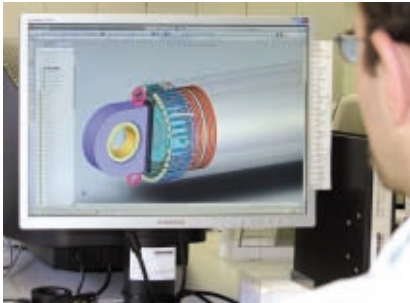


**Cylinders and  
Cylinder Systems  
for all Industries.**





**Competence.**

More than 40 years experience in development and production of individually designed cylinders makes HYDROSAAR your competent partner. Innovative thinking, flexibility, technical competence and permanent readiness to go unusual ways are the guarantee of our success.

**Our Goals.**

Making sure that our customers are given satisfaction, competent problem solutions, professional and requirement oriented support and deliveries on schedule.

**Quality.**

Permanent surveillance of all processes. From design to mounting, control of single parts as well as the final products, the measuring surveillance, contamination control of all hydraulic oils used.

Our top goal:

- High quality
- constant improvement of our quality
- permanent observation of our production and control of the goods produced

Quality concerns our whole efficiency on all levels of our company:

- determination of our customers needs on schedule and specification conform delivery of the products
- installation
- repair

Our level of quality is shown in a very tight and individual cooperation with our customers and suppliers. And in constant training and continuation of employee education.

**Technology.**

For high demands on our final products we use up-to-date technologies: 3D-calculation, FEM and simulations for optimized designs.

**Flexibility in Production.**

Through qualified, highly motivated experts and modern machinery equipment with all possibilities of treatment and processing.

**Solutions out of one Hand.**

Wherever you need us, we are there to help you find the best solution. For each application from the component to the complete system.

**Global Authorisations.**

- TÜV Deutschland
- Lloyds Register
- German Lloyd
- Gost-authorization Russia
- American Bureau of Shipment
- Büro Veritas
- etc.



# Service.

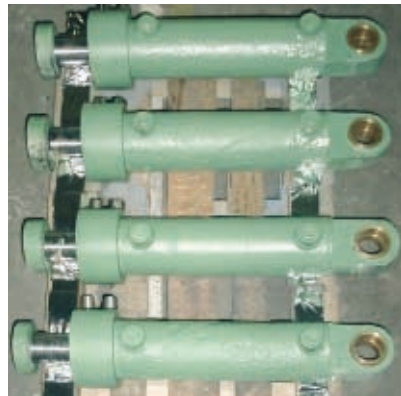
Professional Service for all Cases.



Disassembly stand HYDROSAAR



Before repair work ...



... and after repair work.

## Assembly, Installation, Maintenance, Repair Work and Rebuilding.

Repair work is one of our strengths regarding our service-offer, right next to the production of our powerful products.

Because of our experience concerning the dealing with cylinders world wide, we have created a service-area around the repair of cylinders.

Cylinders of all types and makes are disassembled and an exoert assessment is done in our workshop. Based on an analysis of the damage we draw up an estimate.

According to the customers wish we are able to use different repair methods. In the course of repair and rebuilding work HYDROSAAR offers all commonly used methods of chemical and physical surface finishing.

### Surface-treatment procedures:

- Galvanic methods,
- Flamespraying method,
- plating,
- high velocity flame spraying,
- welding procedure (PTA, plating)

All repaired cylinders have to undergo an intensive quality testing and therefore fulfill the highest quality standards.

### Repair possibilities:

- up to 10 m
- up to 10 t (individual weight)
- Ø up to 1,000 mm

# Cylinders for Mobile Technology.

Light. Compact. System oriented.



## Telescopic Cylinder.



Lengths of 7 to 15 m, totally self-driving and surveying systems with measuring system, pressure transfer, hydraulic control block, valves.

## Special Cylinder for Road Mills.



Cylinder with oil lines through the inside of the piston rod.

## Locking Cylinder.



Leakage free cylinder with integrated valve technology. Weight optimized design of all cylinders through special steel.

## Tension Cylinder.



Special solution: cylinder with power pack. Delivery of complete systems to adjust the top part of crane vehicles. Advantages:

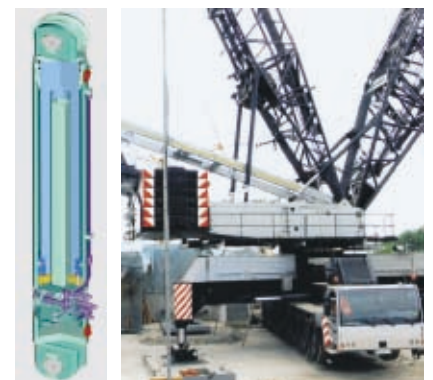
- larger loading area
- higher loads

## Rotary Joints 2 - 18 Channels.



Suitable for transfer of hydraulic energy from generator to user. Highly modern rotation sealings come to utilization. Following media can be transferred: oil, water, air pressure and electrical energy.

## Mast Restraint- and Rope Tension Cylinders for large Equipment.



Special cylinder with torsion control inside, integrated valve technology and control unit incl. valves and sensors in the cylinder.

# Cylinders for Mining Engineering.

Safe. Explosion-Proof. Stable.



## Dumpercylinder.



Special solution for levelling and cushioning of large dumpers, integrated in one single system.  
Cylinder and accumulator in one system.

## Excavating Cylinder.



Cylinder for continuous duty in abrasive surroundings. Special sealing (stroke speed up to 3 m/s), special coatings.

## Mining Cylinder.



Operating media: Emulsion or water  
Pressures up to 1,500 bar, Cylinders with special coatings (corrosion- and abrasion protection).

Cylinders with special valves like pressure burst valves for cylinder protection.

## Pneumatic Cylinder.



Application example:  
Up to 500 mm inner diameter and lengths up to 10 m  
Operating pressure: 6 bar,  
Cylinder for tensioning of a conveyor system.

The program of HYDROSAAR includes all special cylinders for oil and water hydraulic use.

For abrasion and corrosion protection HYDROSAAR offers the most up-to-date surface finishing:

- **Galvanic coating**  
(chromium, nickel + chromium, bronze)
- **Flame spraying method**  
(more than 100 different methods belong to our standard program)
- **High velocity flame spraying**  
(more than 20 variations of coating)
- **Ceramic layers**
- **Carbide layers**
- **Plasma coating**
- **Welded coating (PTA)**

### Our manufacturing line includes:

- Deep-hole boring,
- rotating (CNC, NC and conventional),
- honing,
- milling/polishing,
- grinding/polishing,
- welding.

### Our delivery program:

- cylinders Ø 100 to 800 mm inner diameter
- Production lengths:  
> 300 mm outside diameter up to 8,000 mm length  
< 300 mm outside diameter up to 15,000 mm length

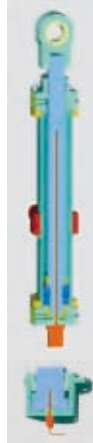
Custom-built machinery which goes beyond the above mentioned measurements can be inquired as well.

# Cylinders for Power Plants.

Precise. Capable of Bearing. Long Lasting.



## Wind Power Stations.



Pitch-control and locking cylinders, Relatively maintenance-free cylinders with special low stick-slip sealings for optimized control of wind power station.

## Water Power Plants.



HYDROSAAR delivers all sorts of cylinders for hydraulic power plants, starting with cylinders for weirs, the opening and closing of dam gates and sluices as well as cylinders for the adjustment of the diffuser of a turbine.

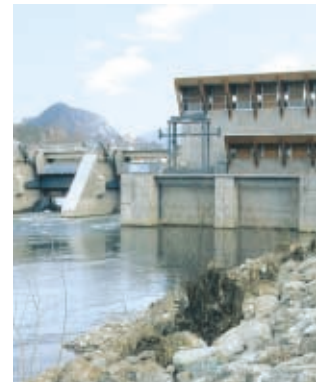
## Thermal Power Plants.



Cylinders for:

- Fire grates
- oscillating screens
- control motors
- Steam adjusting valves, etc.

## Weirs and Dams.



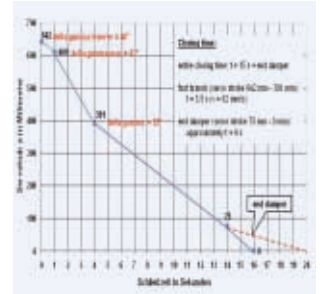
Cylinders made of special material like stainless steel. Further, very often special coatings like ceramic or carbide are used (corrosion- or abrasion protection).

## Cylinders for Coal Mills.



High-load cylinders, designed to withstand continuous cycles for years without any problems.

## Servo Engine.



Cylinders for the adjustment of a diffuser operate IAW special opening and closing rules.

The cylinder is designed to adjust exactly, based on the precalculated curve in the diagram (closing rule), the diffuser of a turbine.

# Cylinders for Steel Works.

Highly efficient. Robust. Reliable.

**HYDROSAAR**  
HYDAC INTERNATIONAL



Tube rolling street



## Cylinders in Operation around the Clock.

Hydraulic cylinders in steel works are used due to their high power density as well as robustness.

Besides the high forces, adjustment exactness of a few hundred millimeters are required.

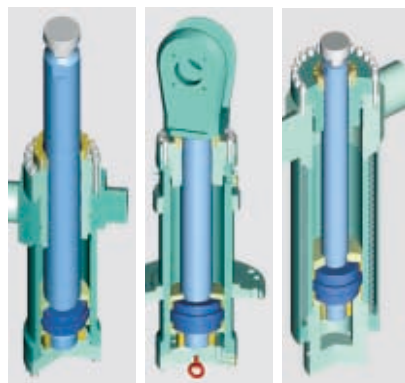
Cylinders for electric furnaces, arc type presses, rolling mills, forging presses. Cylinders designed for continuous duty in very hot and aggressive environment.

Cylinders with special sealings for high temperatures, cooling systems with special coatings.

**All out of one hand!**



Electronic melting oven



Driving cylinder

Zone cylinder

Direction cylinder with water cooling

The information in this brochure relates to the operating conditions and applications described. For applications or operating conditions not described, please contact the relevant technical department. Subject to technical modifications.



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