

GOTHENBURG PLANT



Slide show

Pause

Start



<u>Year of build</u>	<u>Area</u>	<u>Employees</u>
1999	12.000m ²	150



TENNECO DAROS COMPANY HISTORY



Slide show

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Start

1792

A young Scotsman, Peter Robertson, shipwrecks outside Gothenburg on a journey to St Petersburg. The same year he founds a forging company in the city centre.



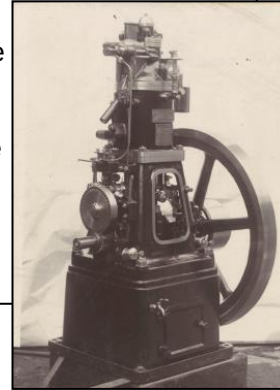
1851

Peter Robertsons grandson David Robertson founds "David Robertsons Machine factory", with telegram address *DAROS*. The company produces for instance steam engines and machines for agriculture.



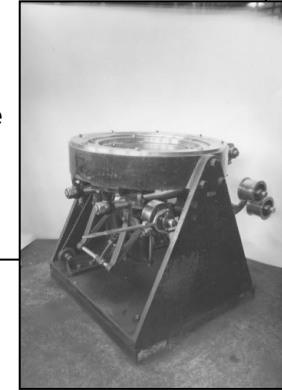
1892

DAROS starts licence manufacturing of the kerosene engine FORCE. The inventor of the engine was the German Emil Capitaine who claimed to be the true inventor of the diesel engine instead of Rudolf Diesel.



1899

David Robertsons son Davy Robertson patents a hammering machine for piston rings and becomes as a result the first producer in the world specialising on piston rings.



1920 & 30's

The picture below shows the workshop for piston ring production (1920's). Davy Robertson dies 1926 without heirs. The company is subsequently taken over by Tage Madsen.



1940's

Daros is growing. The dense urban area around the plant is generating complaints regarding noise and smog from coal fired casting furnaces. Below picture shows the so called Brackelberg furnace. Planning of a new greenfield plant is started.



1948-1998

DAROS moves to the Gothenburg suburb Partille. Here piston rings to a broad range of 2-stroke and 4-stroke engines are produced and moreover cylinder liners, break discs and engine stands, Streets and quarters in Partille still carry names with the origin of the largest employer in the area of that time.



1999-2010

The company moves to Mölnlycke. The plant is now fully specialising on piston rings for marine 2-stroke engines.



Present state

2010 Daros is acquired by



being a global producer of automotive and industrial engine components.

Federal-Mogul is acquired 2018 by



ISO 9001



CERTIFICATE

The Certification Body
of TÜV SÜD Management Service GmbH
certifies that

Federal-Mogul Göteborg AB
Teknologivägen 5, P.O. Box 138
435 23 Mölnlycke
Sweden

has established and applies
a Quality Management System for

Manufacturing and Sales of
2-stroke piston rings.

An audit was performed, Order No. **707127466**.
Proof has been furnished that the requirements
according to

ISO 9001:2015

are fulfilled.
The certificate is valid from **2021-01-09** until **2024-01-08**.
Certificate Registration No.: **12 100 61201 TMS**.

E. Koller

Product Compliance Management
Munich, 2021-01-07



ISO 14001



CERTIFICATE

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of TÜV SÜD Management Service GmbH
certifies that

Federal-Mogul Göteborg AB
Teknologivägen 5, P.O. Box 138
435 23 Mölnlycke
Sweden

has established and applies
an Environmental Management System for

Manufacturing and Sales of
2-stroke piston rings.

An audit was performed, Order No. **707077112**.
Proof has been furnished that the requirements
according to

ISO 14001:2015

are fulfilled.
The certificate is valid from **2021-03-28** until **2024-03-27**.
Certificate Registration No.: **12 104 55573 TMS**.

Paul Durr

Head of Certification Body
Munich, 2021-03-12



ISO 45001



CERTIFICATE

The Certification Body
of TÜV SÜD Management Service GmbH
certifies that

Federal-Mogul Göteborg AB
Teknologivägen 5, P.O. Box 138
435 23 Mölnlycke
Sweden

has established and applies
an Occupational Health and Safety Management System for

Manufacturing and Sales of
2-stroke piston rings.

An audit was performed, Order No. **707077112**.
Proof has been furnished that the requirements
according to

ISO 45001:2018

are fulfilled.
The certificate is valid from **2021-03-28** until **2024-03-27**.
Certificate Registration No.: **12 117 55573 TMS**.

Paul Durr

Head of Certification Body
Munich, 2021-03-12



Deutsche
Akkreditierungsstelle
D-2M 14143-01-00

PISTON RING SURFACE TREATMENTS



Slide show

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MKP200 Cermet

Plasma sprayed

Low wear rate

Excellent scuffing resistance

AluCoat

Arc sprayed

Quick running in

Fast sealing

RIAS

Plasma sprayed

Quick running in

Fast sealing



APPLICATION (PICTURE SHOWS G70-TYPE ENGINE)

TENNECO



Slide show

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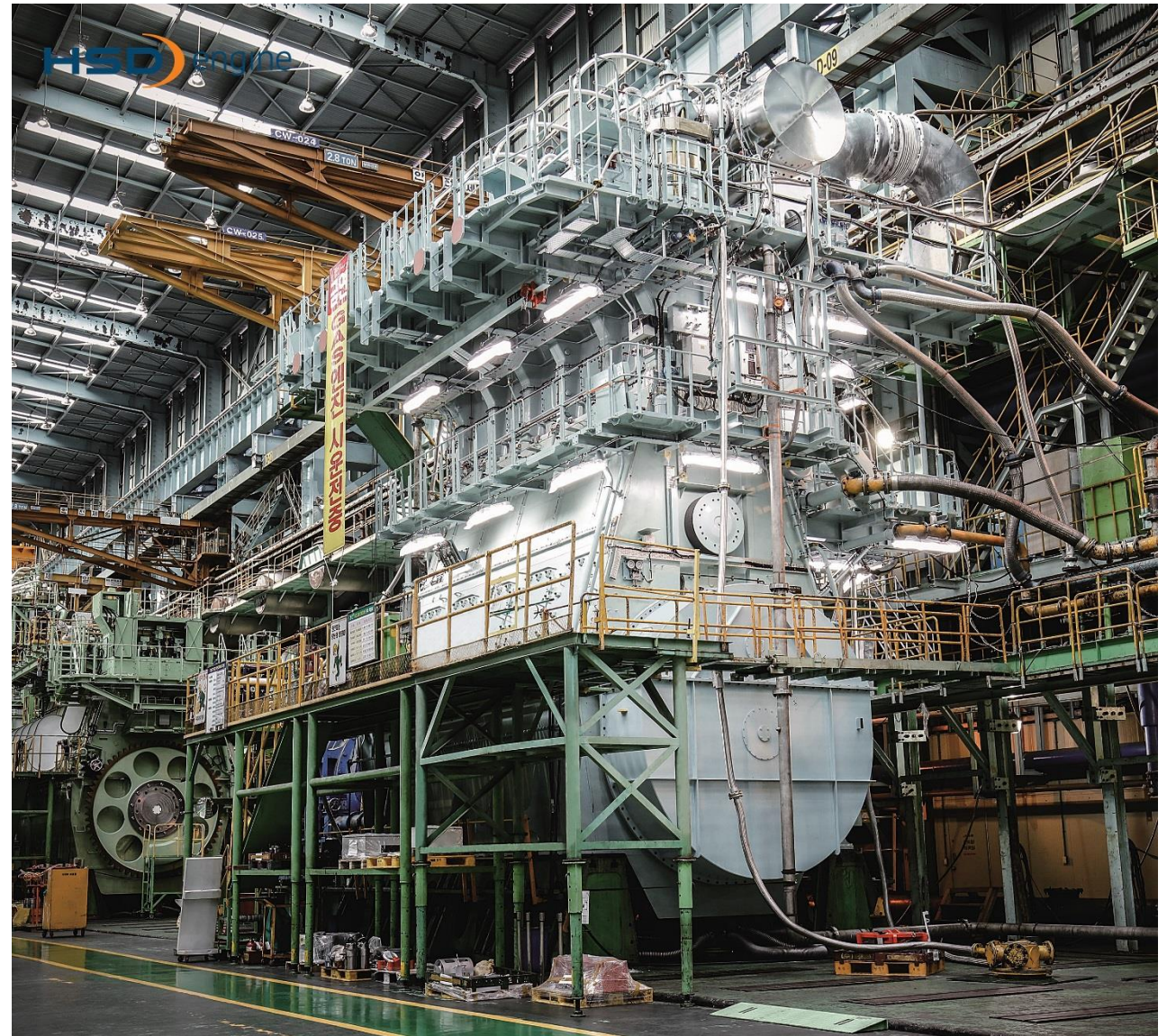


Photo: HSD





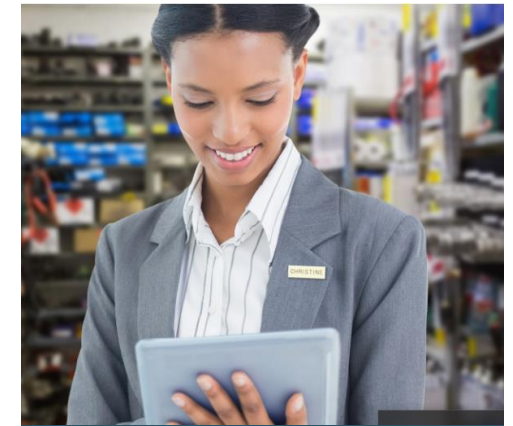
71,000
Global team
members



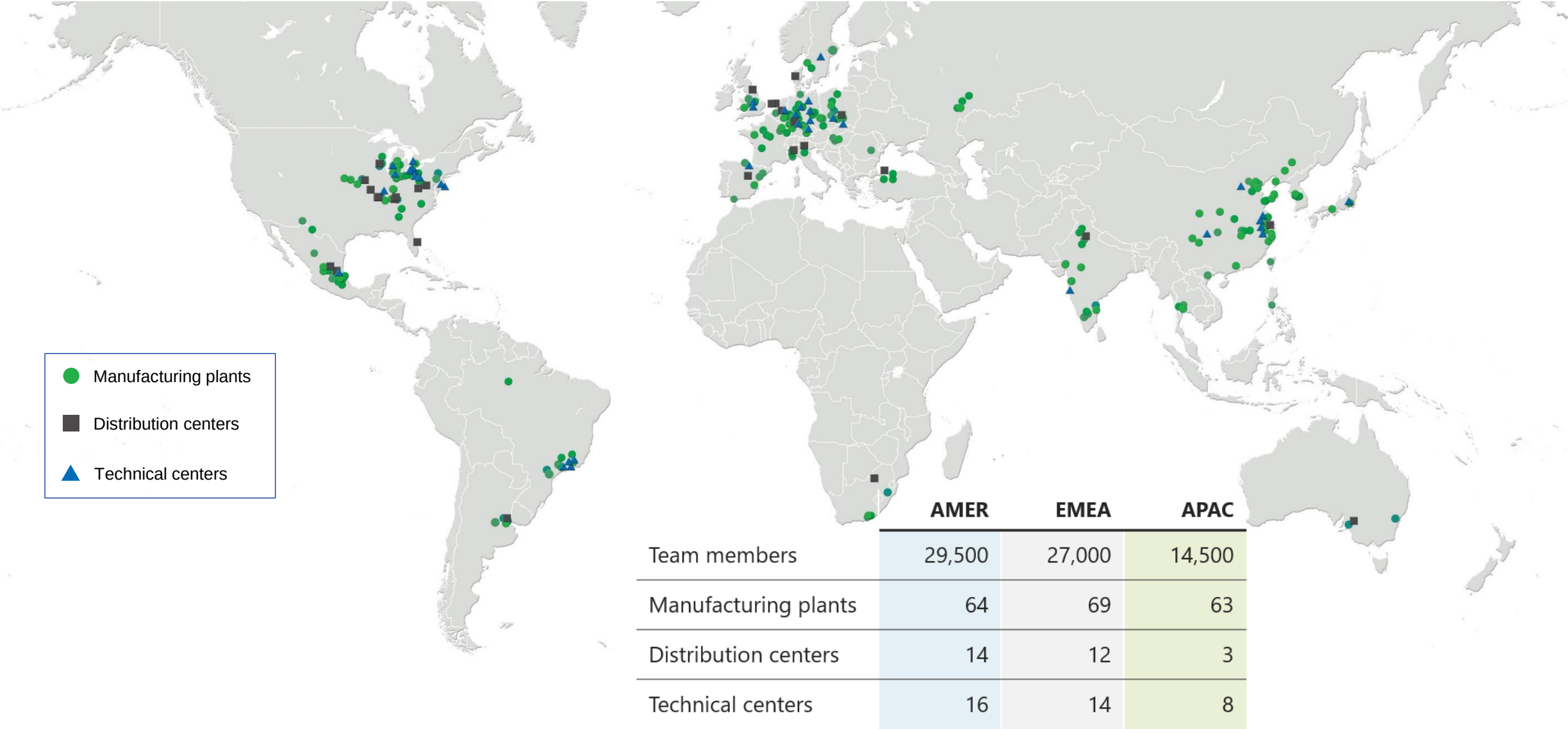
38
Globally networked
engineering &
technical centers



196
Manufacturing
sites worldwide



29
Aftermarket
distribution
centers



MARKET SHARE LEADERSHIP

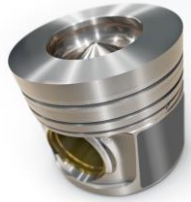


Slide show

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Pistons



#2 Overall
#1 Diesel
Pistons

Piston Rings



#1 Overall

Valve Seats & Guides



#1 Overall

Bearings



#1 Overall

Ignition



#2 Overall
#1 Industrial

Valve Components



#2 Overall
#1 Hollow
Valves

Systems Protection



#1 Overall

Sealing & Gaskets



#3 Overall
#1 Bonded Trans-
mission Pistons

The Powertrain division has a leading market position* in all of its major product lines

* Rankings based on internal analysis of published OEM production volumes and Tenneco sales.



PISTON RING AND LINER PORTFOLIO



Slide show

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Gasoline Rings

Complete range of technologies, materials and ring designs

CarboGlide® bore protection coating for all designs

DuroGlide® fuel save coating for low viscosity oils

Low friction oil ring designs LKZ-Ring® and LKR



Diesel Rings

Emission saving sharp scraping edge ring designs

Broadest ring coating portfolio for all combustion conditions: PVD, DLC, CKS®, GDC®

Full range ring side wear protection for low friction rings – Blitzchrome®

CarboGlide® save run-in coating for all designs

DuroGlide® fuel save face coating for low viscosity oils

Low friction oil ring designs LKZ-Ring® and LKR



Liners

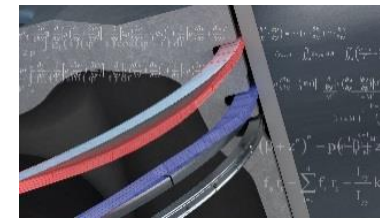
ASLOCK Mushroom Spiny Liners for mechanical interlock

Hybrid Aluminized Liners for metallurgical and full thermal interlock

Megabond® for best-in-class intermetallic adhesion strength combined with highest thermal heat transfer

Thin walled slip-fit liner

Sprayfit® fully sprayed steel and aluminum slip-fit liner technology



Engineering Services

Full-scale 3-D ring dynamic analysis for oil consumption and blow-by prediction

Best-in-class metrology (hot bore distortion) and engine testing (incl. Floating liner)



Industrial Products

Large bore piston rings with bore sizes from 145 to 980 mm for 2-stroke (DAROS®) and 4-stroke (GOETZE®) engines in marine, stationary power generation, railway and construction applications

GOETZE® mechanical face seals (50 up to 1425 mm diameter) made of high performance cast iron (slide rings) and elastomeric (O-rings) materials for heavy technical equipment operating in the harshest environments (mining, construction, industrial markets)

A LEGACY OF QUALITY PRODUCTS



Slide show

Pause

Start



Industrial igniters, flame rods, liquid level sensors, feed throughs and observation ports.

BentleyHarris®

Protective sleeving and shielding solutions for wires, hoses, and mechanical assemblies.



Industrial spark plugs for transit and stationary engines



Piston rings for 2-stroke large bore engines



Maintenance-free, self-lubricating sliding bearings for commercial truck off-highway, industrial and specialty applications.



Bearings, bushings and thrust washers for high loaded truck and car engines made in Russia.

EYQUEM

Specialized spark plugs, glow plugs and ignition leads made in France.



Premium brand of industrial spark plugs for industrial, PowerGen, and GenSet applications.



Full range of radial and axial bearings including main, flanged and conrod.

GLYCODUR®

Dry bearings with layers of self-lubricating material that require no lubrication or lubrication only at initial installation.



Piston rings for 4-stroke large bore engines



Face Seals for construction machinery, conveyors, mining machinery, concrete and cement mixers, tunnel boring and agricultural equipment

Nirral

Sophisticated pistons, designed for optimized engine performance.



Rubber seals and plugs formulated for the tough conditions frequently encountered within the industrial Oil & Gas markets



Customized vacuum coating systems

Many of the powertrain brands have been in existence for 100 years or longer

