

The HYDAC logo is a red oval with the word "HYDAC" in white, bold, sans-serif capital letters.The word "INTERNATIONAL" is written in large, bold, red, sans-serif capital letters, positioned to the right of the HYDAC logo.The background of the entire page is a 3D digital rendering of an offshore oil and gas platform. The platform is a complex, multi-story structure with a central derrick, a helipad on the top deck, and various support structures. It is supported by four red legs. A blue supply vessel is docked at the platform's side, and another red vessel is visible in the distance. The scene is set in a deep blue ocean with a sandy seabed visible in the foreground. The text "Components, Systems and Service for the Oil & Gas / Offshore Industry" is overlaid on the right side of the image.

Components,
Systems and Service
for the Oil & Gas /
Offshore Industry

Your Professional Partner for the Oil & Gas / Offshore Industry

Founded in 1963, today HYDAC has more than 9,000 employees worldwide and is one of the leading suppliers of fluid technology, process technology, hydraulic and electronic equipment in numerous industry sectors.

HYDAC's wide range of products, combined with its expertise in development, manufacturing, sales and service enables the oil and gas / offshore industry worldwide to overcome the most diverse problems.

HYDAC supports its customers to find the most effective solution – from components to complete systems.

HYDAC's quality and environmental certifications to ISO 9001:2008 and ISO 18001 denote first class quality and responsible management of its resources.

Complete solution packages.
One supplier.
One point of contact.

Various international **specifications and approvals** such as:

- API
- Directive 2014/68/EU
- NORSOK
- Lloyds
- DNV GL
- ASME
- ABS

And many more...

In the Oil & Gas / Offshore Industry

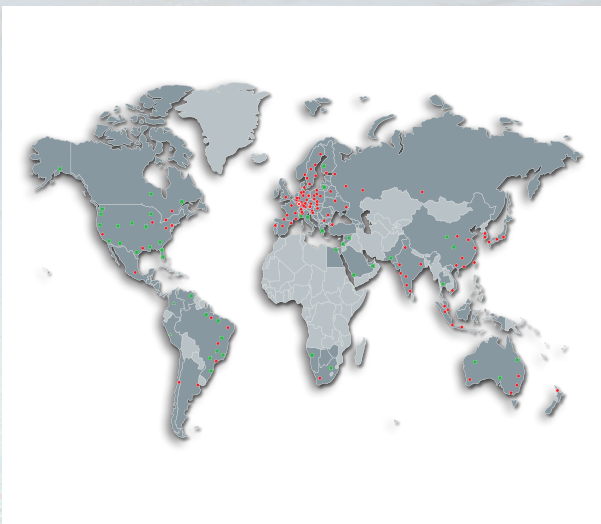
Whether it is onshore, offshore or subsea; from engineering to final production, HYDAC is a partner you can rely on.

Brief overview: HYDAC Capabilities

- Development and engineering capabilities
- Working pressures up to 2,000 bar / 30,000 PSI
- Special materials: Carbon steel, stainless steel 316, duplex and super duplex stainless steel
- Welding and fabrication to international standards
- Special offshore coating
- Flushing according to customer requirement
- Hazardous protection for applications onshore and offshore
- Condition monitoring of oil cleanliness and oil ageing in hydraulic and lubrication oils
- World-wide technical and commercial support through HYDAC global presence
- Prevention of electrostatic discharge and resulting system damage, such as accelerated oil ageing or damage to system components, through the use of HYDAC innovative filter technology
- Energy-efficient components and systems

And many more...

Global Presence



With over 45 subsidiaries, the international production facilities of the HYDAC group are located close to the customer and all over the world we represent quality: "Made by HYDAC". No matter what the job entails or where in the world you need us, we are there to help you in finding the best solution.

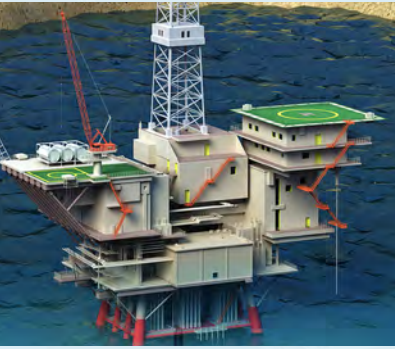
Components, Systems and Service for the Oil & Gas / Offshore Industry

SOLUTIONS FOR CUSTOMER APPLICATIONS

Oil & Gas / Land



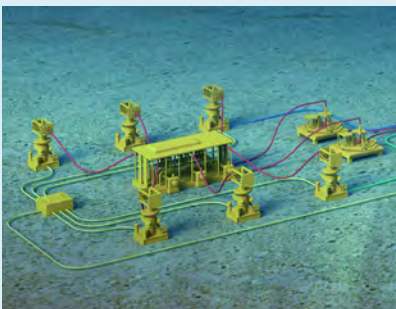
Oil & Gas / Offshore



Brief Overview:
HYDAC Components, Systems,
Service & Training



Oil & Gas / Subsea



Global Presence

The HYDAC organization is close to the customer. Worldwide.

ITALY



THE NETHERLANDS



FRANCE



UK



USA



CANADA



BRASIL



HEADQUARTERS GERMANY



NORWAY



CHINA



KOREA



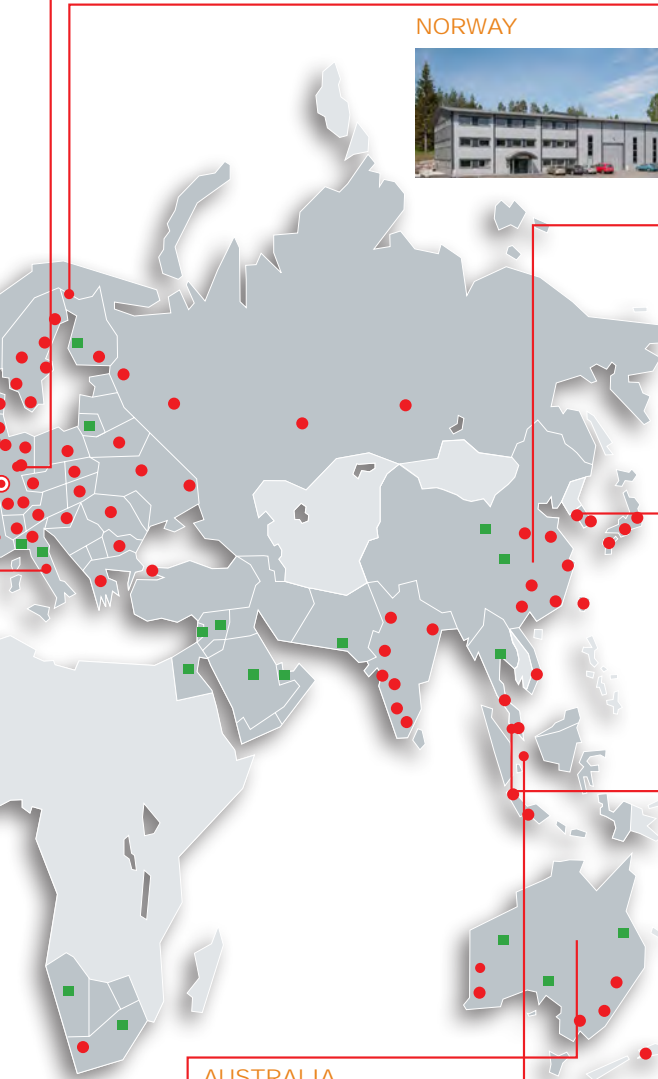
MALAYSIA



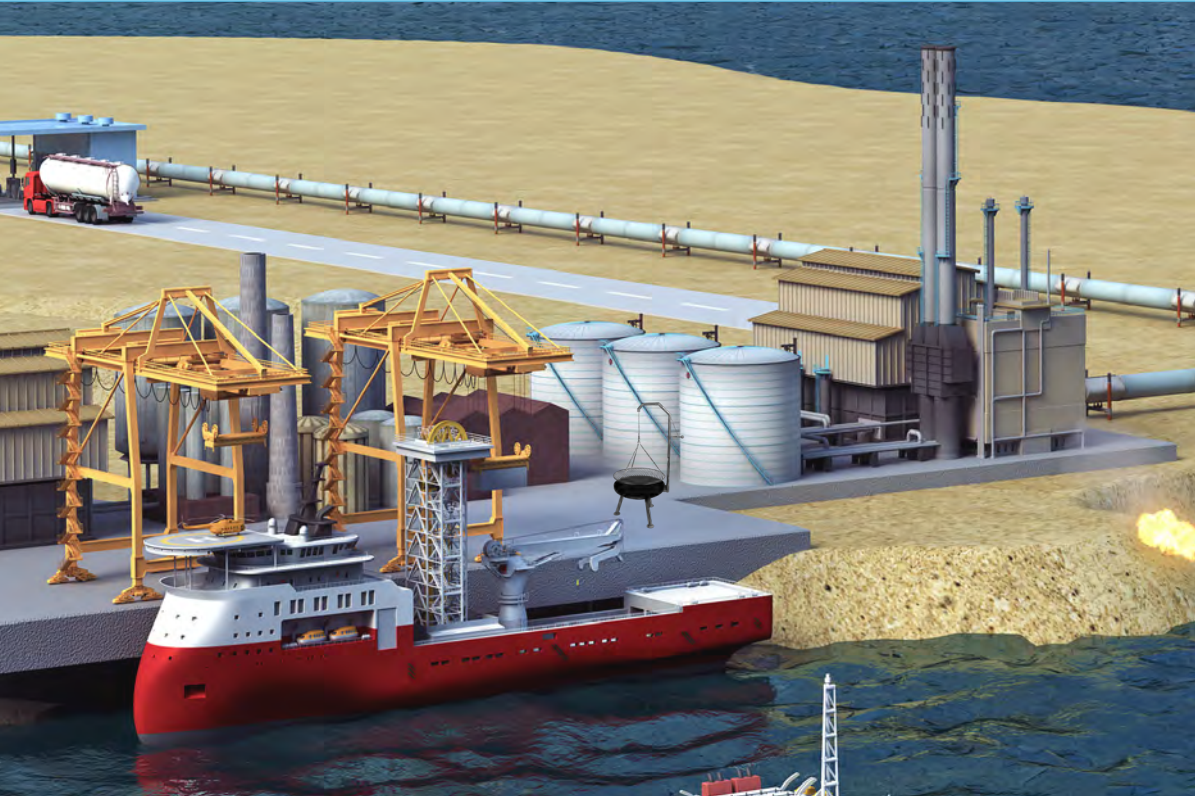
AUSTRALIA



SINGAPORE



Components, Systems and Service for Oil & Gas / Land Applications



HYDAC offers solutions for customer applications, such as:

- Blowout Preventers
- Compressors and Gas Turbines
- Loading Systems
- Oil Lubrication Systems
- Hydraulic Valve Actuation
- Pipeline Precommissioning Equipment (i.e. Flooding/Flushing Unit)
- Seal Supply Systems
- Pump Systems (e. g. Chemical Injection Systems)
- Top Drives
- Water Injection filtration
- Wellhead Control Panels
- Workover Control Systems
- Downhole Tools
- Mobile Well Servicing Units
(e. g. Fracturing, Cementing, Stimulation, Coil Tubing)

And many more...

Examples of HYDAC Solutions



Oil and gas pipeline flooding with fresh water or seawater. **Backwashing Filters AutoFit® RF3** are used to protect the flooding pumps



Bladder and piston accumulators on electro-hydraulic actuators e.g. Emergency shut-off for gas pipelines



Fluid Aqua Mobile FAM - Compact unit for degassing, dewatering and filtration of hydraulic and lubrication oils



Lube Oil Systems as per API 610 & 614



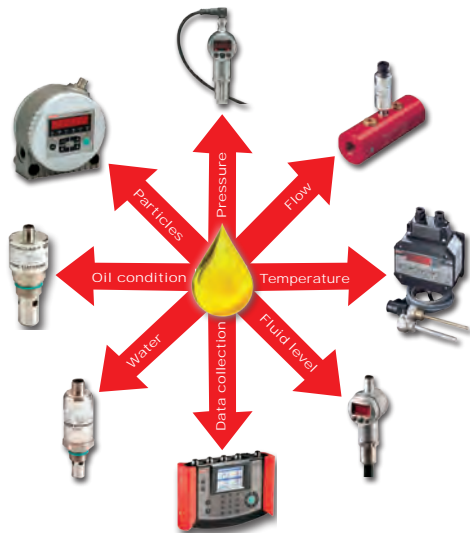
Seal systems made out of 316 ss or duplex UNS S32205



Radial piston pumps BRK are very robust radial devices with high volumetric efficiency, wide speed range and high reliability, even under rough conditions used in drilling rigs and wellhead control panels WHCP.



ATEX oil-air coolers in e.g. Top Drives, HPUs & lubrication systems



Condition Monitoring
Preventive maintenance to increase fluid service life



Pressure transducers (up to 15,000 psi / 1030 bar) in HPUs, wellhead control panels and BOP's. Triple certified - all in one: ATEX, CSA, IECEx (explosion and flame proof)

Components, Systems and Service for Oil & Gas / Offshore Applications

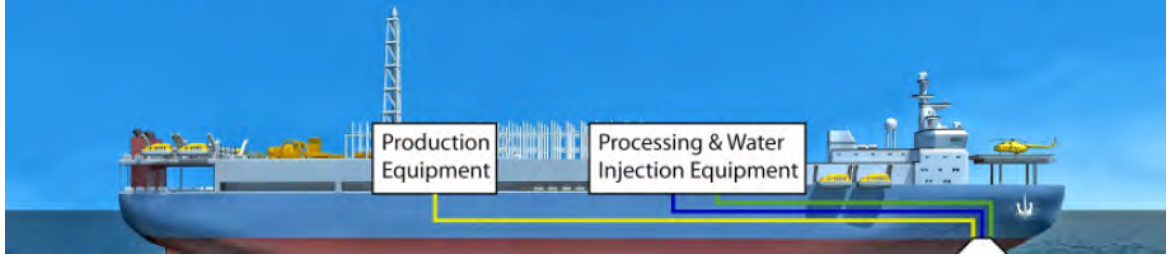


HYDAC offers solutions for customer applications, such as:

- Water Injection Filtration
- Heave Compensation
- Blowout Preventers
- Davits, A-Frames & Cranes
- Pipe Handling Equipment
- Mooring Systems
- Pump Systems (e. g. Chemical Injection Systems)
- Compressors and Gas Turbines
- Oil Lubrication Systems
- Pipeline Tensioning
- Seal Supply Systems
- Wellhead Control Panel
- Workover Control System

And many more...

Floating Production Storage & Offloading (FPSO)



AutoFilt® RF3

Process Inline Filter PLF1

HPU
Hydraulic Power Unit

One of the first steps in the treatment of water is pre-filtration, followed by fine filtration. This is precisely where the HYDAC solution comes in.

Three AutoFilt® RF3 filters with a filtration rating of 50 µm are used as coarse filters, and then three process inline filters PLF1 are installed further downstream to provide the fine filtration to 5 µm absolute. In essence, the HYDAC filter solutions used in this application serve to protect the high pressure pumps and the membrane system.

The example on the left is a complete HYDAC solution package.

Info: www.hydac.com /
See brochure no. 7.700, brochure no. 7.807



This HPU drives a hydraulic pile hammer for placing foundation piles subsea, for instance for offshore platforms or windmill foundations.



Hydraulic cylinders, ABS type approved accumulators and coolers for offshore cranes.

- Cylinders can be painted according to application conditions or regulations and customer-specific requirements



Filter with Hazardous area clogging indicator VDHA with 316 stainless steel junction box (indicator approved with ATEX and IECEx; CSA/UL) on a Wellhead Control Panel.



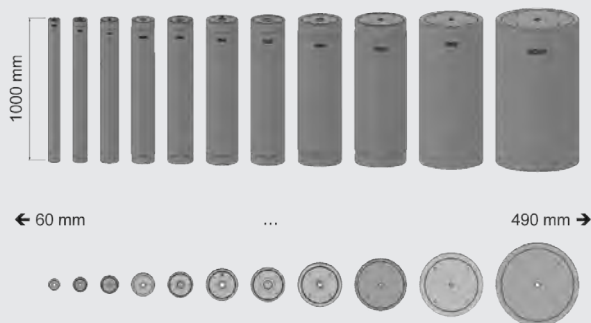
QHP Bladder accumulator are designed and constructed especially for the Oil & Gas market. Depending on customer requirements, special elastomer, steel materials and as well connections are available.



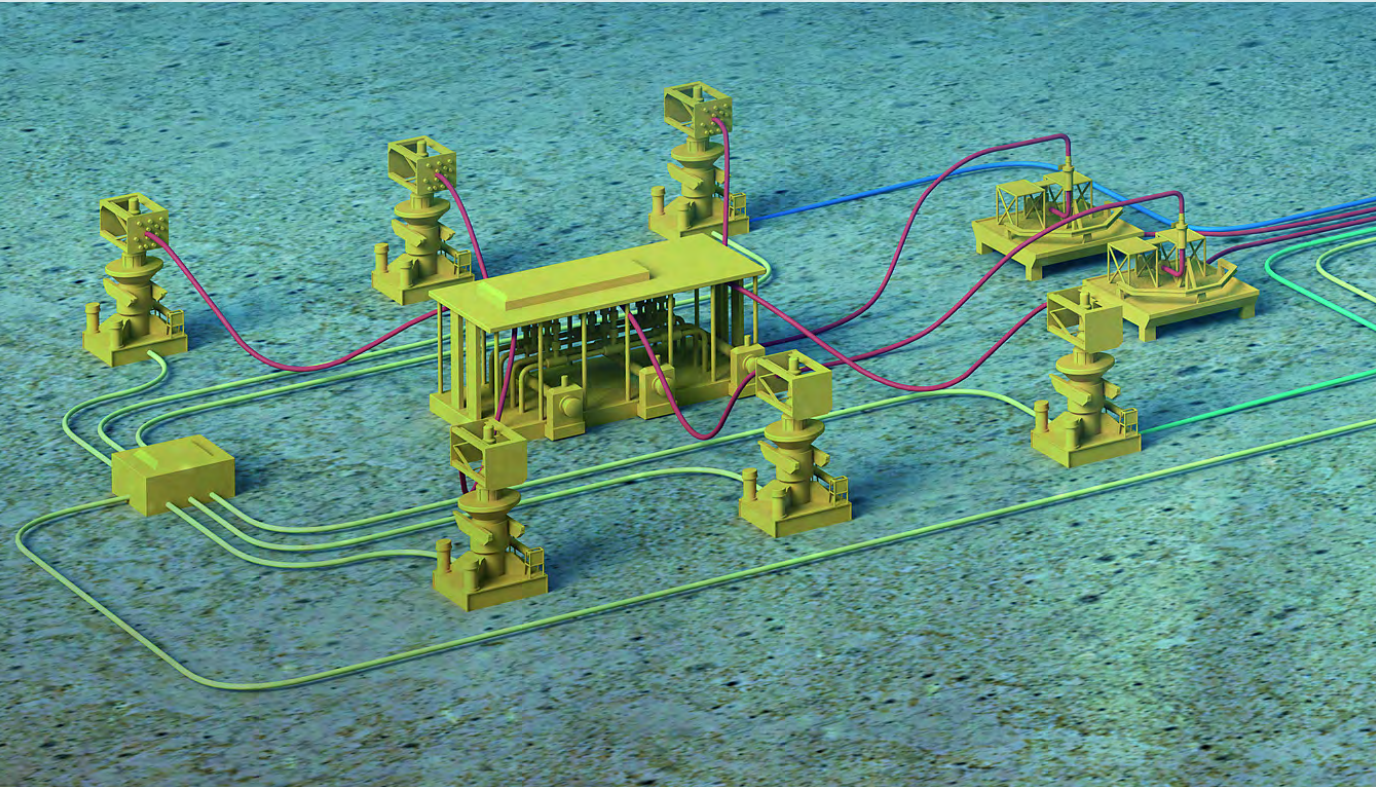
QHP Piston accumulators are designed for various Oil & Gas / Offshore applications.



HYDAC piston accumulators can be in various lengths and diameters and can therefore be manufactured to suit very individual requirements.



Components for Oil & Gas / Subsea Applications



HYDAC offers solutions for customer applications, such as:

- Subsea Control Modules
- Subsea Accumulator Modules
- Subsea Blowout Preventers
- Remotely Operated Vehicles
- Mono Ethylene Glycol Filtration
- Downhole Tools

And many more...

Examples of HYDAC Solutions



Subsea filtration for Mono Ethylene Glycol (MEG)



QHP bladder & piston type accumulators and compensators for subsea applications



Compact Temporary Subsea Ball Valve

- Subsea bidirectional floating ball valve, for temporary applications
- Dual stem allowing two sided ROV operation
- Qualified through DNV-GL, according to ISO 10423 – Performance requirement 1 (PR1)



Stainless Steel High Pressure filter types for subsea applications



Development of sensors for subsea applications

- Pressure transmitters – standard or redundant designs
- Delta P pressure transmitters
- Pressure switches

Brief Overview: HYDAC Components, Systems, Service & Training

PROCESS FILTERS

Automatic backflushing filters, inline filters, gas filters and filter skids for various filtration tasks of process fluids and gases. Typical applications include:

- Filtration of injection water both onshore and offshore
- Seal gas filtration / seal water filtration / fuel gas filtration
- Pipeline flushing (pre-commissioning of pipelines)
- Filtration of Mono-Ethylene-Glycol (MEG)



Gas filtration, e.g. for seal gas on a centrifugal compressor



Automatic backflushing filter RF3, e.g. used for coarse filtration of injection water (typical filtration rate: 50 to 100 µm)



Mono-Ethylene-Glycol (MEG) filters used topside and subsea

- Filtration rates: 100 µm and 200 µm
- Pressure range: up to 690 bar



Process inline filter PLF1 for fine filtration down to 1 µm, e.g. used to filtrate impurities in topside water injection systems



RF3 / RF4 automatic backflushing filter in a typical filtration rating of 50 µm for the filtration of sealing water, e.g. used on water-lubricated turbine bearings



AutoFill® ATF TwistFlow Strainer
Hybrid – centrifugal separator with secured separation limit

- Preliminary filtration for relieving sand filters
- Preliminary filtration ahead of membrane systems
- Filtration of surface water

Info www.hydac.com / See brochure no. 7.727

ACCUMULATORS

HYDAC, together with its fully owned subsidiary QHP, is the only company worldwide to develop, design, manufacture and distribute all forms and types of hydraulic accumulators.

- Bladder, piston, diaphragm and metal bellow accumulators for various oil & gas applications – onshore, offshore & subsea
- Wide range of international approvals



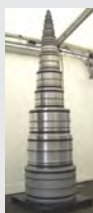
Bladder accumulators
Max. volume 450 l,
max. pressure 1000 bar



Piston accumulators
Max. volume 3500 l,
max. pressure 1000 bar



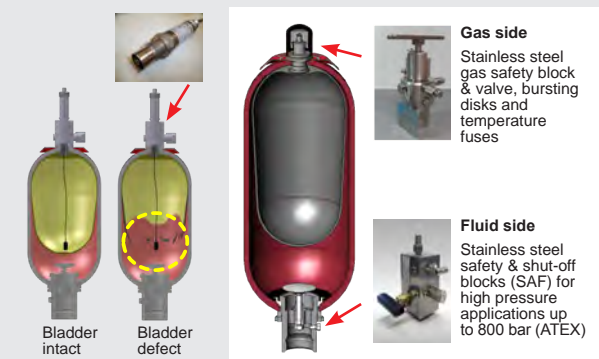
Diaphragm accumulators
Max. volume 4 l,
max. pressure 750 bar



Piston accumulators and metal bellow accumulators
Max. volume and pressure on request

Info: www.hydac.com / See brochure no. 30.000

Accessories & Safety Equipment



Bladder Integrity System (BIS)

- Detection of fluid in the bladder
- Integrated pressure and temperature monitoring during operation
- Different interfaces (HART)

Piston accumulators
Max. volume 3500 l, max. pressure 1000 bar



Charge and testing unit FPU-2

- In stainless steel
- Up to 800 bar

Info: www.hydac.com / See brochure no. 3.552

STAINLESS STEEL FILTERS

Stainless steel high pressure filters for various oil and gas applications

Stainless steel material used (Head - 316 / Bowl - 318) reduces galling. Port connections are available in BSP (up to 600 bar), NPT and Autoclave Style thread forms.



MPSSF (up to 450 bar), HPSSF (up to 700 bar) and ACSSF (up to 1035 bar) – flow rates up to 130 l/m – designed for filtering contaminants from offshore hydraulics as well as from chemical and industrial process engineering systems



Hazardous area clogging indicator VDHA with 316 stainless steel injection box available in 450, 700 and 1035 bar

Hydraulic standard inline and off-line filters, breathers and filter elements with high filtration performance and simple handling for safe and economically efficient system operations on request

FILTER ELEMENTS

HYDAC offers high quality filter element technology constantly improved through our field experience, research and development.



- Stat-Free® and Stat-X® filter elements
- Protection from electrostatic discharge thanks to charging optimized filter mat, O-ring caps, support tubes made from conductive material
- Protection from sparks, low-speed detonation, explosion
- High performance/service life of oil and filter element
- High operational reliability
- Fewer oil changes, less varnish

Info: www.hydac.com
See brochure no. 7.017



HYDAC manufactures filter elements for every requirement, in line with the filter concept. When choosing the right filter element to suit you, we naturally take both technical and economic aspects into consideration and test new or challenging applications with you.

Info: www.hydac.com
See brochure no. 7.221, catalogue no. 70.000, catalogue no. 79.000

FILTER SYSTEMS

HYDAC offers a comprehensive range of easy-to-use measurement and analysis equipment. Whether it be solid particles or fluid contamination, for sporadic checking or as a permanent installation, under rough field conditions or in the laboratory.



AquaSensor AS

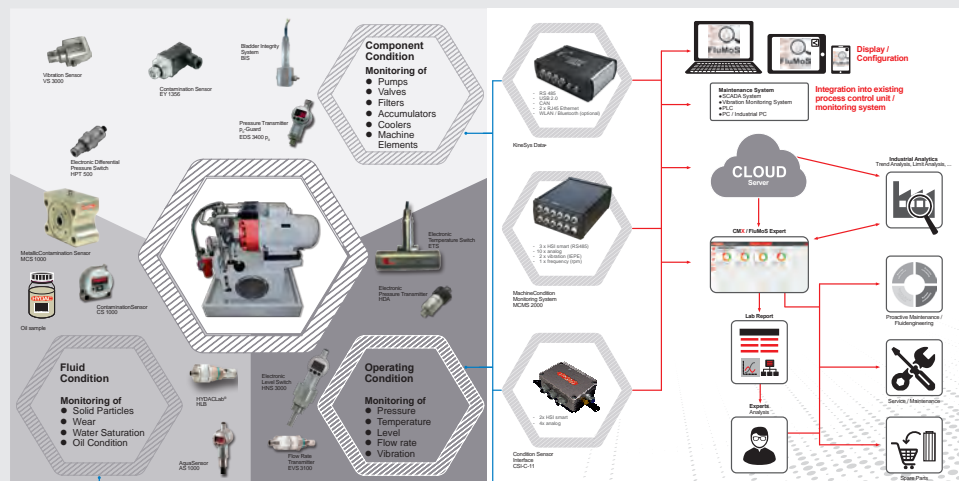
ContaminationSensor CS

MetallicContaminationSensor CS

ContaminationSensorModule CSM

FluidMonitoringModule FMM

MobileFiltrationUnitMFU



Predictive Maintenance
From Sensor to System

Brief Overview: HYDAC Components, Systems, Service & Training

BALL VALVES

Wide range of ball valves in stainless steel

- Pressure range: Up to 1034 bar / 15000 PSI
- 316Ti – Duplex – Superduplex
- Flexible adaptor system



Stainless steel 3-piece high pressure ball valve – 420 bar



Fluid level gauge with reflex glass, manually shut off, lockable check valve and flexible mounting



Subsea bidirectional floating ball valve. Dual stem allowing two sided ROV operation. Qualified for PR1 by DNVGL



2- and 3-way ball valves in different variations/adaptions

2 way and 3/2 ball valves, e.g. for ROVs

MOUNTING TECHNOLOGY

Safe fixing – Piping – Hoses – Components

- DIN3015 clamps
- Swivel bold clamping band
- U-Bolt clamps



Swivel bolt band clamps for heavy duty applications

- Stainless steel band and screws
- Reservoir mounting
- Multi shape suitable



U-Bolt clamps DIN3570

- Up to Ø762
- A4
- With pipe support

ELECTRONICS / CONTROL TECHNOLOGY

Sensors (pressure, temperature, flow rate) for use in potentially explosive atmospheres and controllers

- Versions for ignition protection types: explosion / flame proof, intrinsically safe and many others
- Approvals: ATEX, IECEx, CSA
- Optionally with HART protocol and PROFIBUS interface
- 4..20 mA output signal
- Controllers to SIL 2 / PL d



Pressure transmitters, Flush mount pressure transmitters, Electronic pressure switches, Temperature transmitters, Delta P transmitters, Redundant pressure transmitters, Flow transmitters with triple certified (all in one), dual or single certification.



Info: www.hydac.com / See brochure no. 180.000

PUMPS

- Radial piston pumps – ATEX
- Axial piston pumps (micro pumps)

BIERI
HYDAC INTERNATIONAL



Axial piston pumps (micro pumps) for mineral oil and other fluids.

- Displacement: 0.012 – 2.2 ccm/rev
- Pressure range: up to 900 bar
- Diameter: 21.5 to 75 mm

Radial piston pump in ATEX for mineral oil, Diesel and other fluids (on request).

- Displacement: 0.47 – 8.14 ccm/U
- Pressure range: up to 700 bar

HYDRAULIC CYLINDERS



Cylinders for a wide variety of deck superstructure tasks

- Davit system
- Opening cylinders
- A-frames
- Roll-on / roll-offloading system

COOLERS

Standard air coolers up to 1 MW cooling capacity

- ATEX certificate: II 2G/D de IIC T4 for 50 Hz + 60 Hz
- Corrosion protection CPL:
 - CPL1: Onshore
 - CPL2: Near-to-shore
 - CPLS: Offshore



AC-LN 1-14 for cooling and lubrication of gearboxes and bearings

- Low-noise air cooler
- Cooling capacity: up to 200 kW
- Optional with pump & filter



AC-LN MI 8-14 for cooling of hydraulics, inverters, generators and transformers

- With speed controlled fan for constant fluid output temperature
- Cooling capacity: up to 230 kW



OSCA/OSCAF 1-3 for cooling and lubrication of gearboxes and bearings

- Low-noise air cooler with radial fan
- Screw pump for high viscosities
- Optional with filter (OSCAF)
- Cooling capacity: up to 15 kW



AC-MS – Modular system for general applications in oil and gas, e.g. gas turbines, compressors and Diesel/gas generators

- 3 configurations: low noise, compact design or heavy duty
- Cooling capacity: up to 1 MW



Heave compensation systems are used on deck cranes to neutralise the movements of a vessel. No fixed reference point is needed for this process in the case of Active Heave Compensation (AHC). Instead, a Motion Reference Unit (MRU) compensates for the swell by measuring roll, pitch and yaw motions.

This active hydraulic system consists of piston accumulator and cylinder which are coupled to each other.

- In this example, piston accumulators with a size of 1,000 litres and a cylinder stroke of 4,500 mm are fitted

Cranes

To ensure safe and precise loading and unloading of ships, we offer standard hydraulic cylinders adapted to marine conditions as well as customized solutions for deck cranes.

- Special valves on the cylinders help control the movement of the arms and enable precise lifting of loads
- Can also be supplied with electroplated and sprayed coatings, which enhances cylinder durability
- Hydraulic cylinders can withstand a pressure of 400 bar and so are able to lift especially heavy loads



Cylinder with control block and pulley damper

Cylinder: 180 / 90 x 3923
Weight: 890 kg
Operating pressure: 250 bar
Hydraulic force: 636 kN
Tensile force: 477 kN

Davit Systems

A davit is a crane installed near the side of a ship for lowering or raising lifeboats. Cylinders with integrated valve technology provide these functions, which must be reliably guaranteed in case of an emergency. The cylinders are individually designed depending on the load requirement.



Brazed PHE HYDAC HEX Sxxx

- Vacuum brazed with copper or nickel
- Up to 30 bar
- Cooling capacity: up to 300 kW



Gasketed PHE Hxxx LIQUID – 3-pass heat exchanger for motor cooling

- Plate materials: stainless steel, SMO, Titanium
- Up to 25 bar
- Up to 30 000 kW



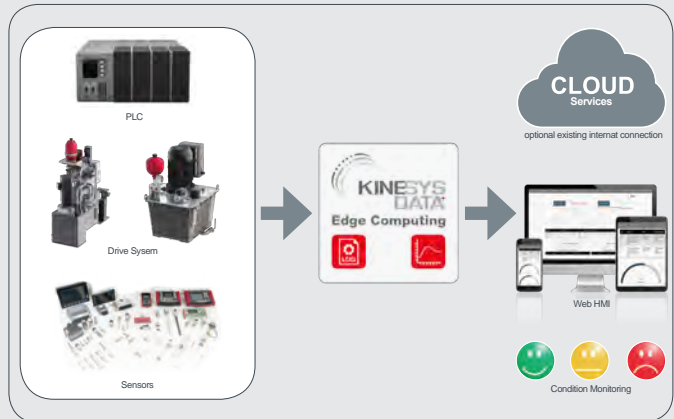
Speed variable multiple pump system DVA-Kit

- DVA-Kit to supply a central hydraulic system
- Need-based pressure control, which turns the DVA-Kits on demand on or off
- In case of an error the options are to switch the operating mode between two or one pumps operation manually



E-Cylinder and Synchronous Servomotor

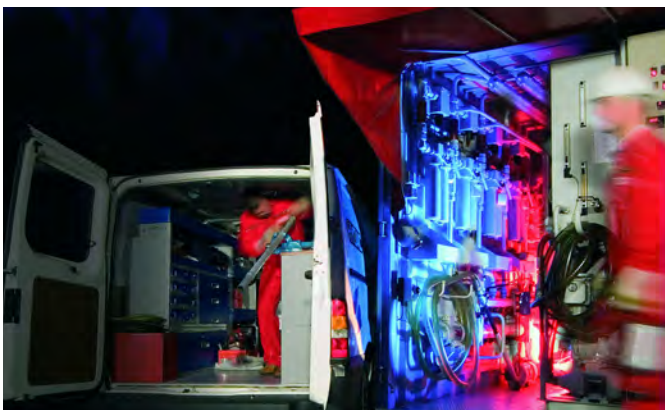
- High dynamic operation
- Highly accurate positioning controllability
- Force monitoring and controlling the force
- Environment-friendly



Edge Computing with KineSys Data*

- Connectivity to KineSys drive controller, PLC and cloud services
- Visualization of life and historical data
- Data processing

HYDAC SERVICE AND TRAINING. CLOSE TO THE CUSTOMER.



From individual service all the way to fluid management

The HYDAC Servicenter offers a systematically constructed, comprehensive range of services which uses proper maintenance and inspection procedures to make a decisive contribution towards increasing the useful life of hydraulic plants, lubrication systems and electrohydraulic controls and regulators.

The qualification and many years' experience in hydraulics and electronics are reflected in the world-wide authorization of HYDAC products and the close collaboration practiced with the responsible acceptance agencies (TÜV, Germanic Lloyd, DVGW, etc.) as well as by the sound training of the specialist personnel.

Info: www.hydac.com / See brochure no. 71.100



In an age when processes are constantly changing, Quality Assurance must take centre-stage in company activities. The continuous training and further development of staff is an important component in improving quality and therefore in ensuring the long-term success of the company. Starting from this realisation, we aim constantly to improve and to extend the provision of further training for our staff.

At HYDAC, quality, professionalism and individual customer support are our standards, and always present new challenges.

Condition Monitoring: Measuring, Analyzing, Conditioning.

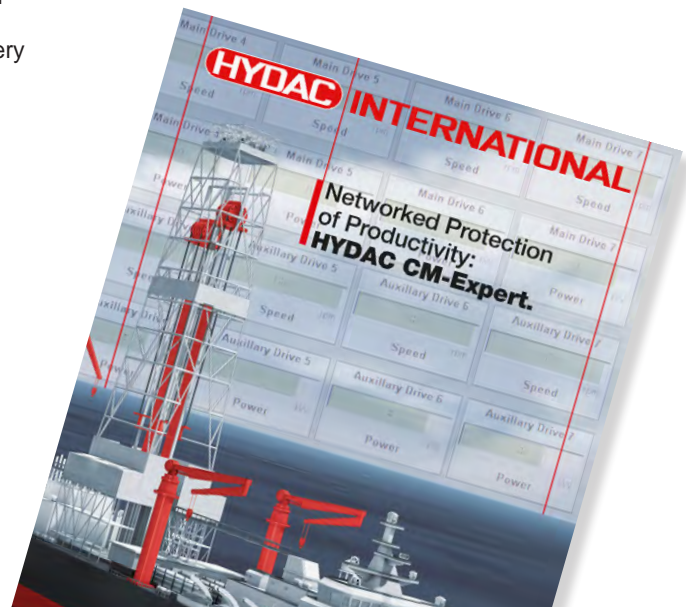
HYDAC offers a comprehensive range of easy-to-use measurement and analysis equipment. They are ideal for either solid particle or liquid contaminants, sporadic checks or as permanent installations, and are designed for use in the lab or for heavy-duty use in the field. The perfect measurement and analysis equipment for every application.

Product range:

- Fluid sensors (to measure particle contamination and water saturation)
- Sampling systems
- Laboratory equipment
- Component analysis equipment
- Software and controls

Customer benefits:

- Planned availability of systems and components
- Prevents disastrous consequential damages to systems and related supply bottlenecks
- Prevents sudden stoppage times
- Reduces operating costs
- Preventive, condition-based maintenance
- Conserves resources and protects the environment



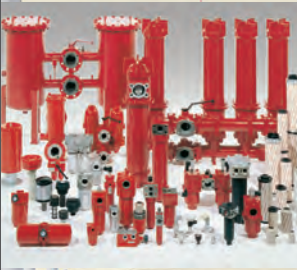
Info: www.hydac.com / See brochure no. 79.000, brochure no. 10.141





Accumulators 30.000

Global Presence. Local Expertise. www.hydac.com



Fluid Filters 70.000



Process Technology 77.000



Filter Systems 79.000



Compact Hydraulics 53.000



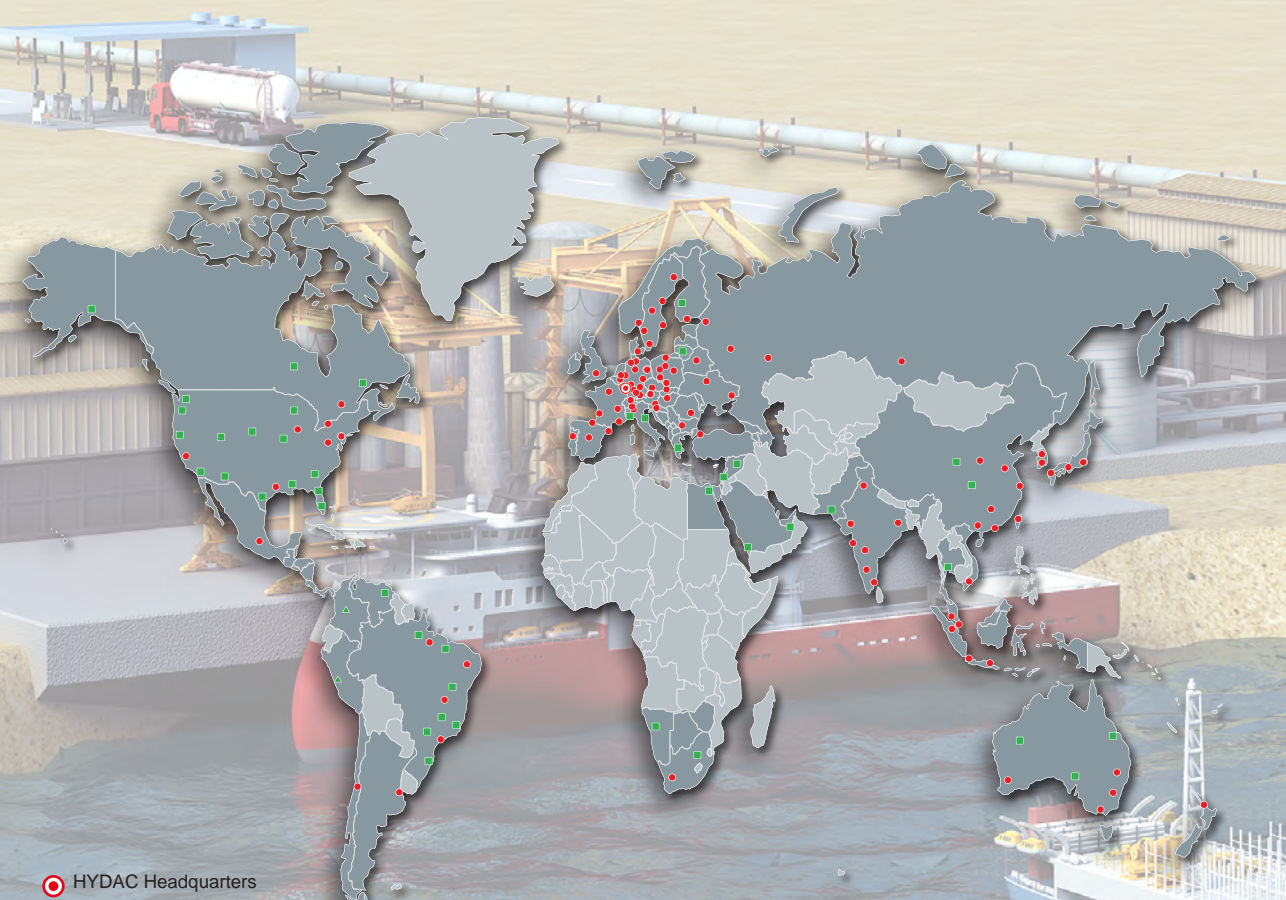
Accessories 61.000



Electronics 180.000



Cooling Systems 57.000



- HYDAC Headquarters
- HYDAC Companies
- HYDAC Distributors- and Service Partners
- Free Sales Partner

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Note

The information in this brochure relates to the operating conditions and applications described.

For applications and operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.