



alfdex[®]

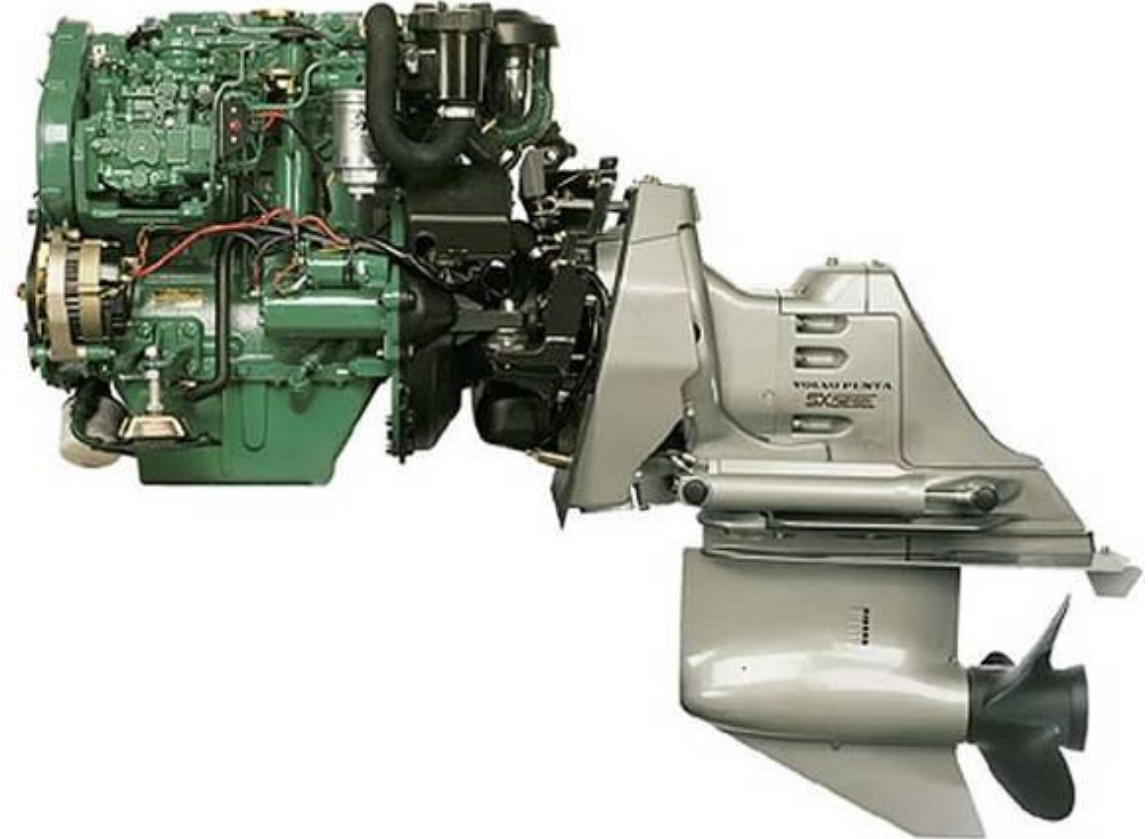
Number one in crankcase ventilation

A company started by Alfa Laval and Haldex

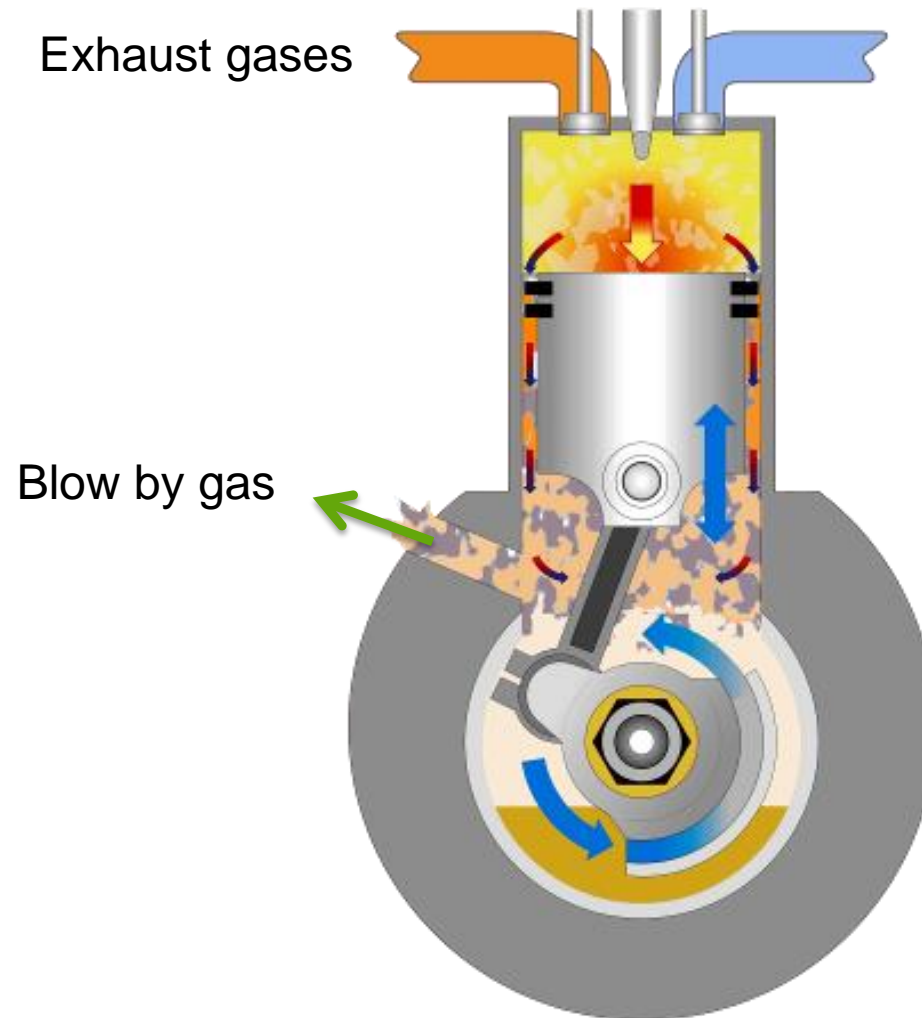


The glimmering idea

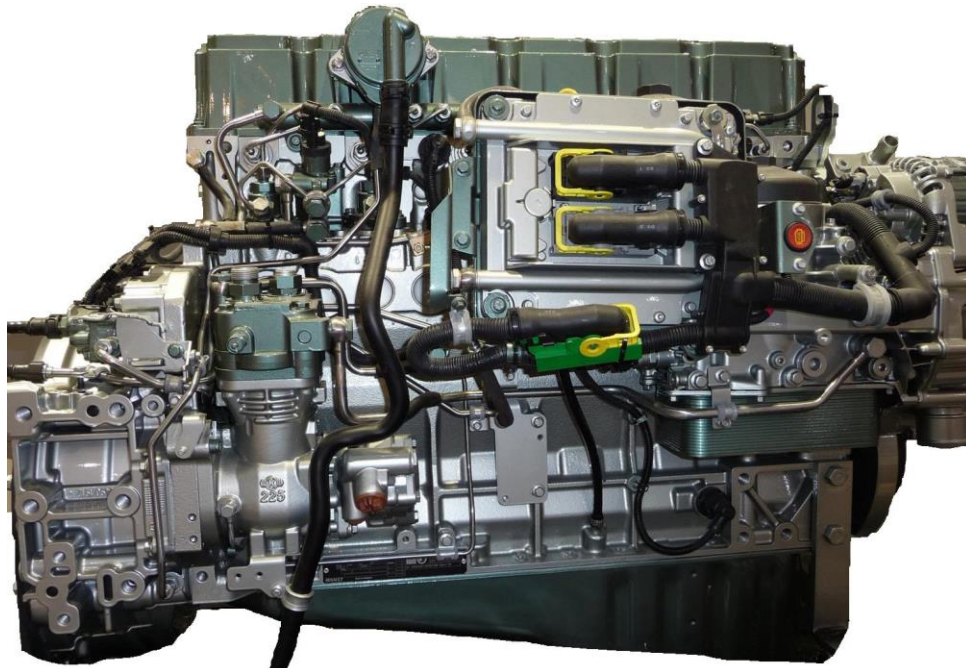
In 1997 Volvo Penta approached Alfa Laval about an idea on cleaning crankcase gases with a separator.



Alfdex focus on engine Blow-by



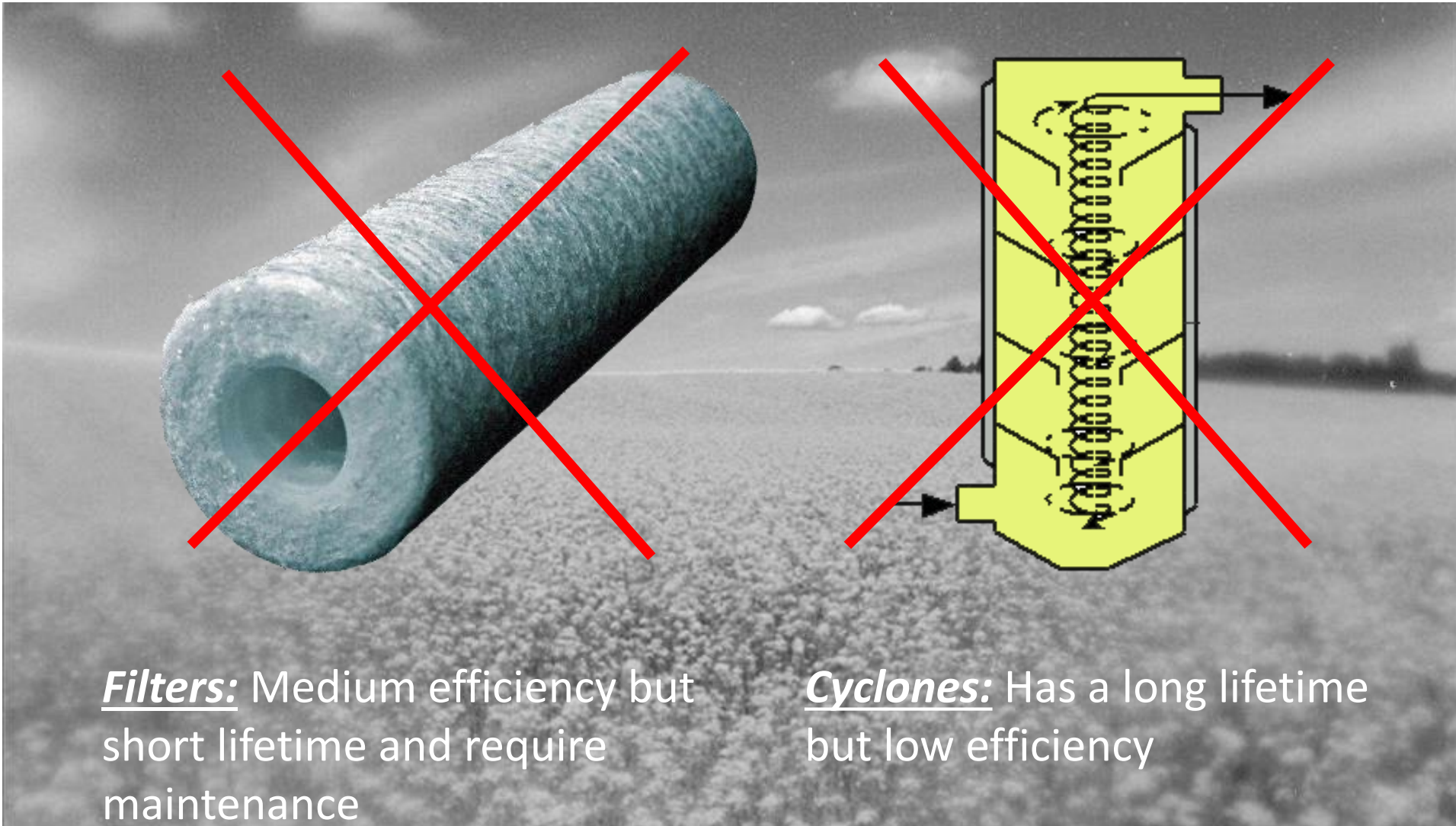
A typical solution from the past



Open Blow-by

With an open Blow-by such engine emits some 25-30 liters of oil per annum.

Traditional solutions



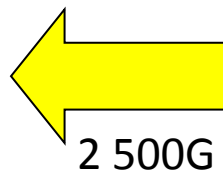
Filters: Medium efficiency but short lifetime and require maintenance

Cyclones: Has a long lifetime but low efficiency

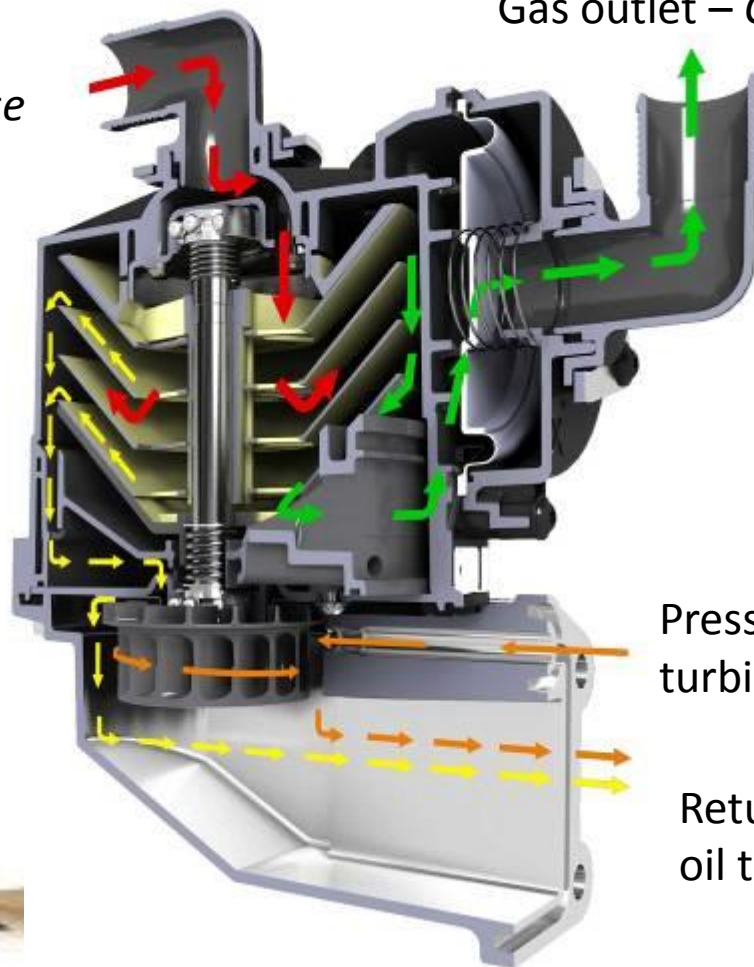
Alfdex principle and solution

Gas inlet - Escaping
oil mist from crankcase

Gas outlet - Cleaned by Alfdex



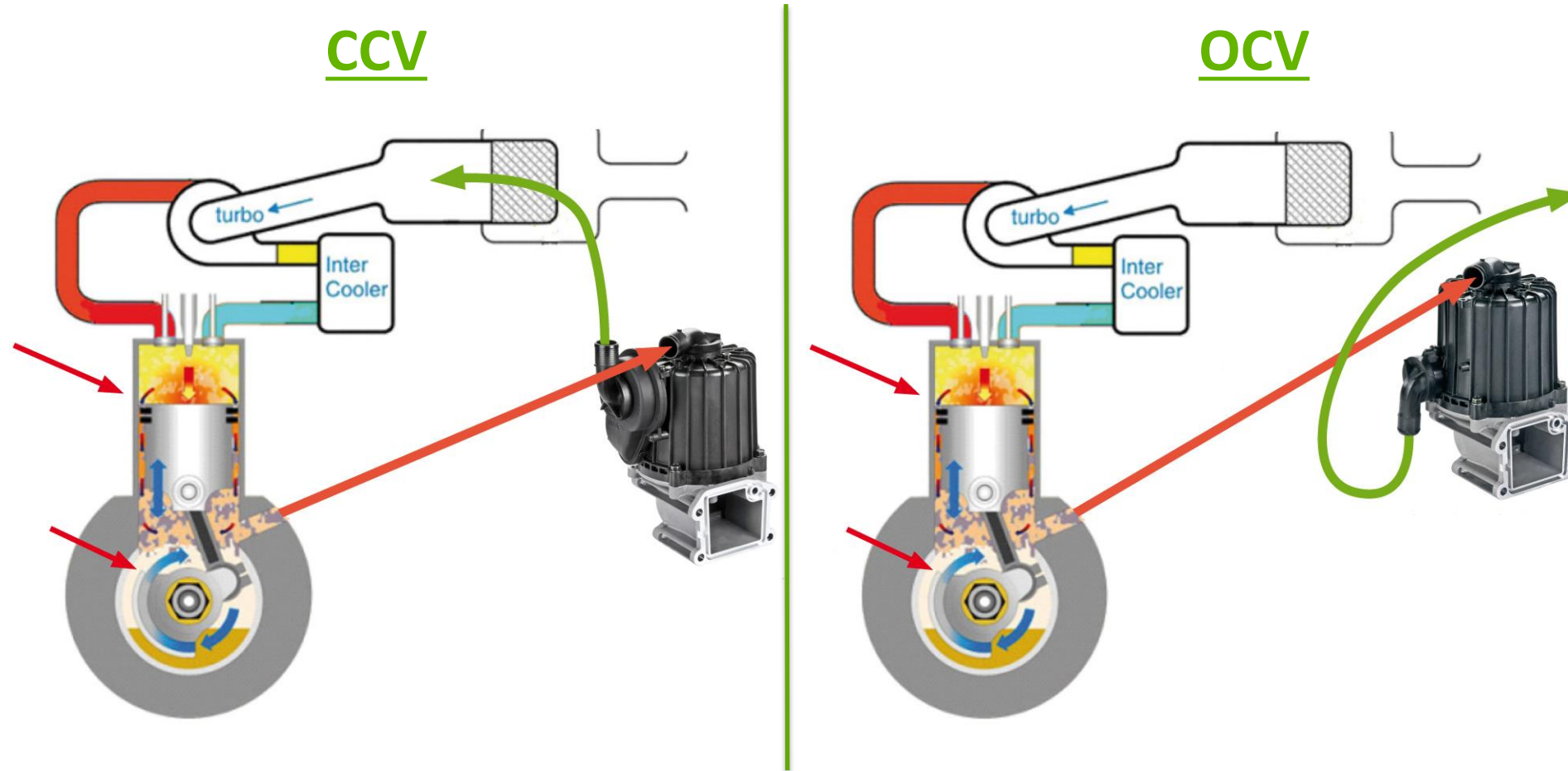
High-speed rotation at ~8000 rpm



Pressurized lube oil feed to rotate
turbine wheel

Return of drive oil and separated
oil to the engine

Closed or Open Crankcase ventilation



A cleaning device with high performance is needed in both applications

Alfa Laval needed a partner

*Alfa Laval needed to find a partner
within the automotive industry.*



Haldex

– The new partner

alfdex[®]
Number one in crankcase ventilation

*Haldex became that partner and later on
Alfdex was formed as a joint venture.*



Customer Segments

Haldex

Heavy Vehicles
66%

Light Vehicles
10%

Industrial Vehicles
8%

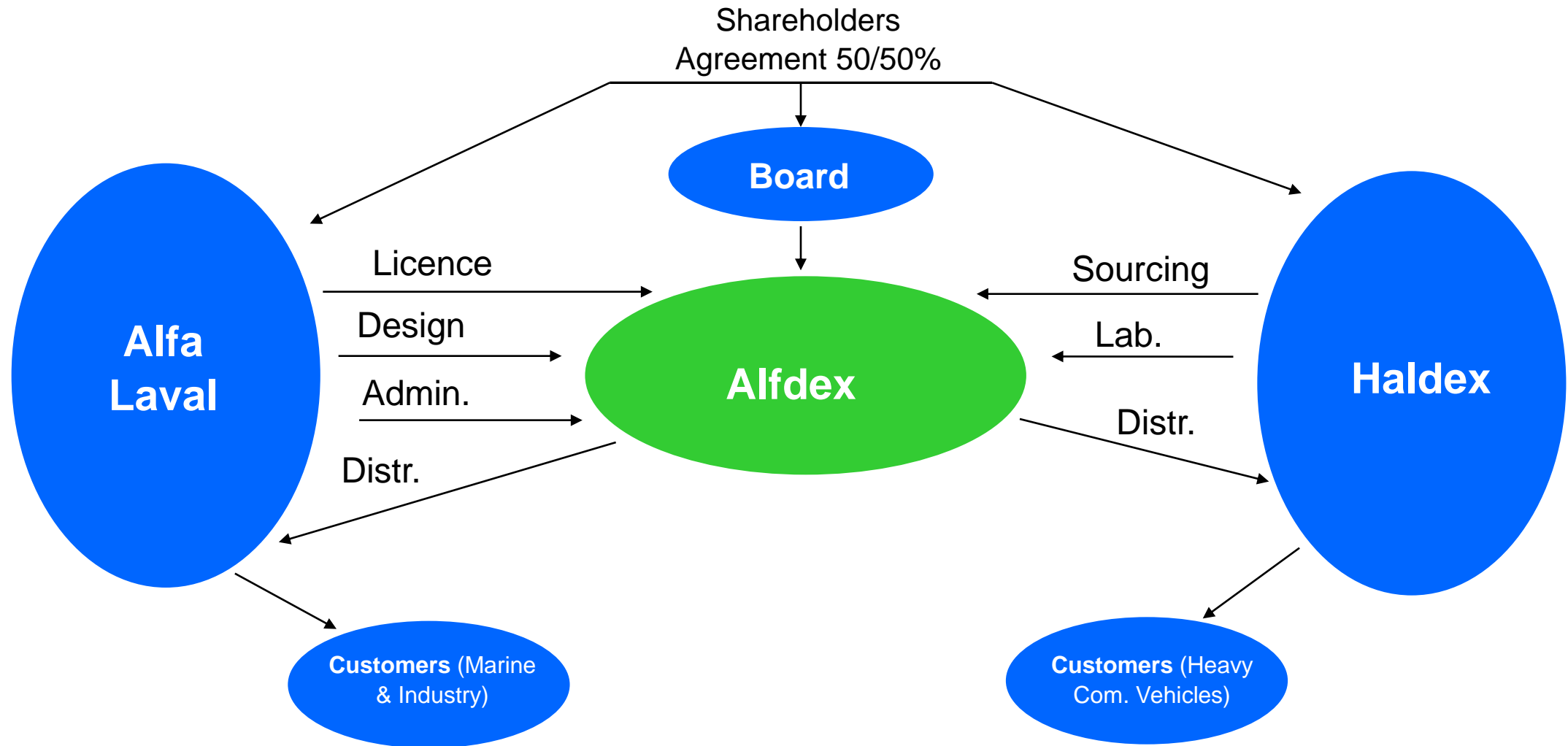
**Products for
Combustion Engines**
13%



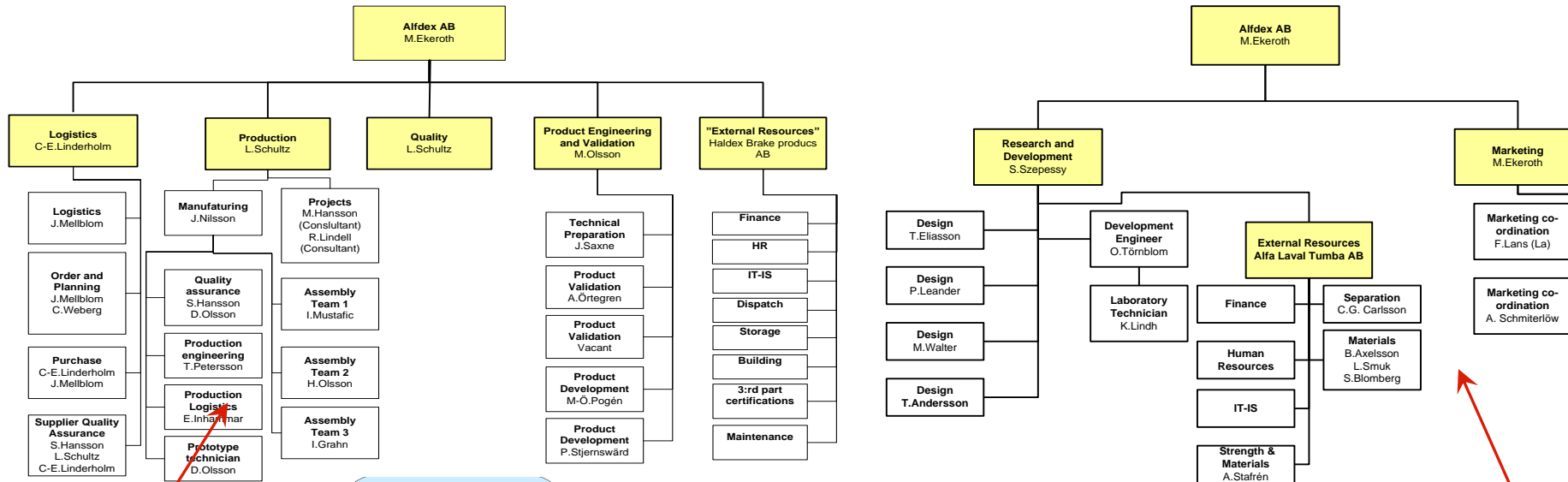
Other = 3%

- Annual sales > 7.4 billion SEK
- 4,600 employees
- Production in North & South America, Europe and Asia

The Joint Venture



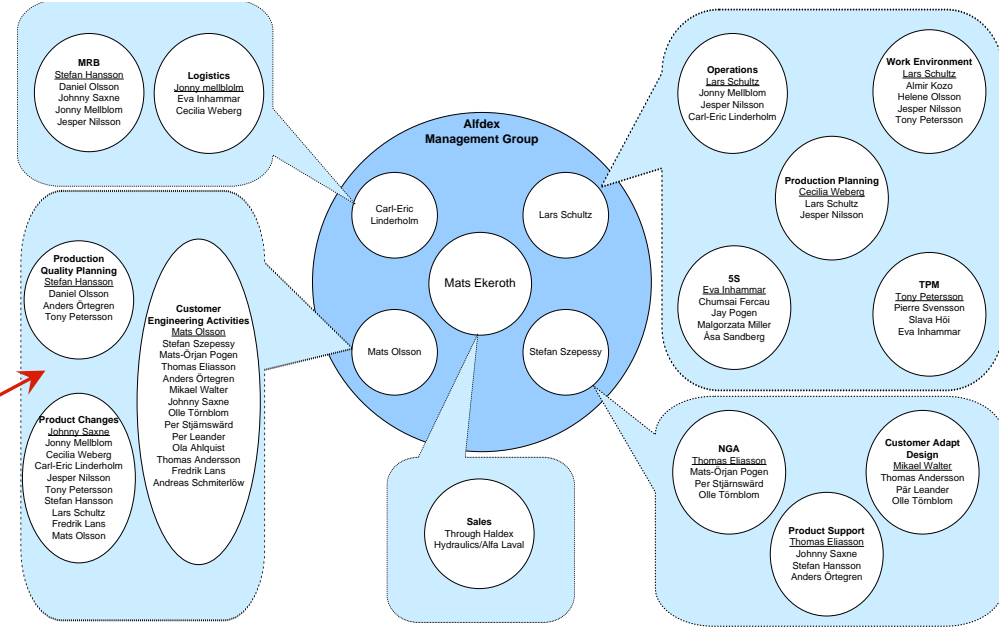
Different teams



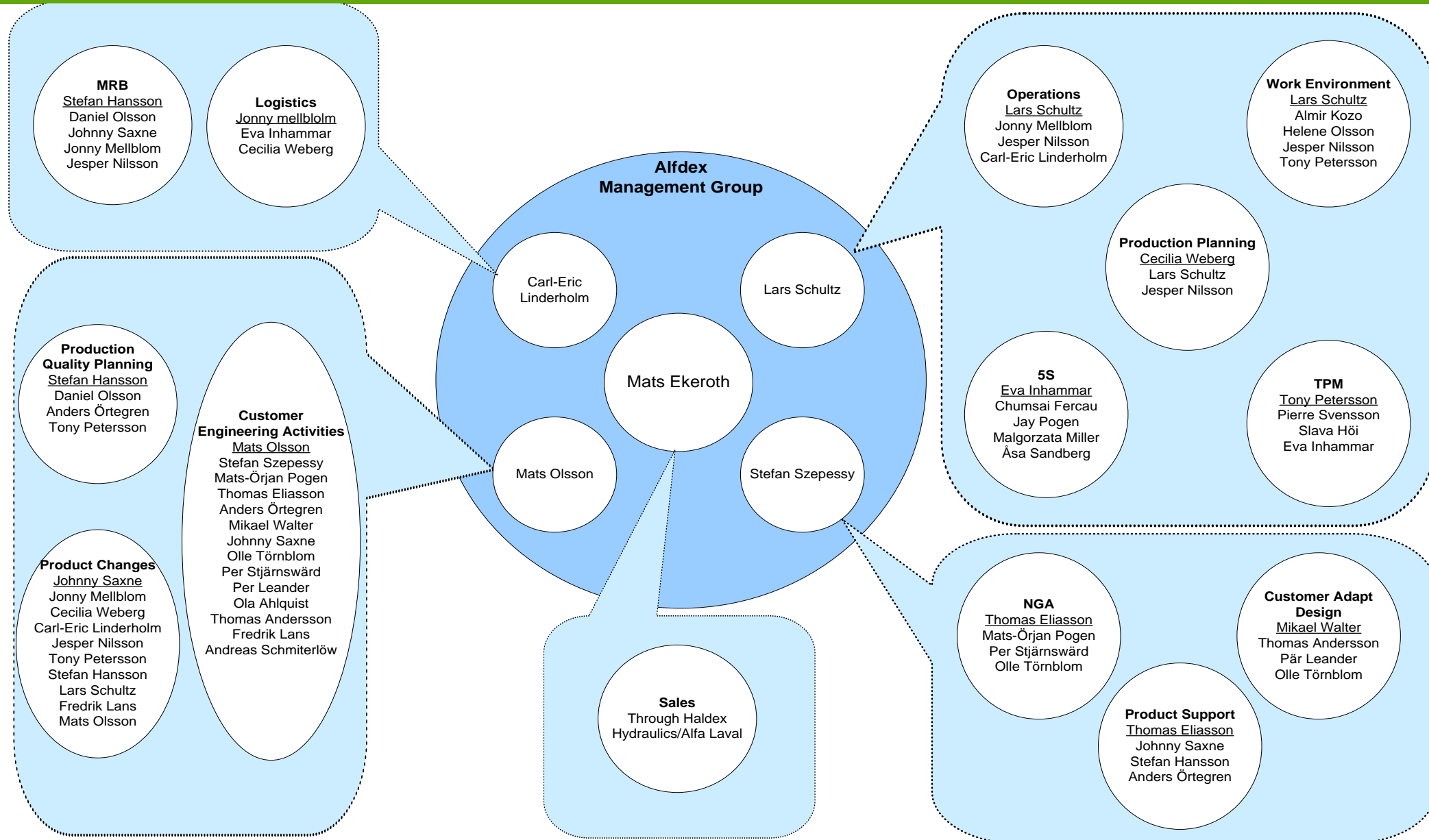
Team in Landskrona

Team in Tumba

Cross-functional teams



Cross-functional teams



A joint version was developed



September 2002



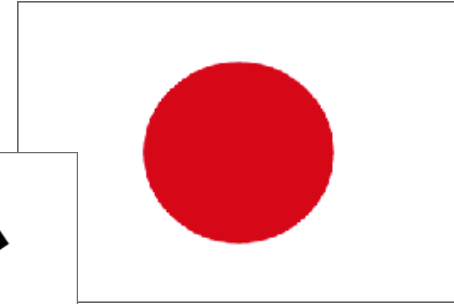
April 2003

Ostindiefararen Göteborg



Market drivers – Legislation On-road

South Korea and Japan have, since 2002 & 2005 a legislation.

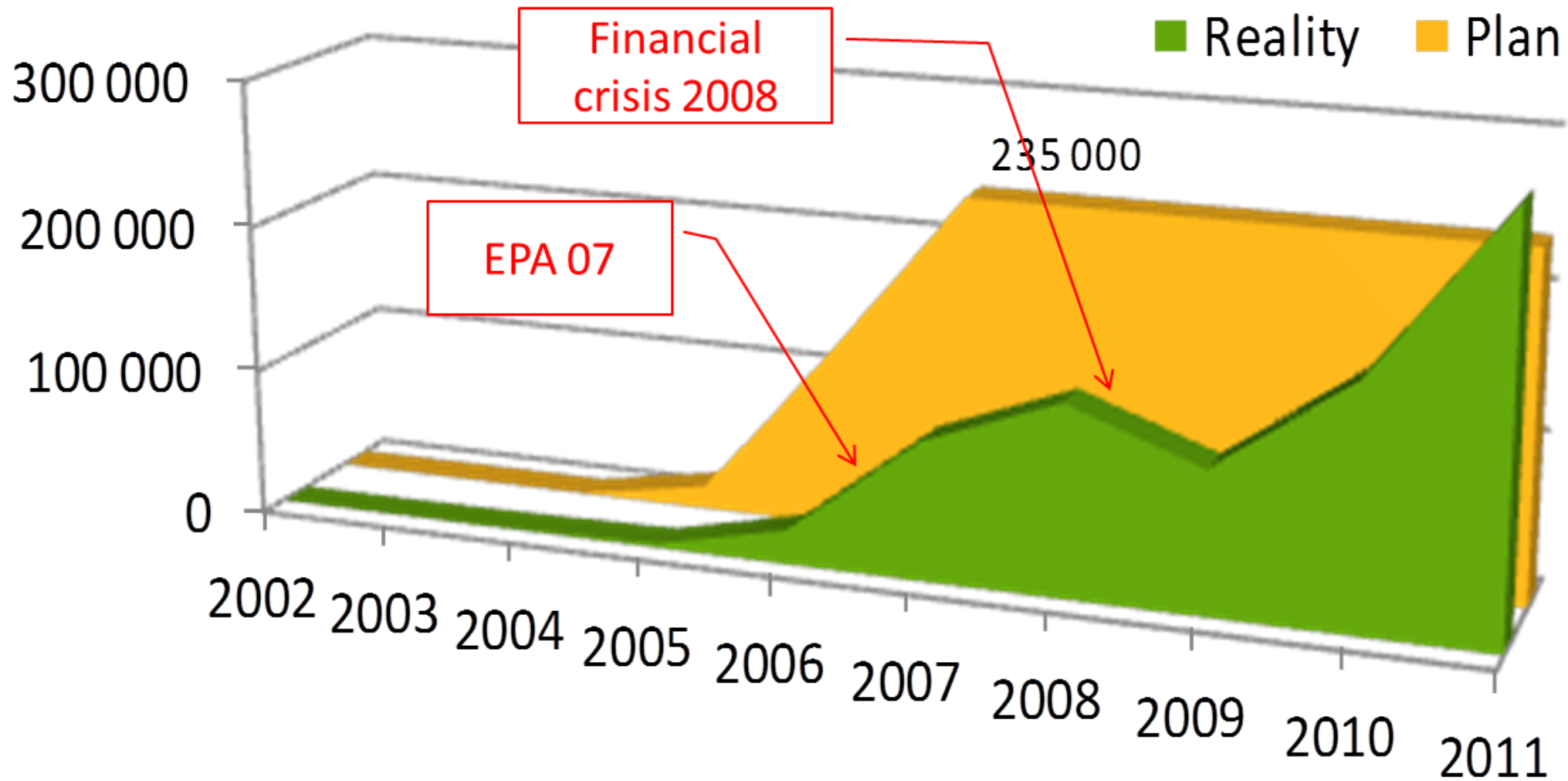


In North America “EPA 07” was introduced 2007 followed by “EPA 10” and “EPA 13”.

EU introduced Euro 6 in January 2014.



How did the volume (units) develop?



Alfdex customers



PACCAR



**VOLVO
PENTA**



JOHN DEERE



SCANIA

CAT



DETROIT DIESEL

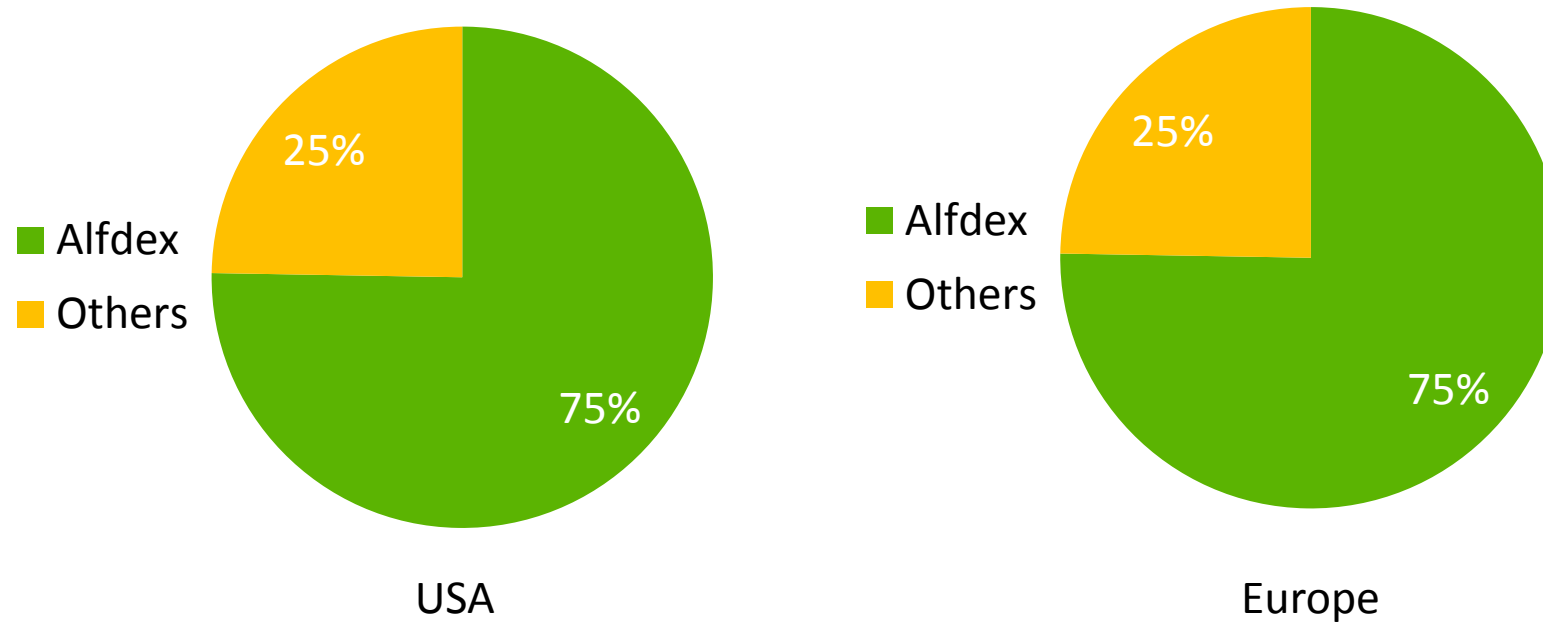


Mercedes-Benz



WESTERN STAR TRUCKS

Alfdex market share 2016



Annual production volume is just above half a million separators

Alfdex locations

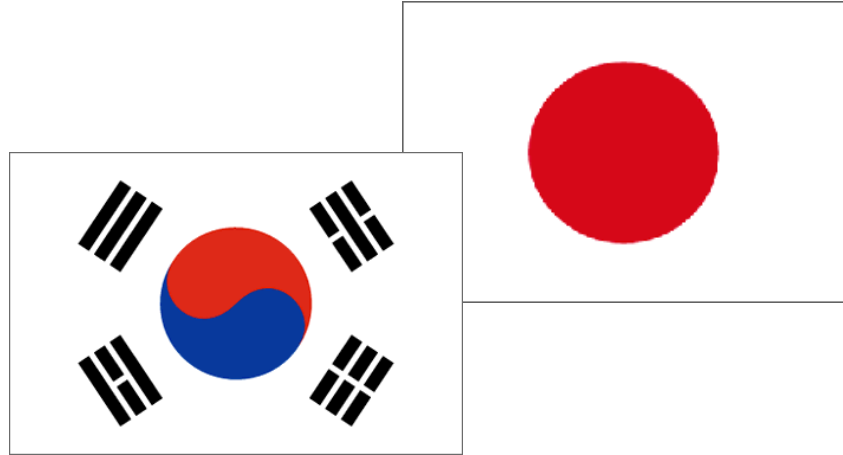


135 employees whereof
125 in Landskrona



Market drivers – Legislation On-road

South Korea and Japan have, since several years a CCV legislation.

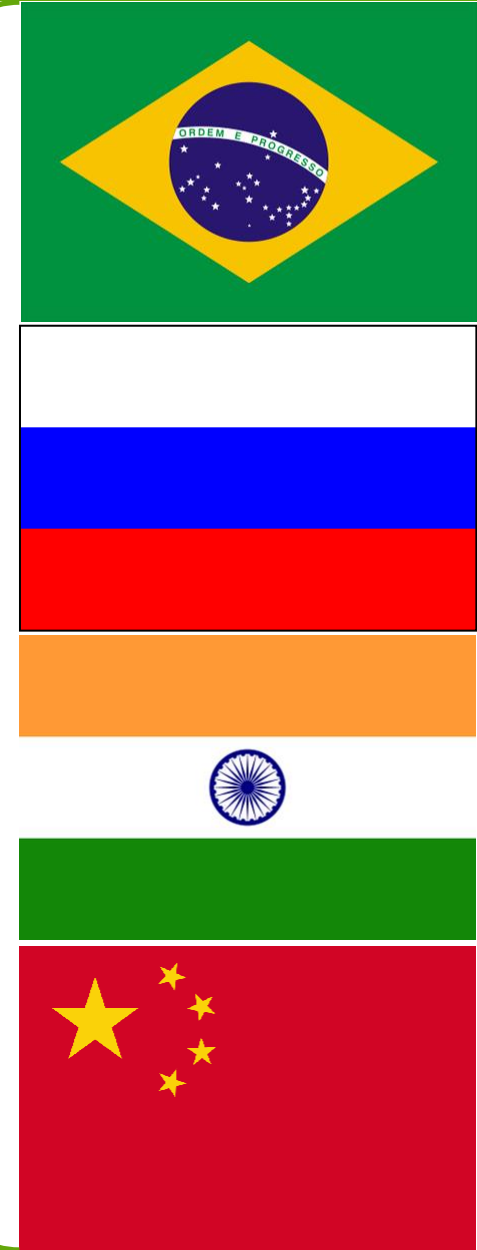


In North America “EPA 07” was introduced 2007 followed by “EPA 10” and “EPA 13”.

EU introduced Euro 6 in January 2014.



Legislation in BRIC countries starting January 2020



These are the customers we do not have!



Why successful?

1. Two competencies, one knowing the technology the other the market.
2. Governance at the right level, the board members from the group management leaving the Alfdex management to govern the company.
3. Of course, the right product at the right time supported by strong patents.
4. As always, blood, sweet & tears.



Thank you!

