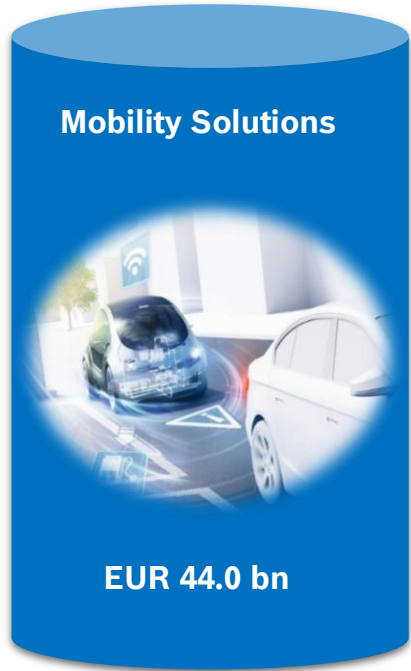


Automotive Aftermarket - AA

Customer Team Off-Highway - CFH

AA/CFH

Bosch: Divisions and main subsidiaries



Starter Motors and Generators



Electrical Drives



Chassis Systems Control



Automotive Steering



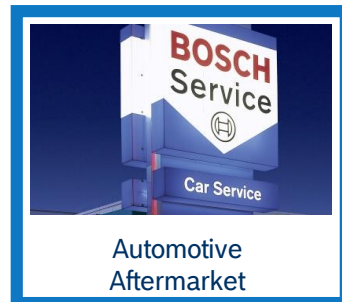
Car Multimedia



Automotive Electronics



2-Wheeler and Powersports



Automotive Aftermarket



Bosch Engineering GmbH



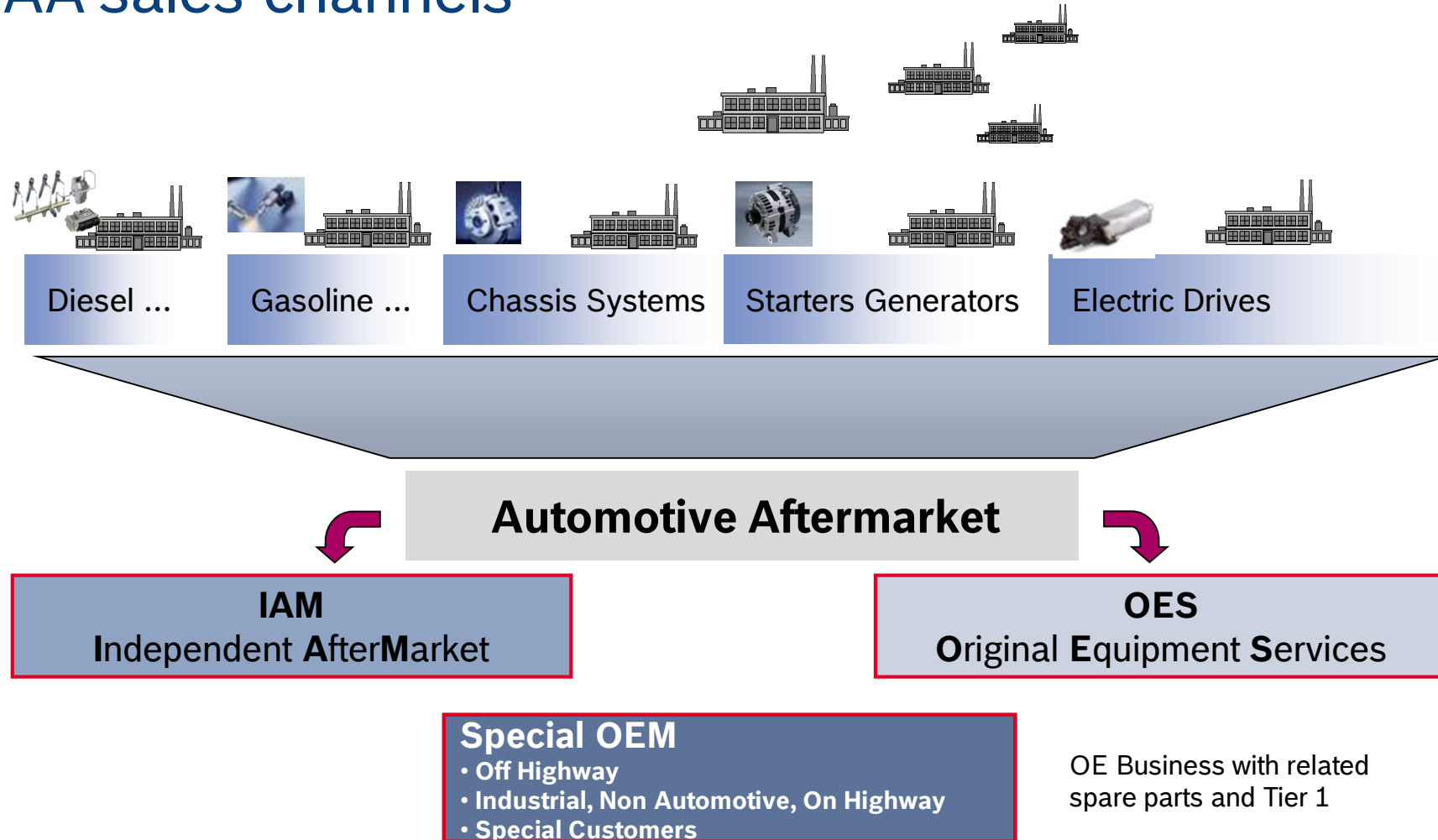
ETAS GmbH



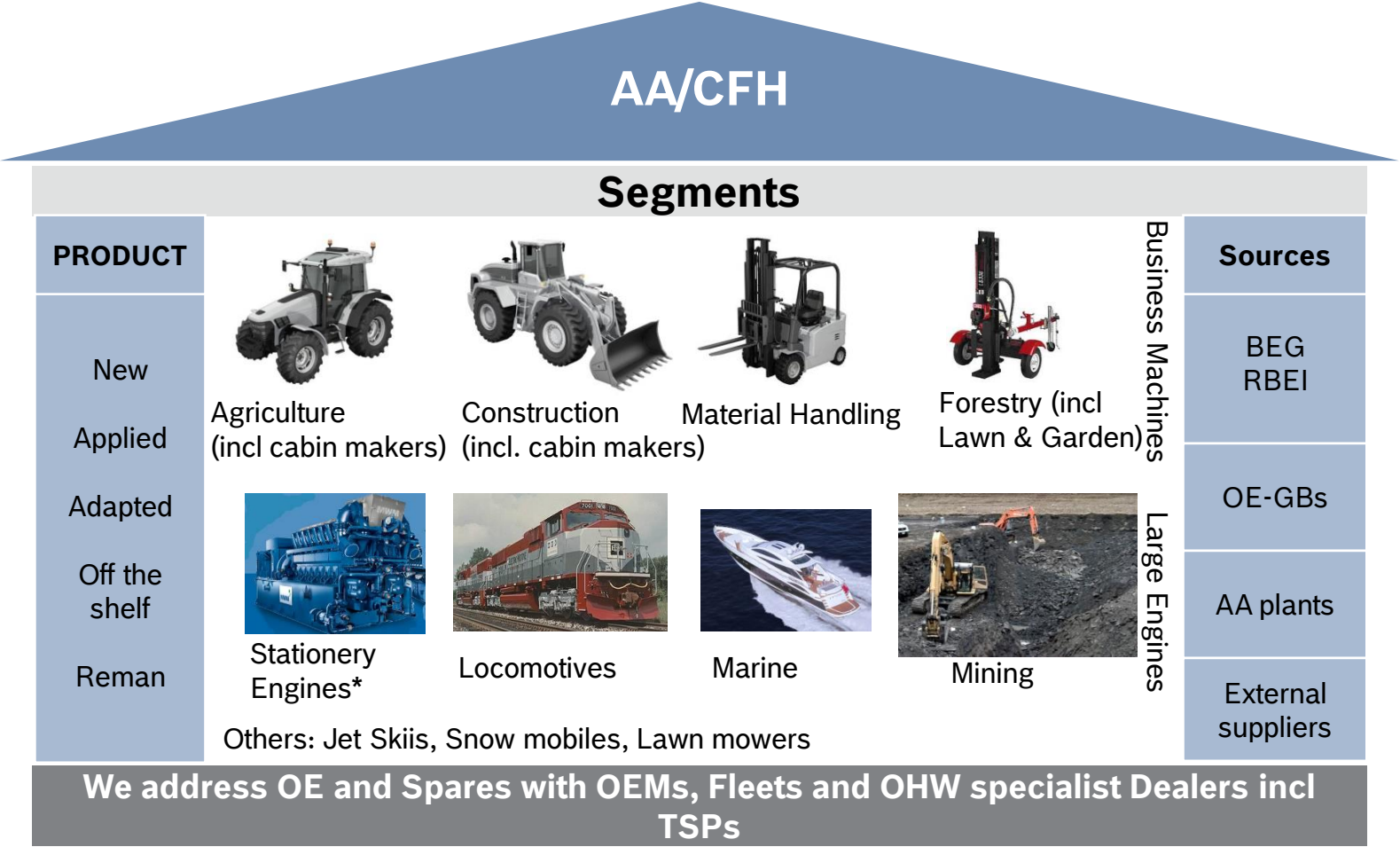
Commercial Vehicles and Off-Road

AA/CFH

Bosch AA sales channels



AA/CFH Sales Off-Highway



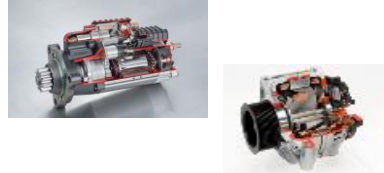
AA/CFH

Sales Off-Highway: Product Portfolio (Extract)

Injection Systems & Fuel Pumps



Starter Motors & Alternators



Water Pumps & Valves



Wiper Blades



Spark & Glow Plugs



Braking Components



Sensors



Assistance Solutions



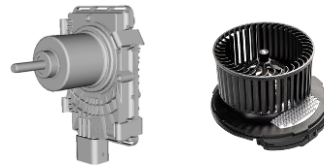
Filters



Batteries



Electric actuators & Blowers



Connectors, Relays, Lighting



AA/CFH Overview Product Portfolio

Economical. Powerful. Reliable.



Diesel Systems

Sensor Systems

Miscellaneous

Starter Motors and
Alternators



Batteries

Electric Motors

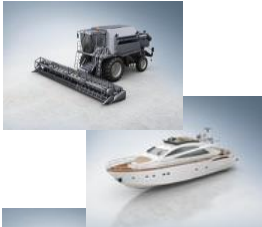



GENERAL INFORMATION

LARGE ENGINE

AA/CFH Engine Segmentation in LE Business

Economical. Powerful. Reliable.



LE Segment (> 560 kW)	Market share	Engine categories	Typical Bosch FIE	Typical engines
 <p>LE-D Derivates (Truck/OHW based) ≥ 1400 rpm 4 stroke</p>	Pleasure boats, Genset, C&I	< 2,5 l/cyl. ≤ 150 kW/cyl. bore: ≈ 135 mm	CRSN Mixed CRS UP2.2	MTU BR1600, BR2000 Doosan DV 12 ...32 Kipor KD146 Yuchai 6C
 <p>LE-H High Speed ≥ 1400 rpm 4 stroke</p>	Mining, C&I, Genset	2...6 l/cyl. ≤ 250 kW/cyl. bore: ≈ 175 mm	MCRS CONV (IP, PF) LEGV	Cummins QSK , -DF MAN D7, MTU BR4000 CAT C175, Wärtsilä W20 DF
 <p>LE-M Medium Speed 450 ... 1400 rpm 4 stroke</p>	Loco, Genset HFO Marine & Power Plant	4 ...290 l/cyl. ≤ 2100 kW/cyl. bore: ≈ 480 mm	MCRS UPS, UIS CONV (PF) LEGV	GE EVO, -DF, EMD 710 MAN HFO 32/44, 48/60 Wärtsilä W46, W34DF, MWM TCG2032, GE-J9xx
 <p>LE-L Low Speed ≤ 450 rpm 2 stroke</p>	Marine & Power Plant	> 110 l/cyl. 435 ... 6230 kW/cyl. bore: up to 980mm	-----	MAN Wärtsilä Mitsubishi Licensees

Bosch Diesel Systems

Bosch Rexroth

AA/CFH

Large Engine Applications

Economical. Powerful. Reliable.



Stationary Applications



- Gen set
- Emergency power generators

Marine Applications



- Engine applications on ships/yachts/ferries
- Generator applications on big ships

Mining & Industrial Applications



- Construction vehicles
- mining vehicles
- Agricultural vehicles

Rail Applications



- Diesel locomotives

AA/CFH Product portfolio

Economical. Powerful. Reliable.



Natural Gas	Dual Fuel		Diesel		Dual Fuel	
<p>Large Engine Gas Valves</p> <p>LEGV50 LEGV400</p>	<p>CRSN Common Rail System up to 2500 bar</p> <p>Pump Injector</p>		<p>MCRS Modular Common Rail System 1600 / 2200 bar</p> <p>Injector Pump</p>		<p>UI/UPS Unit Injector/ Unit Pump System</p> <p>Electronic Unit Injector Unit Pump (& NHA)</p>	<p>Conventional Mechanical systems (HFO applications available)</p> <p>Nozzle Holder Assembly (NHA) PF-Pump</p> <p>Inline pump (& NHA)</p>
<p>LE-ECU-MD1CE200-LE Engine Control Unit for Large Engines, also available w/ marine certification</p>						

Sensors, e.g.

Temp. Sensor Knocking sensor Speed sensor

Marine Certification

ABS	Korean Register
BV	ClassNK
CCS	RINA
DNV GL	RS
Lloyd's Register	

Denoxtronic – SCR w/ urea

Dosing Control Unit Dosing Module Supply Module

AA/CFH OEM Engine Portfolio (Extract)

Economical. Powerful. Reliable.



MTU BR

- ▶ 331
- ▶ 396
- ▶ 830
- ▶ 870, 871
- ▶ 880, 881, 883
- ▶ 956
- ▶ 1163
- ▶ 2000

CAT MaK

- ▶ M25
- ▶ M282
- ▶ M332
- ▶ M452
- ▶ M453

Wärtsilä

- ▶ CW200
- ▶ NOHAB F10, F20, F30
- ▶ STORK 210, 280
- ▶ STORK F240
- ▶ STORK SW280
- ▶ VASA 20/28, 24TS
- ▶ VASA32 (HF)
- ▶ W20, W26, W170
- ▶ WN 25

MAN

- ▶ 20/27
- ▶ 280V16
- ▶ 32/40 DG
- ▶ D28/42

AA/CFH OEM Engine Portfolio (Extract)

Economical. Powerful. Reliable.



Cummins

- ▶ KTA50
- ▶ QSK19
- ▶ QSK38
- ▶ QSK50
- ▶ QSK60

DDK

- ▶ DC 17
- ▶ DC 32
- ▶ DK 20
- ▶ DK 28
- ▶ DK 36
- ▶ DL 16
- ▶ DL 22
- ▶ DL 26
- ▶ DL 28

YANMAR

- ▶ T 220
- ▶ TZ-ST
- ▶ 6ZL-UT
- ▶ 6Z-ET



THANKS FOR YOUR ATTENTION!