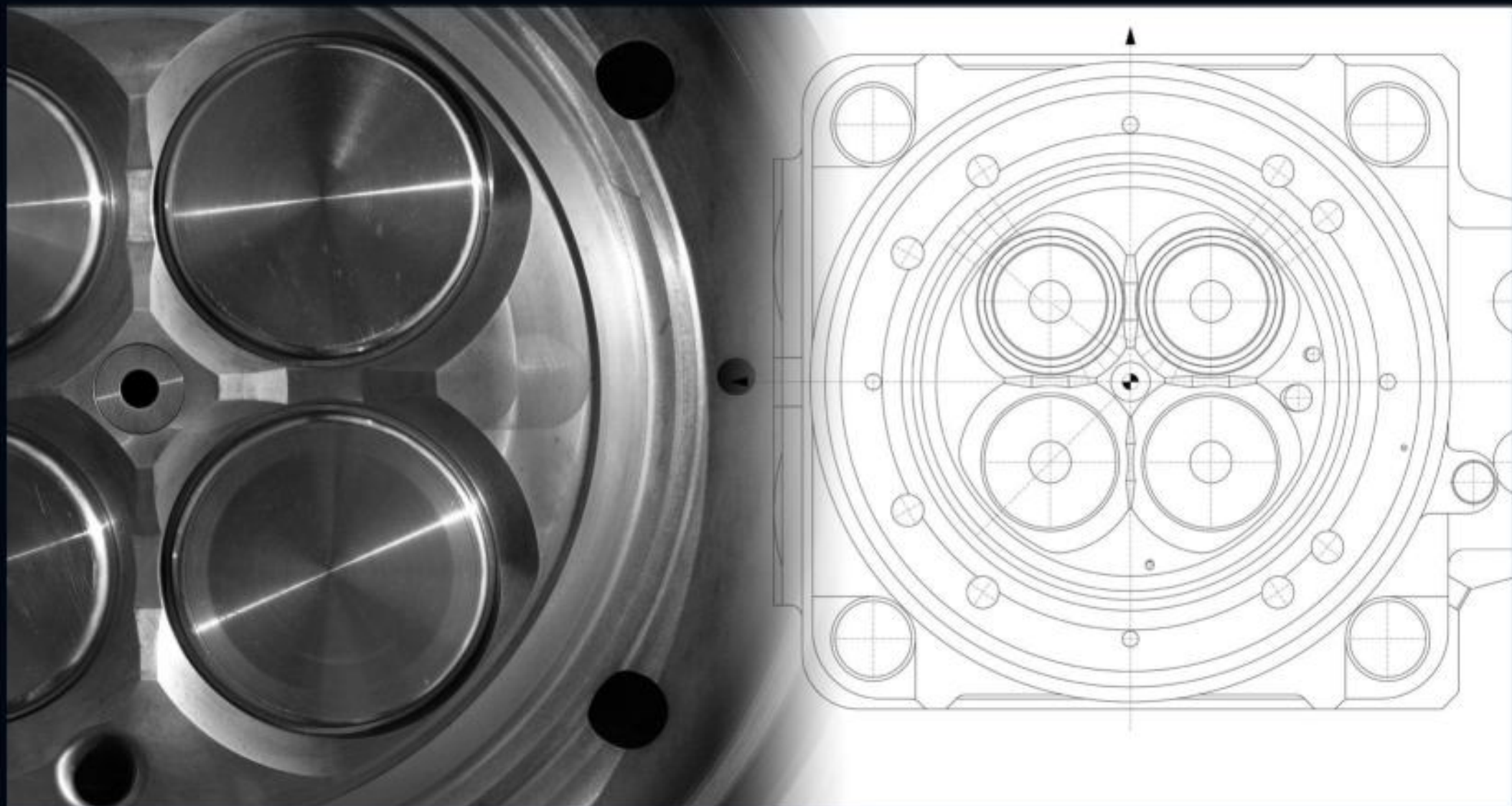


**MIMS**

**SECO**



**PART OF YOUR ENGINE**



# MMS

Marine Motor Service GMBH: established 1989, is a family owned company located in the North of Germany close to Hamburg. Our team with currently 80 employees is constantly working to accomplish only one goal:

To establish a long term relation with our customers, by providing them not only with the best possible quality of spare parts but also by supporting them with our 30 years experience in the production of large bore diesel and gas engine components.

Being the largest independent manufacturer of cylinder heads in Germany we are serving more than 45 countries in the world. Stationary as well as prime mover and auxiliary engines in marine applications.

We are supporting our clients with all our experience in order to optimize the performance of their engines, by conducting audits or simply sharing our knowledge.

One thing you will never hear from MMS: „No, you are the only one with this problem, we never had any client with this problem before.



# SECO

SECO GmbH is Germany's largest, independently working manufacturer of pistons and cylinder liners for 4-stroke diesel and gas engines with diameters ranging up to 500 mm.

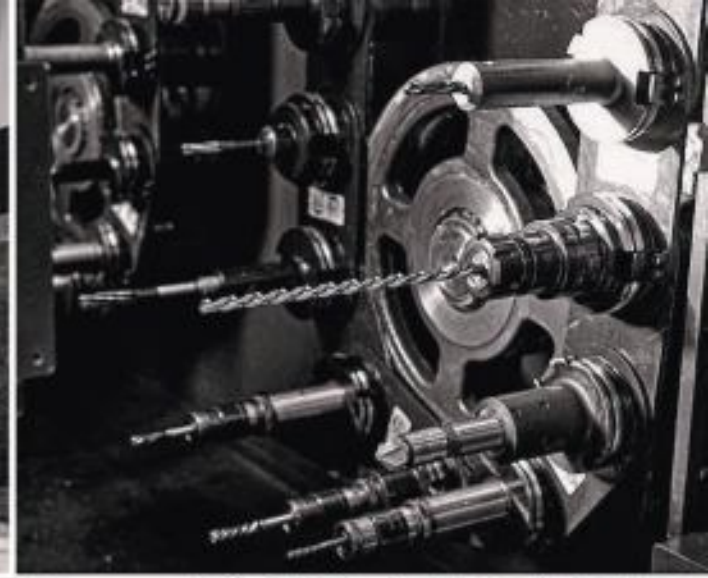
Our products are used in stationary operated power generating engines in more than 45 countries worldwide. The shipping sector is appreciating the quality and reliability of our goods by using them in main and auxiliary engines.

Founded over 140 years ago and traditionally committed to our customers quality requirements, SECO is manufacturing their products at its new premises since 2011.

Here, in the geographical center of Germany, close to the Harz Mountains and the UNESCO World Cultural Heritage town of Quedlinburg, SECO has established a modern facility.

So, for all our existing and future customers, there are at least two good reasons for visiting our site





**MMS**

**170 YEARS**



**OF EXPERIENCE**

**SECO**

# DEVELOPMENT

The components of modern 4-stroke engines are subject to increase the loads as development progresses.

The reasons for this are increasing ignition and effective mean pressures to increase engine performance; as well as the legal requirements for air pollution control.

Intense calculations on the resistance and durability of our products guarantees maximum safety and reliability. Quality assurance is carried out using complex and advanced calculation methods.

Only if all calculations, simulations and test runs for the respective diesel, gas or heavy fuel oil engine have been completed successfully, our products will be released to the market.

This puts high demands on the optimization of weight and service life, especially for moving components. The focus here is on improving the thermal balance, reducing the coefficient of friction and increasing deformation stiffness.

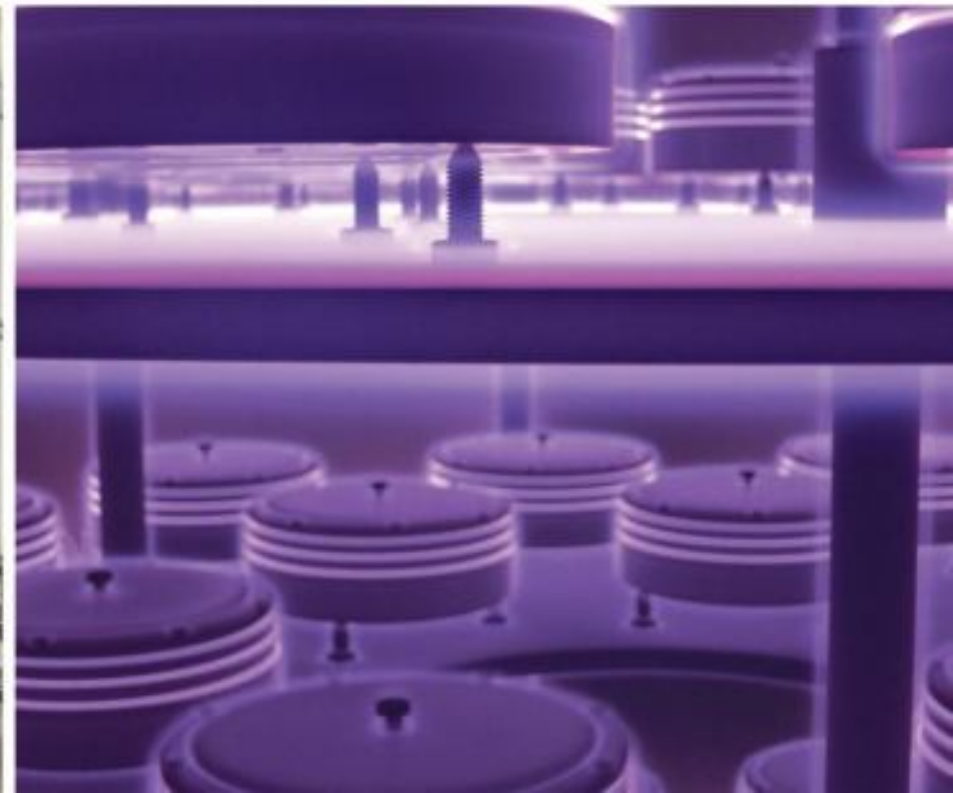
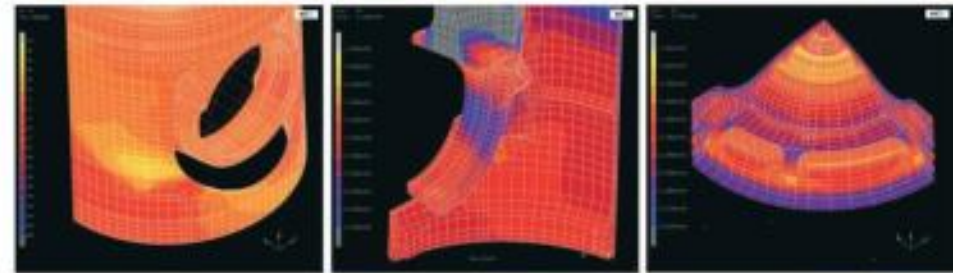


Functional and operational safety must be guaranteed under all operating conditions. In order to uncover existing optimisation potential, the components manufactured by SECO are analysed and evaluated in detail in terms of material, geometry and structural mechanics.

### Root Cause Analysis

Our experienced development team is providing failure analysis. Micro- and macroscopic investigations are used to determine the cause of damages with regard to operating conditions.

If required, numerical calculation models are used to support the failure analysis. Being of utmost importance to us, we will involve the client in the analysis process.





## INJECTION EQUIPMENT

MMS offers a wide range of fuel injection equipment, ranging from pump elements to complete fuel pumps and injectors. We are using our experience to optimize certain components like head adapter to reach longer lifetime, better performance, or in simple words: better cost efficiency.

Constant investment in measuring devices, equipment and training of our staff - to reach at least the OEM quality is our obligation.







# MANUFACTURING

With high dynamic loads, connecting rods are certainly among the components whose operational reliability depends directly on the manufacturer's know-how.

The use of the most modern CNC technology, together with our deep understanding for the design safety, but at first priority reproducible production processes, is our basis for the manufacturing of various components including connecting rods.

As well as for our pistons, all raw materials for connecting rods are sourced from certified German forging companies only.

Already since the 1960s, SECO accompanied several engine manufacturers with the development of new piston design for continuously increasing engine outputs. Today, we are able to produce more than 120 different pistons for various engine types and brands. To extend the lifetime of e.g. our piston crowns significantly and as a consequence, to reduce our customers operating costs considerably, we have developed innovative technologies. Nowadays, over 80% of our pistons or piston crowns are supplied in our WearResist® -quality to our customers. In addition we supply piston crowns with a HOCOREL®-coating to prevent hot- or even high-temperature corrosion at engine operation under full load and unfavourable boundary conditions.

MMS is also specialized in the production of cylinder heads using state of the art 5-axle CNC machines. The raw pieces are only casted in Germany by foundries approved by classification societies.



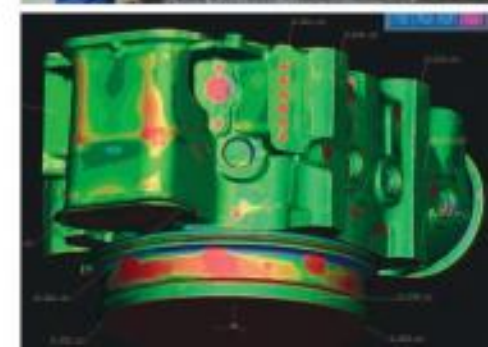


# ISO 9001:2015

Both, MMS and SECO have implemented an internal Quality Assurance System decades ago.

However, it was important for us having this system certified by ISO 9001:2015 to establish an efficient and powerful management system to the benefit of our customers and us.

Every two years our procedures are checked by independent auditors. Traceability and documentation of our production processes are important to us and the heart of our quality control system.



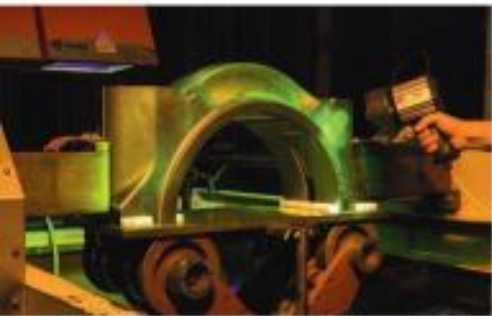
# Quality

As a manufacturing company with its own design department, the SECO is certified in accordance to the rules of ISO 9001:2015.

The quality management system that we have implemented is reviewed on a regular base by the DQS - German Society for Certification of Management Systems - in conformity with the requirements of the ISO 9001:2015.

All products manufactured by ourselves, such as pistons, piston parts, cylinder liners and connecting rods, can be supplied, depending on our customer requirements, with all major certificates.

Even though the designs and versions of pistons manufactured by SECO are different - they all have one thing in common: Prior to shipment, each single piston will be inspected by 100% in regard to the material properties, dimensions and cracks.





# FOUNDRY

SECO has decades of tradition in casting pistons from special aluminium alloys. By means of a special casting process, material properties have been accomplished which cannot be achieved in conventional gravity die casting. Especially pistons with diameters from 200mm to about 500mm can be realized efficiently. The current annual casting capacity is about 50 tons.

In addition to the high quality of the raw material, the well-trained staff and quality assurance help us to maintain a superior end product.

Of course, SECO has LLOYD'S REGISTER foundry approval. Annual audits and certification according to ISO 9001:2015 ensures our quality standards for the benefit of our customers.





## SERVICE

Let us face it – the maintenance of your engine is a necessary evil. It takes time, but most of all, it costs money. Your money! ...in any case!

So, why not see this necessary evil in a different way? As a sensible measure of investment protection?! Because in fact, that is what it is all about.

To complete our services we also provide our customers various programs of overhaul planning, execution and monitoring including the procurement of all necessary spare parts at economical prices.





# LOGISTICS

Apart from being a producer with a high stock value as well as service provider to serve our customers needs, it is most important to be able to give fast response.

A motivated team of skilled sales personal ensure fast replies on enquiries. Appropriate packing is made possible by a computerized storage system allowing us to pack your orders fast and minimize the impact of human errors.

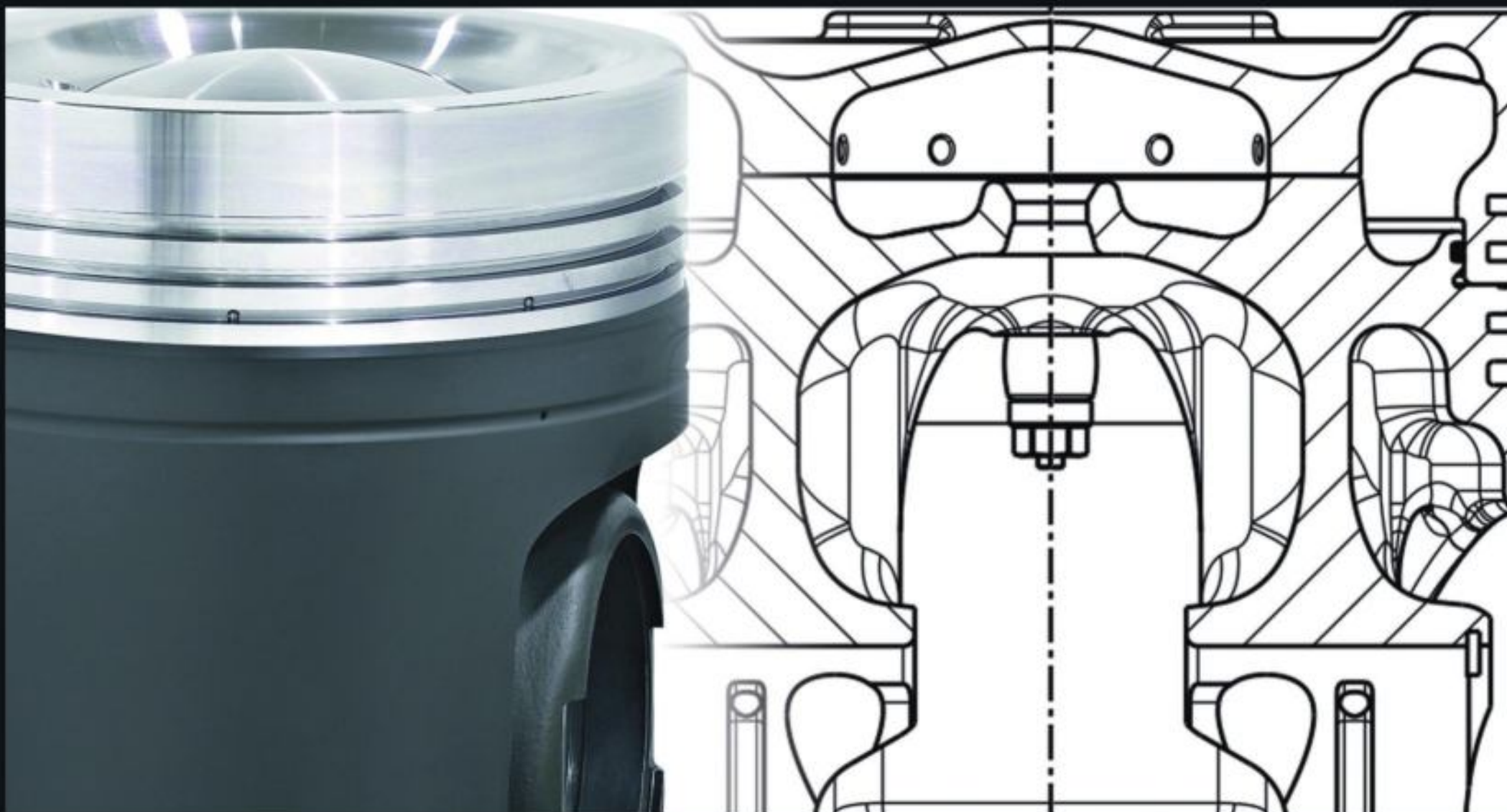
Shipping by airfreight to attend urgent requirements or packing of a complete 40' container with large components makes no difference for us. Our goal is to meet the requirements to your satisfaction.



# PRODUCTS

valve, o-ring, cock valve, piston ring, anti polishing ring, nozzle holder, extension bush, guide bush, fuel rack, injection valve, joint ring, thrust pin, pressure switch, spring dowel, washer, hexagon screw, steel ball, valve rotator, rubber seal, rocker arm, tappet roller, tappet housing, throttle screw, control rod spring, valve spring, adjusting screw, piston crown, expansion joint, baffle body, control sleeve, x-ring, sealing set, pressure screw, guide bolt, thermo couple, fuel injection pipe, charge air cooler, filter element, tension spring, clamp, 3-way valve, pressure valve, parallel pin, compression spring, big end bearing, stud for piston crown, mounting set, piston skirt, lower valve disk, lobo adapter, steel ball, back up ring, stroke limiter, delivery valve spring, nozzle nut, pump spring, spacer sleeve, valve carrier, slotted disc, disc spring, distance plate, shim, lube oil pipe, spring pin, screw plug, flange, yoke pin, stud, nut, cutting ring, pilot air valve, reduction unit, locking ring, dummy air start valve, hose gasket, indicator valve, ball head pin, allen screw, camshaft piece, axial bearing, support ring, locating bolt, retainer ring, shaft seal, stop piston, guiding screw, lube oil pump, holding plate, eye bolt, gear wheel, helical gear, drain valve, bearing bush, intermediate shaft, banjo fitting, solenoid valve, manometer, ball valve, bush, transducer, housing, locking device, vibration damper, coupling, piston ring, camshaft, d-ring, fuel pipe, rocker arm, valve yoke, seat ring, valve guide, connection flange, head adapter, pump element, fuel pump, cylinder head, liner, piston, bearing, sealing ring, gudgeon pin, connection rod, push rod ... to be continued ...





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