

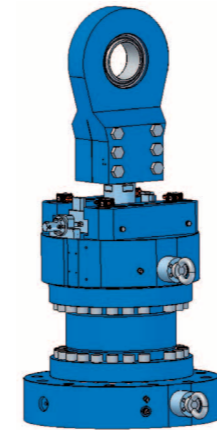
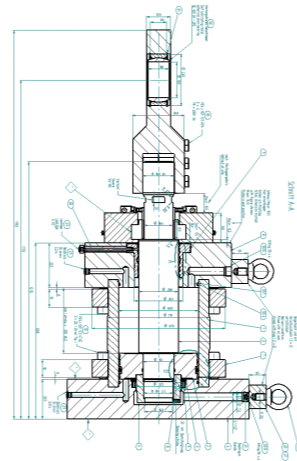
POWERFUL HYDRAULIC SOLUTIONS



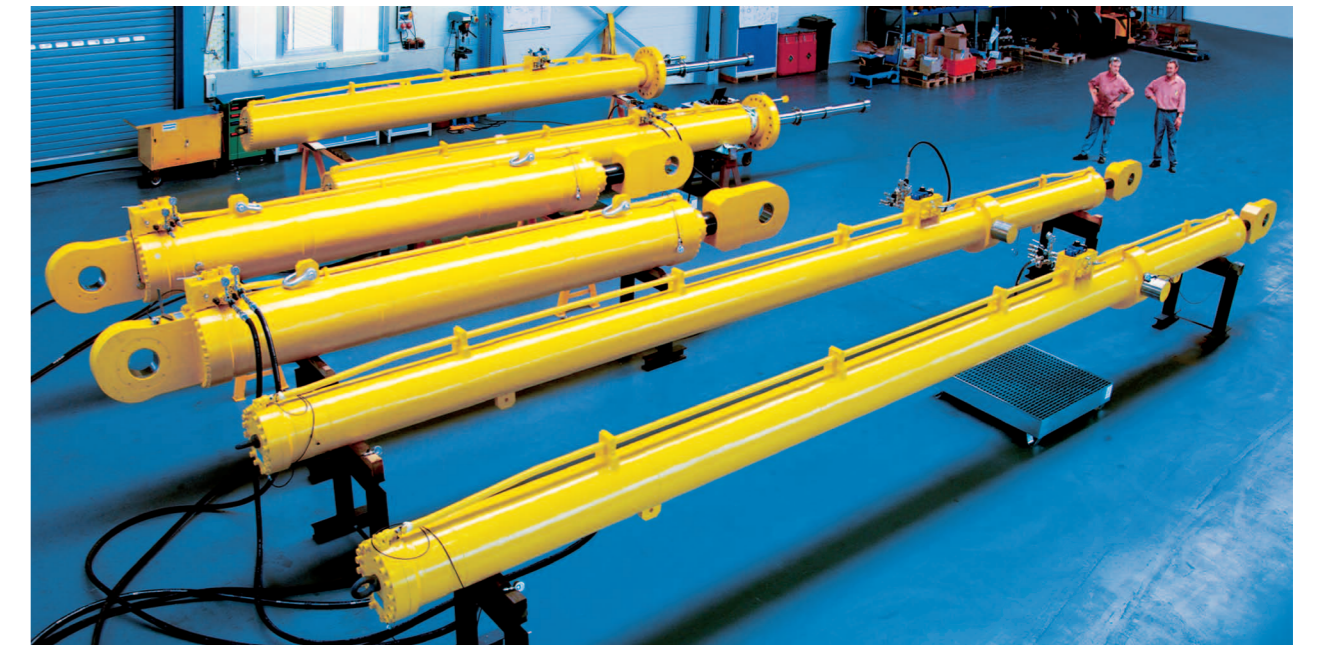
Design & manufacture of special purpose hydraulic cylinders

- DESIGNED FOR A LIFETIME -

RUHFUS Systemhydraulik GmbH is a company with more than **100 years** of experience. For over **60 years** we have been involved in the customer-specified design and manufacturing of **hydraulic cylinders** and related **intermediate products**.



Hydraulic cylinders for water turbine in power station



Precision & big size - no contradiction!

In our production range you will find all kinds of **special cylinders** with single or dual functions. **Telescopic cylinders** and larger **pneumatic cylinders** are also available.

Special solutions for Dams, water reservoirs and water turbines



Hydropower is sustainable

Dams and water reservoirs have always and will ever be highly critical projects. Hydromechanics of dams and water reservoirs must function reliable and steady for many years. Maintenance and repairs are always very difficult in its specific environment. Malfunction of a dam hydromechanic may lead to worst catastrophies.

As the hydromechanical equipments always operate in due contact with water (drinking water in many case) highest demands regarding the sealing systems, material and technology is required.

Only perfection in detailed engineering and manufacturing will guarantee the faultless and longterm function of dams and water reservoirs. Servomotors (specific term for typical cylinder) and high class power packs fulfill these requirements.

In many dams, storage of water is combined with generation of electrical energy by water turbines. These highly complex facilities are controlled and operated by sensitive working servomotors.

In order to deliver into this very specific field it is imperative to have the unrestricted trust of customers and facility owners.

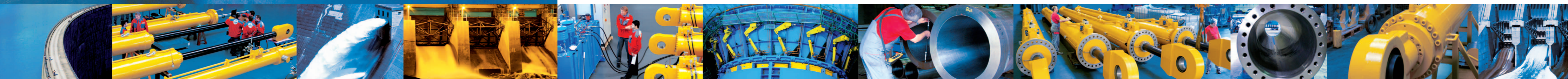
RUHFUS has gained this reputation and have been delivering into this field for many years.

SELECTED REFERENCE LIST

project name/country	year	pulling/pushing capacity (tons)	piston/rod Ø (mm)	stroke (mm)	application
...
Ekbatan Dam, Iran	2006	35/60	200/125	1400	radial gate
	2006	36/110	280/125	1550	emergency gate
Vanyar Dam, Iran	2007	185/130	380/140	3300	vertical gate
ZaHung Dam, Vietnam	2008	80/40	280/140	6630	radial gate
	2008	85/40	280/140	4800	emergency gate
Sang Tuda Dam, Tajikistan	2009	140/3	320/125	5600	radial gate
Karun IV Dam, Iran	2009	145/2	330/125	9500	intake gate
	2009	230/100	420/170	5500	emergency gate
	2009	280/150	480/220	4000	radial gate
Gotwand Dam, Iran	2009	450/10	550/200	11600	intake gate
Karacham Wang To Dam, India	2009	150	350/200	2050	water turbine
	2009	270	400/200	330	water turbine
	2009	270	400/200	350	water turbine
Theun Hinboun Dam, Laos	2010	122/181	350/200	1900	water turbine
Rheinkraftwerk Iffezheim, Germany	2010	.../98	280/180	2454	power plant
Bemposta, Portugal	2010	126/150	550/220	598	water turbine
Azadi Dam, Iran	2010	62/45	200/090	1650	bottom outlet

hydraulic systems hydraulic cylinders cylinder tubes deep hole drilling machining honing welding
Hydrauliksysteme Hydraulikzylinder Zylinderrohre Tieflochbohren Zerspanen Honen Schweißen

repairs hydraulic systems hydraulic cylinders cylinder tubes deep hole drilling machining honing welding repairs hydraulic systems hydraulic cylinders cylinder tubes deep hole drilling
Reparatur Hydrauliksysteme Hydraulikzylinder Zylinderrohre Tieflochbohren Zerspanen Honen Schweißen Reparatur Hydrauliksysteme Hydraulikzylinder Zylinderrohre Tieflochbohren



KNOW HOW - accumulated as benefit for our customers

To make the ideal product, you need a lot more than just knowing the specification. Knowledge of the industry, the specific application, the physical demands and the environmental conditions are crucial to create a troublefree application that will operate for a long time.



CONTACT: RUHFUS
Systemhydraulik GmbH
Büdericher Str. 7
41460 Neuss - Germany

Telephone: +49 - (0) 2131 - 914 - 6
Fax: +49 - (0) 2131 - 914 - 820
E-mail: sales@ruhfus.com
Internet: www.ruhfus.com

Custom designed power packs and control units

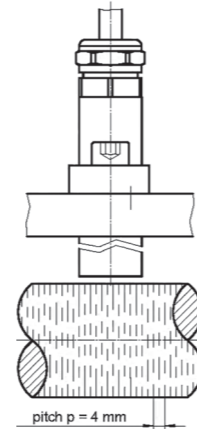


in collaboration with our partners we also develop and supply **complete hydraulic systems** including interconnecting pipings, control units and

measuring systems. Each power pack system is especially designed and tailored to meet the project requirements.



Measuring systems

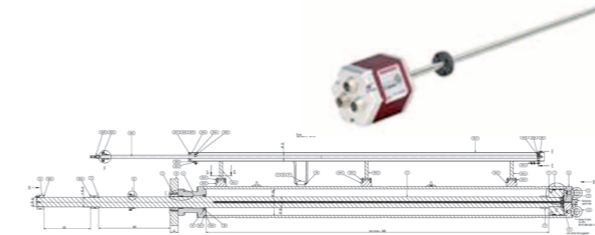


High quality servomotors for gates are normally equipped with different types of precise sensors and encoders. These technologies can distinguish the position of gate and create all necessary feedbacks used in control panels.

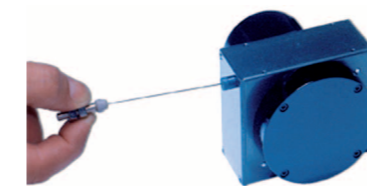


Among others, **RUHFUS** servomotors can be equipped with **LPM** system which includes a magnetic sensor "counting", the threads precisely machined on rod and covered by a special ceramic layer having a surface hardness of 60 HRC and also protecting the rod against corrosion when it is in contact with humidity or water.

Temposonic is another method with its great advantages. A small diameter hole is being drilled in rod covering the stroke and sensor is being installed.



Depending on the demand and opinions of our customer, other technics like **wire transducer**, **friction rollers** and similar can also be used.



A typical wire transducer

Superior machinery guarantees quality

To manufacture a lasting product, one needs a lot more than just knowing the specification. Superior hardware and machinery together with high level of expertise and experience are crucial for success.

Our machine park is unique in its type and meets the highest standards. We live by the philosophy of manufacturing as much as possible in-house to insure best quality and leadtimes.



CNC milling / drilling



Computer controlled welding



Modern paint shop - guaranteed quality

APPLICATIONS

With its many years of experience and its technical facilities in manufacturing, **RUHFUS** supplies a huge variety of applications with very different requirements.



Karun IV Dam - Iran

Sample project: KARUN IV DAM

Hydraulic servomotor for **Intake gate operation**, Size 330/125x9500 mm, Qty. 2
Emergency gate operation, Size 420/170x5500, Qty. 2
Radial gate operation, Size 480/220x4000, Qty. 2
&
Hydraulic power pack (3 x 3000 Lits)
Electrical control panels



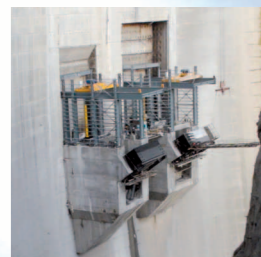
Servomotor for power intake gate



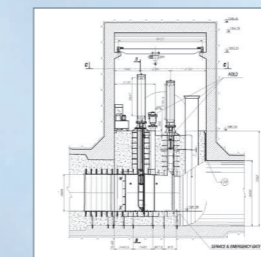
Made according to highest international standards in Germany by **RUHFUS**



Servomotor for radial gate



Close view - vertical emergency & radial service gates

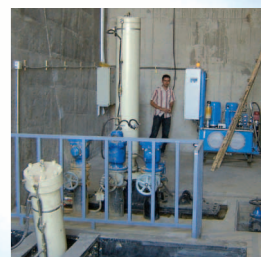


Typical bottom outlet chamber

Sample application: BOTTOM OUTLET OF DAMS

We supply complete package incl.:

Hydraulic servomotors
Hydraulic power pack
Electrical control panel



Sample installation of bottom outlet cylinders on site



Sample computer model of our servomotors



Servomotors (hydraulic hoist) - manufactured & tested by **RUHFUS**



Sample power pack and electrical control panel

hydraulic systems hydraulic cylinders cylinder tubes deep hole drilling machining honing welding repairs hydraulic systems hydraulic cylinders cylinder tubes deep hole drilling
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