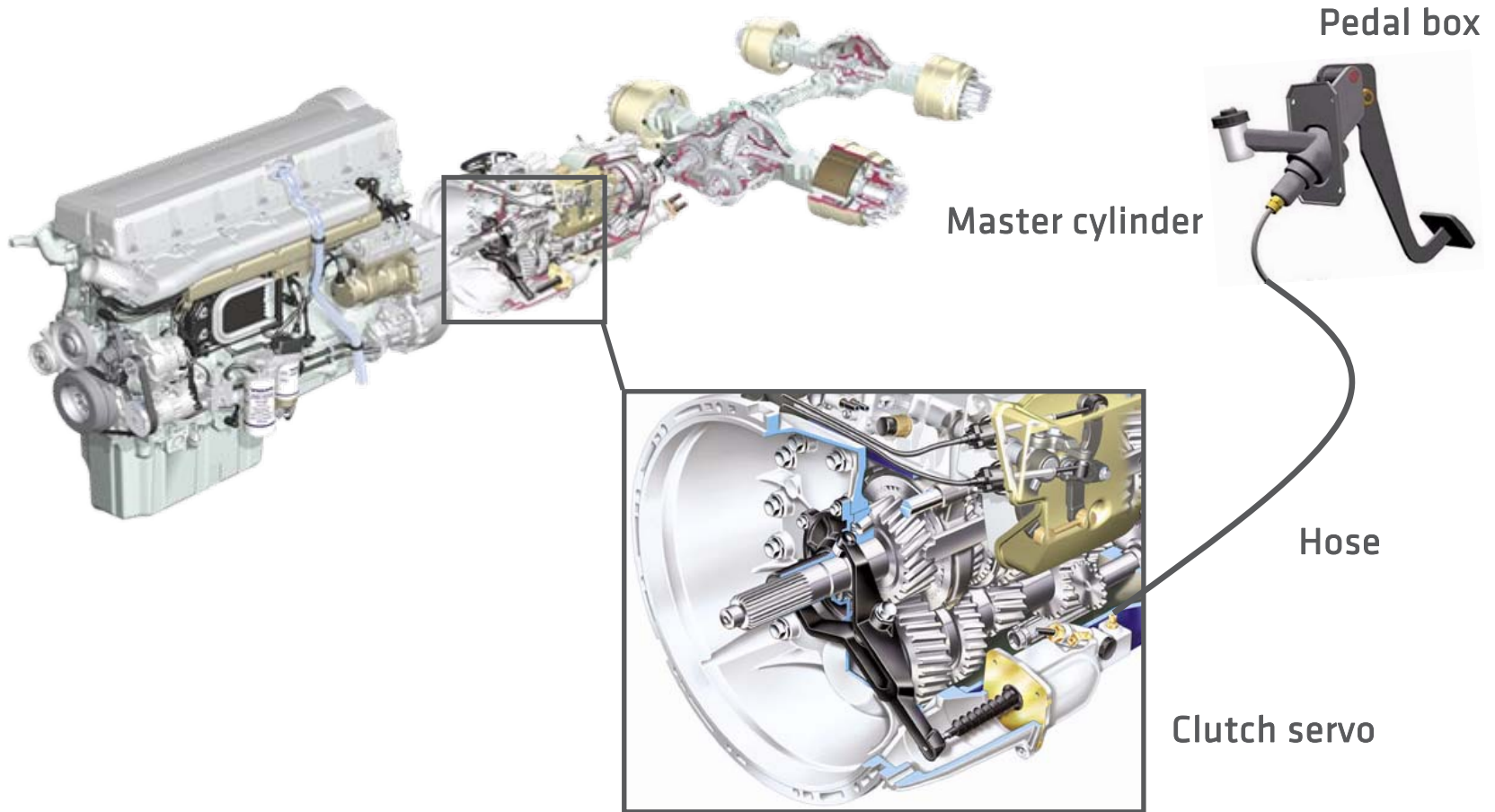
**Enter new markets with existing portfolio  
(Americas and Asia)**



# A portfolio well suited for future developments



# Clutch Actuation System





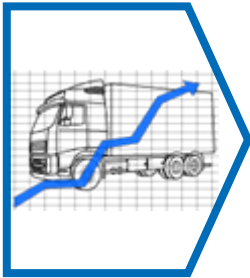
## OUR APPROACH TO CREATE COMPETITIVE EDGE



# Competitive edge

*- our long term systematic approach*

## Business concept



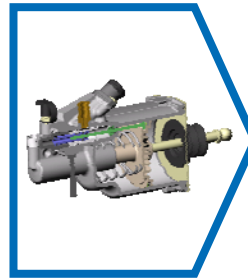
Nr 1 in growing segments  
Unique products  
Internal efficiency  
Corporate culture

## Strategy STP



Identify global opportunities  
Global footprint  
Financials  
Product roadmap

## Product roadmaps



Product pr. customer  
Define technology gaps  
Competitor benchmark  
Action plan

## Research & development



Customer requirements  
Close technology gaps - innovation  
"Green line"  
IPR

## Production

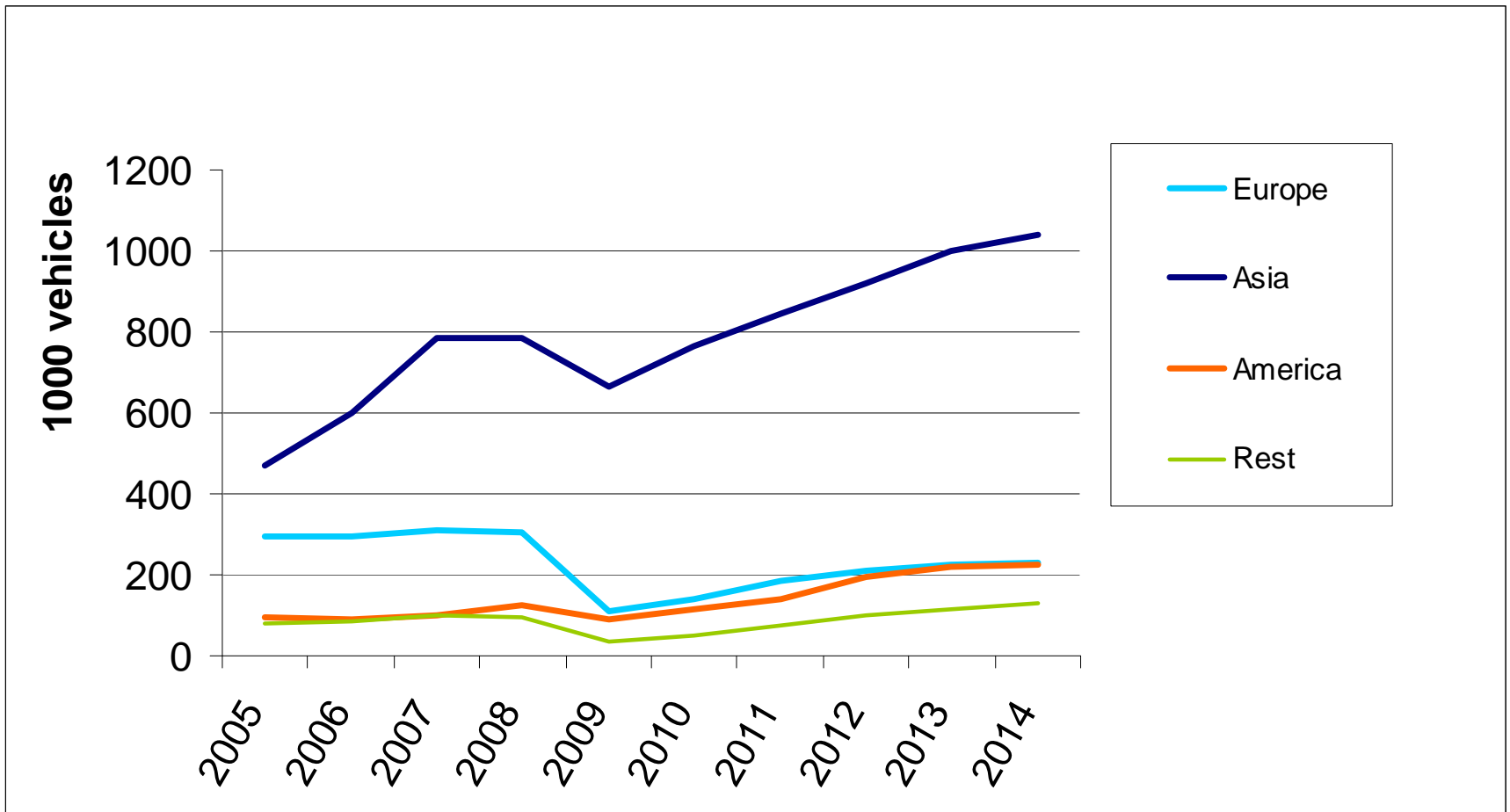


Optimal efficiency  
Perfect quality  
Minimum lead time

————— *How to create a competitive edge* —————



# Clutch Actuation System volume development



Internal estimates



# General customer requirements

## Supplier requirements

- ▶ Quality/HES ISO/TS 16949/ISO 14000
- ▶ Purchase/price/warranty agreements
- ▶ Global footprint
- ▶ Logistical system
- ▶ Performance

## System requirements

- ▶ Pedal force and comfort
- ▶ Return time (avoid burnt clutch)
- ▶ Lifetime: 3 000 000 clutch operations

## Component requirements

### Clutch servo

- ▶ Temperature: - 40° to + 120° C
- ▶ Vibrations
- ▶ Dirt, oil, high pressure water cleaning etc.
- ▶ Corrosion: 160 h salt spray
- ▶ New SPV valve (for split shifting)
- ▶ Weight

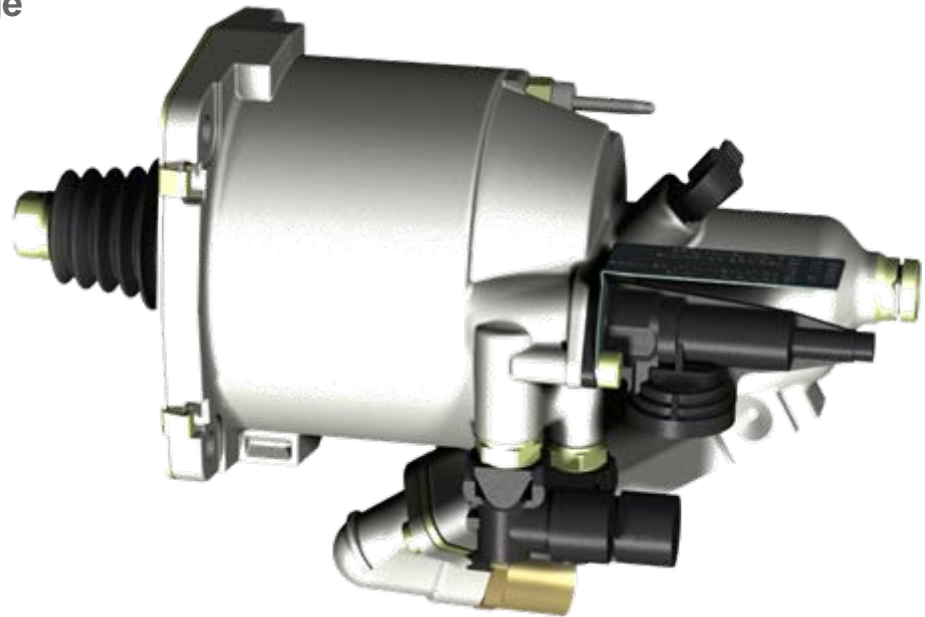
### Master cylinder

- ▶ Temperature: - 40° to + 80° C
- ▶ Corrosion: 96 h salt spray
- ▶ Friction
- ▶ Max load when no air pressure available



# Customer uniqueness

- ▶ Brand values (shift and clutch actuation has to do with the customer brand – creates uniqueness)
- ▶ Best function and driving comfort
- ▶ Complete system and full range
- ▶ Extra options
- ▶ “Green line”
- ▶ Cost



# Example from media

”For sjåføren gjelder det at arbeidsdagen ikke pumper all energi ut av kroppen hans. Det som teller mest er sittekomfort, fjæringskomfort inkludert hyttefjæring, gearkasse, eller geararbeid, og styrestabilitet.”

	Gjennomsnittspoeng, veltet		
	MAN	Scania	Volvo
Profilant	4,00	4,25	4,00
Motor	4,25	4,25	3,75
Clutch	3,75	4,00	3,50
Styring	4,25	4,50	4,50
Fjæringskomfort	3,75	4,25	4,00
Hyttedesign	4,25	4,25	4,00
Styrestabilitet	4,75	4,00	3,75
Margrep drivaksel	4,25	4,25	4,00
Akustikkonfort	4,00	3,75	4,25
Kjørehøyde	3,75	4,00	4,00
Førerhus, dører	4,00	4,25	4,00
Førerhuskomfort	3,75	3,75	3,50
Kjørestabilitet	3,75	3,50	4,25
Førerhus	4,00	3,75	4,00
Passasjerkomfort	4,00	4,00	4,00
Dashboard, betjening	4,25	4,00	4,00
Varmesystem	4,25	4,00	3,75
Varmesystem	4,25	4,25	4,00
Utsikt	4,25	4,00	4,00
Oversett	4,00	4,00	4,00
Sideseil	4,00	4,00	4,00
Lydnivå (i hytta)	4,00	4,00	4,00
Daglig servicekontroll	4,00	4,00	4,00
Total kjøresjøl	4,38	4,40	4,32

**Kjøreintrykk**  
For sjåføren gjelder det at arbeidsdagen ikke pumper all energi ut av kroppen hans. Det som teller mest, er sittekomfort, fjæringskomfort inkludert hyttefjæring, gearkasse, eller geararbeid, og styrestabilitet. Støy har ikke vært noe problem i lastebiler på mange år. På området førerplass har Scania alltid hevdet seg godt, og det er Scania med for løst hytteoppheng. Når det gjelder informasjon til føreren, hadde testbilen Interactor 600, og den forteller "alt".



# Competitive edge at KA

## Long term systematic approach



## Technology as differentiator



# Q&A



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