



## Quality and Innovation

Hydraulic drive systems for decanter centrifuges  
Dynamic test benches for gear units



**VISCO THERM**

Quality and Innovation  
Motivation is our Drive  
Technology with potential – Decanter drives  
The heart – the hydrostatic drive ROTODIFF®  
Dynamic test benches with ROTODIFF®  
Drives for decanter centrifuges – in use for the Ecology  
Swiss Quality – world wide – thousands of drive systems in operation  
Production, Service and Support  
Viscotherm – Service Worldwide

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## Quality and Innovation

For over 50 years, Viscotherm AG has been offering drive solutions in Swiss quality that are used around the world. Our customers seek out the best solutions for their decanter drives and dynamic test benches. We owe our leading global position as a manufacturer and provider of hydraulic centrifuge and test bench drive systems to the market acceptance of our products:

- **Intensive research and development**
- **Quality surveillance**
- **Extensive application know-how and experience**

With constant innovative adaptations and further developments in the field of hydrostatic, electronic and sensoric systems, Viscotherm AG safeguards its position at the top of its technological field.

Viscotherm AG has made a point of manufacturing powerful drives that have to reliably meet the high demands of centrifuge and test bench technology.

We design our products and services to be future-oriented. Seizing on the economic and technological transformation at an early stage enables us to develop competitive advantages. This allows us to establish, develop and strengthen long-term partnerships to create optimal customer value.



Switzerland / USA /  
Germany / Singapore /  
China



## Motivation is our Drive

**In order to perform company objectives, motivated employees are divided into individual team groups to achieve our high goals.**

- Marketing / Sales
- Research and development
- Design engineering / Production / Quality control
- Project planning / Order fulfilment
- Installation and maintenance service
- Customer and spare parts service

### **Marketing / Sales**

- Targeted, customer-oriented market research
- Market shares, optimised price/performance rating

### **Research and development**

- Patents
- Market-oriented new developments
- Use of the latest technologies
- Continuous improvements

### **Design engineering / Production / Quality control**

- ISO 9001 certified
- Close collaboration between these departments ensures compliance with our quality policy
- Customer-oriented design engineering
- CAD drawings for customer operating and safety manuals etc.
- state-of-the-art CNC production machines, rational production workflow
- Environmentally friendly production
- Guarantee of the durability of the product

Application: **Waste water treatment plants / Chemical industry / Food industry / Drilling technology / Bio fuels / Environmental technology, mobile equipment / General industry**



## Technology with potential – Decanter drives

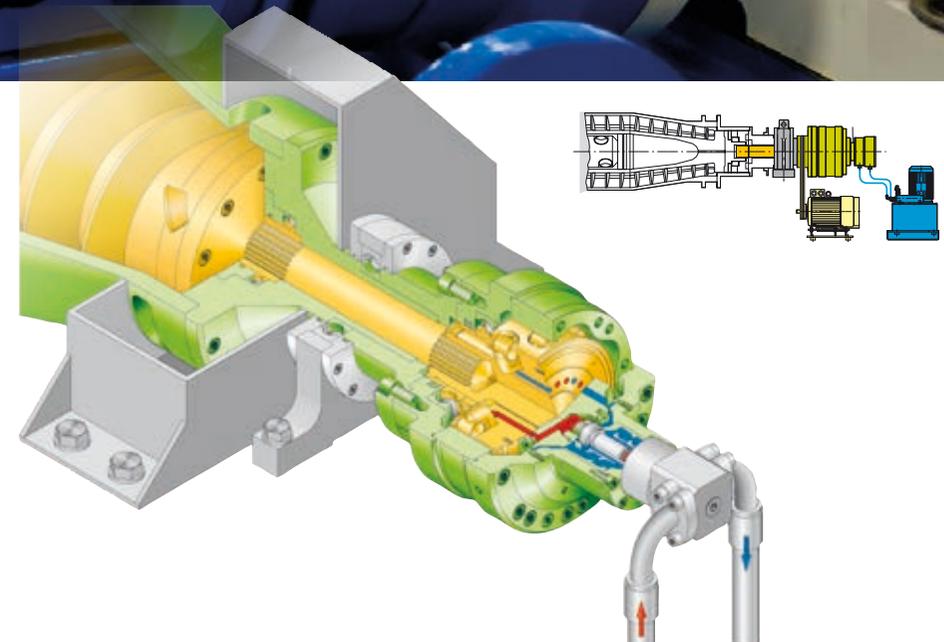
A solid bowl decanter centrifuge is used for a wide variety of procedural tasks, from treatment and separation to screening, concentrating, washing and extraction. The suspension is accelerated in the centrifuge to a multiple of the earth's gravity. Because of this high G-force, the heavier sludge is pressed against the outside of the rotating bowl and transported from there by means of the scroll into the conical part of the centrifuge, from where it discharges through the cake outlet. The clean effluent flows through adjustable weir plates via the runoff pipes. The decanter drive is one of the most important prerequisites for an optimal separation process.

### **The decanter bowl speed substantially influences the following:**

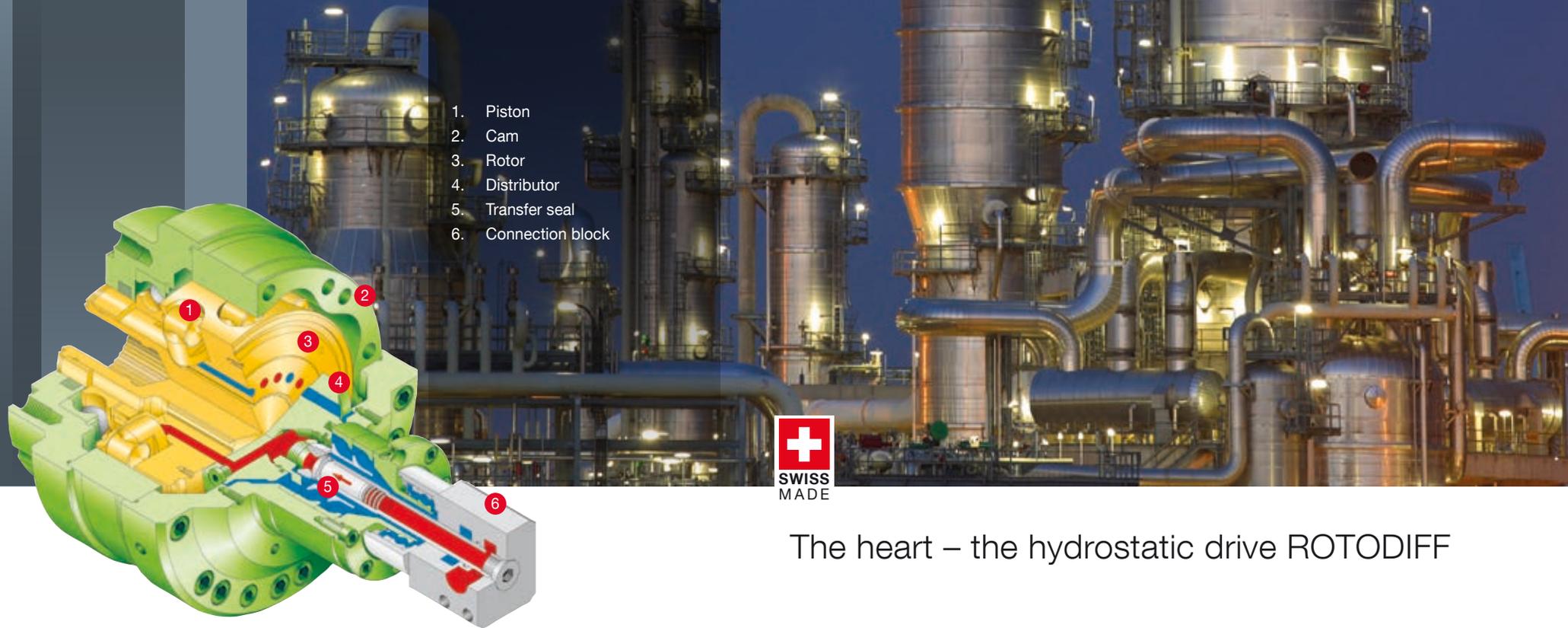
- The separating speed
- The sedimentation

### **The decanter scroll speed substantially influences the following:**

- The solids transport and, as a result, the solid throughput
- The solids retention time
- The solids loading separation time



A high bowl speed and powerful hydraulic ROTODIFF drive for the scroll as well as a scroll speed that automatically adapts to the solids load in the bowl and the product inlet are the prerequisites for increasing the performance and availability of the decanter centrifuge substantially. The drive controls the differential speed between the decanter bowl and scroll as a function of the prevailing scroll torque. In all Viscotherm systems, the drive carries out direct and infinitely variable control automatically, which allows on-going, optimal adaptation to the separating tasks.



1. Piston
2. Cam
3. Rotor
4. Distributor
5. Transfer seal
6. Connection block



## The heart – the hydrostatic drive ROTODIFF

### Advantages of the Hydraulic Drive System with ROTODIFF

- Technology and quality = robust build to suit harsh operation and separation conditions
- Excellent torque to weight ratio = better separation results for high torque applications
- Reduced overhang load = less vibrations and load on main bearings
- Long service life high dependability = difficult separation tasks: “chatter” applications (Ethanol, PVC, rendering...)
- Overload protected = a safety pressure valve protects all mechanical components of the drive against overload
- Outstanding controllability and operating safety = automatic precise regulation depending on separation loads
- Improved energy efficiency and throughput capacity = reduced electrical installation and lower energy consumption
- Operation in hazardous areas = Ex-proof and ATEX certification

### ROTODIFF® hydraulic motor

The ROTODIFF hydrostatic scroll drive is a radial roller piston motor capable of high torque, which is mounted directly on the bowl system, where the housing (stator) is flanged onto the bowl and the rotor directly drives the scroll. The hydrostatic transfer seal coupling enables operation of the scroll drive that covers the turned part.

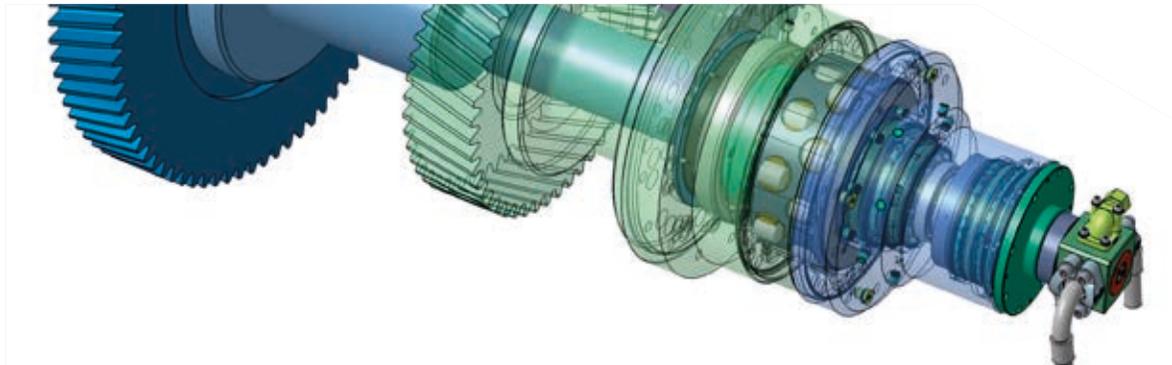
The ROTODIFF with a constant displacement drives the scroll at the differential speed required for the separation process based on the load. This ensures a continuously optimal output.

With electronic control systems the important control parameters such as the hydraulic pressure, bowl and scroll speed can be monitored, displayed, and set. The hydraulic scroll drives can be controlled remotely, thanks to field bus technology.

«Drastically reduced energy consumption thanks to the hydrostatic ROTODIFF drive in the dynamic test bench.»



## Dynamic test benches with ROTODIFF®



### **Dynamic test benches with ROTODIFF® for gear units, couplings, and gears in a mechanically closed loop system.**

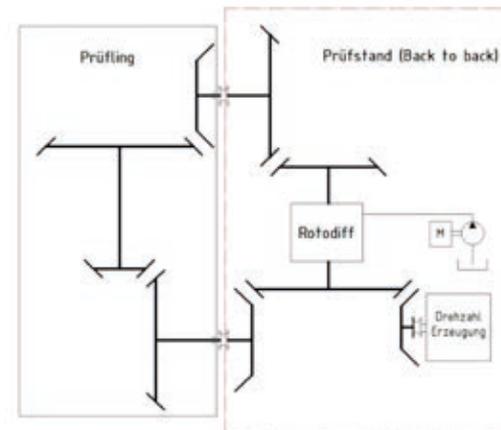
To test whether your mechanical drive systems meet the stringent requirements related to quality, reproducibility and safety, helicopter manufacturers around the world rely on a technology manufactured in Switzerland. Dynamic test benches with the ROTODIFF can be operated in a mechanically closed loop. The torque is introduced at the test bench by controlling the pressure of the ROTODIFF. A delta rotational speed is also required to control the torque.

As the heart of dynamic test benches, the ROTODIFF solution from Viscotherm guarantees that these test benches can be operated with a fraction of the turbine power. In addition, in this way, gear units can be tested at various gear ratios under the stipulated operating conditions. As stated already, dynamic test benches with the Rotodiff can be operated in a mechanically closed loop, which significantly reduces energy consumption. This advantage is key for Airbus Helicopters, to use our ROTODIFF technology to substantially reduce their energy consumption.

The heart of the gear unit test bench – the Rotodiff solution from Viscotherm AG



In back-to-back dynamic test benches in a mechanical closed loop, the input shaft and output shaft of the test object are connected to a gearbox of the same design such that there is mirror symmetry. Then, both are accelerated until they reach the nominal rotational speed and kept at this level when idling. Then, torque is introduced into the drive circuit, which causes the gearboxes to torque against each other. The elastic deformation of the test object and test bench creates a torque angle between the laden and unladen design. Testing is only carried out at a fraction of the nominal power of the gearbox as only the idle power and power loss have to be provided after the nominal rotational speed has been reached. As a result, a helicopter manufacturer, during the annual gearbox tests at its factory, generates enough power to provide energy to an average town with 30,000 residents.



«Increased decanter power and improved separation results thanks to the hydrostatic ROTODIFF drive.»

## Drives for decanter centrifuges – in use for the Ecology

Viscotherm has taken separation technology forward through continuous innovation. This development is typified by exceptional flexibility of the equipment, adaptation to widely varying operational conditions.

**Waste water treatment plants / Chemical industry / Food industry  
/ Drilling technology / Bio fuel / Environmental technology, mobile  
equipment**





Swiss Quality – world wide – thousands of drive systems in operation!

#### **Environmental Technology**

Industrial waste water, slurry, communal waste water, tannery sludge, slurry oil, bioethanol etc.

#### **Geo-drilling technology**

Treatment: Reclamation of drilling fluids, reclamation of barite, removal of water and conditioning of drilling mud, tunnelling etc.

#### **Mining and ore preparation**

Aluminum hydroxide, calcium carbonate, kaolin, coal mines, coal dust, titanium dioxide etc.

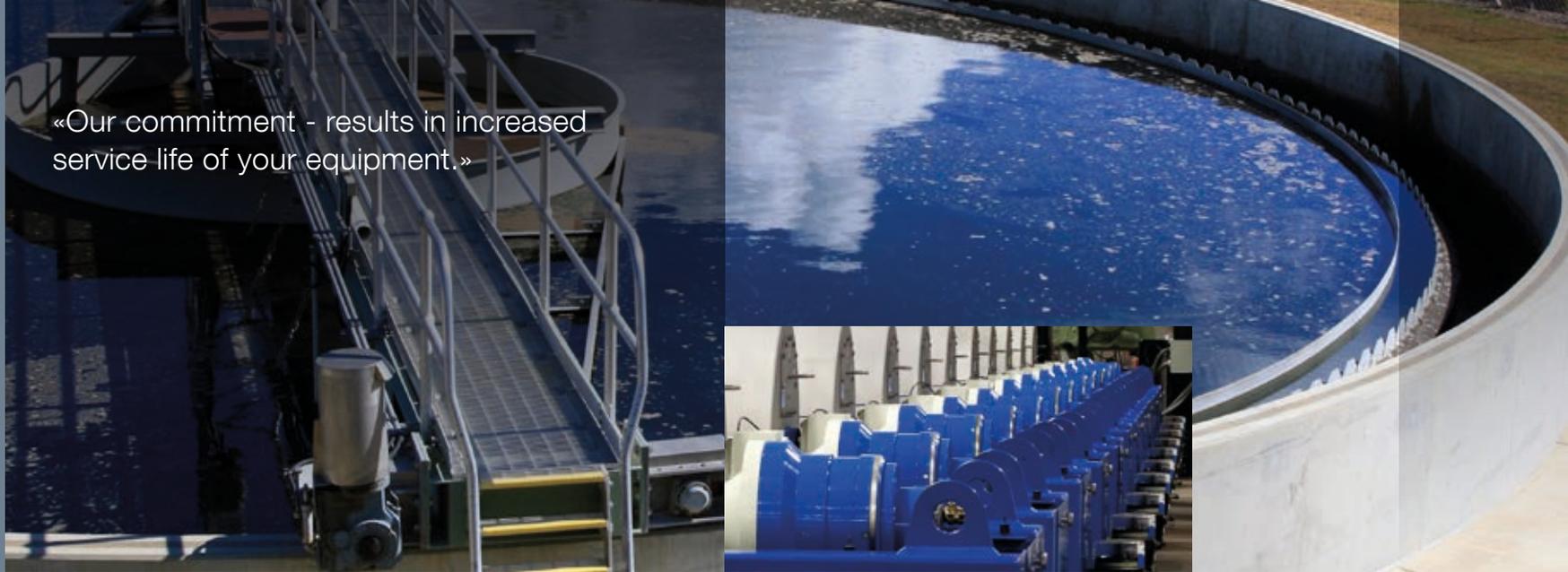
#### **Chemical products**

Alum sludge, iron oxide, dye pigments, gypsum, silica, mineral oil, polyethylene, PVC various salts, zinc chromate, bio substrates, insulin, intermediate pharmaceutical products

#### **Foodstuffs**

Beer yeast and wine lees, blood, fish meal, fish industry, meat extracts, fruit juices, gelatine, vegetable juices, grain mash, gluten, potato protein, potato peels, cheese production, casein, lactose, monosodium glutamate, plant extracts, vegetable oil, proteins, starch, animal fats, drinking water processing, wine yeast and wash, wheat starch etc.

«Our commitment - results in increased service life of your equipment.»



## Production, Service and Support.

### State-of-the-art CNC production machines, rational production workflow

- Environmentally friendly production
- Guarantee of the durability of the product

Experienced employees with many years of experience ensure that the optimal solution is found competently and precisely. Our technicians from the service departments are ready to assist you and work to maintain long-term customer loyalty around the world.

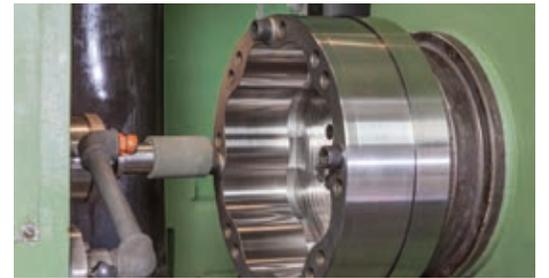
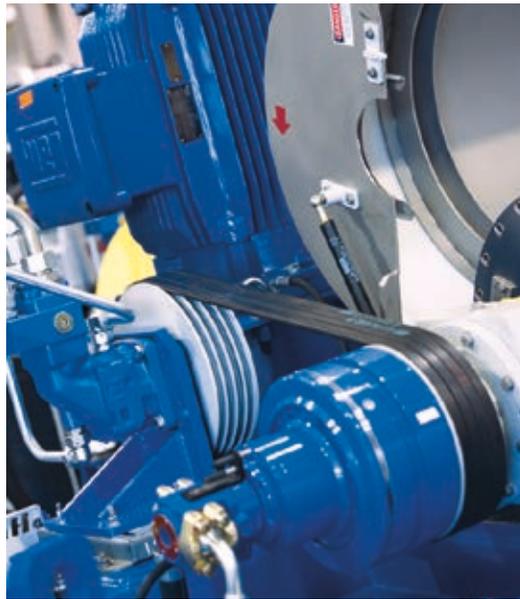
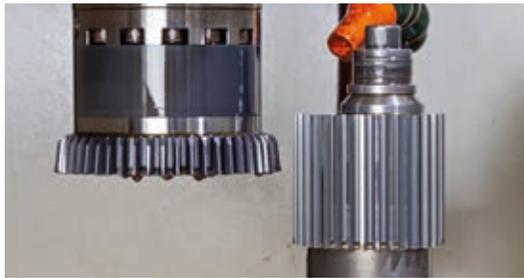
### Pre- and After-sales service:

- Drive design, technical consultation
- Retrofits & upgrades
- Project planning, face-to-face support and consultation
- Turn-around service for complying with your standstill and the maintenance plan
- Repair service and system overhauls at our service centers around the world. Factory overhauls and services including renewed works warranties.
- Installations
- Customer workshops, individualised, practice-oriented

- Inventory analysis
- History management

Maintenance contracts or regular inspections of your system at different intervals are preventive measures that ensure a seamless process flow. Expert technicians provide service at a high level of quality inspections, biannual to triannual audits.







We are where you need us. We believe proximity to the market is the fundamental requirement for added value from partnerships, and it secures the long-term success of our clients.

Viscotherm – Service Worldwide.

#### Worldwide affiliates



Viscotherm Service & Wartungs GmbH Deutschland | 65385 Rüdesheim am Rhein | Germany  
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