

**Rexroth**  
Bosch Group

Sales & Service Partner

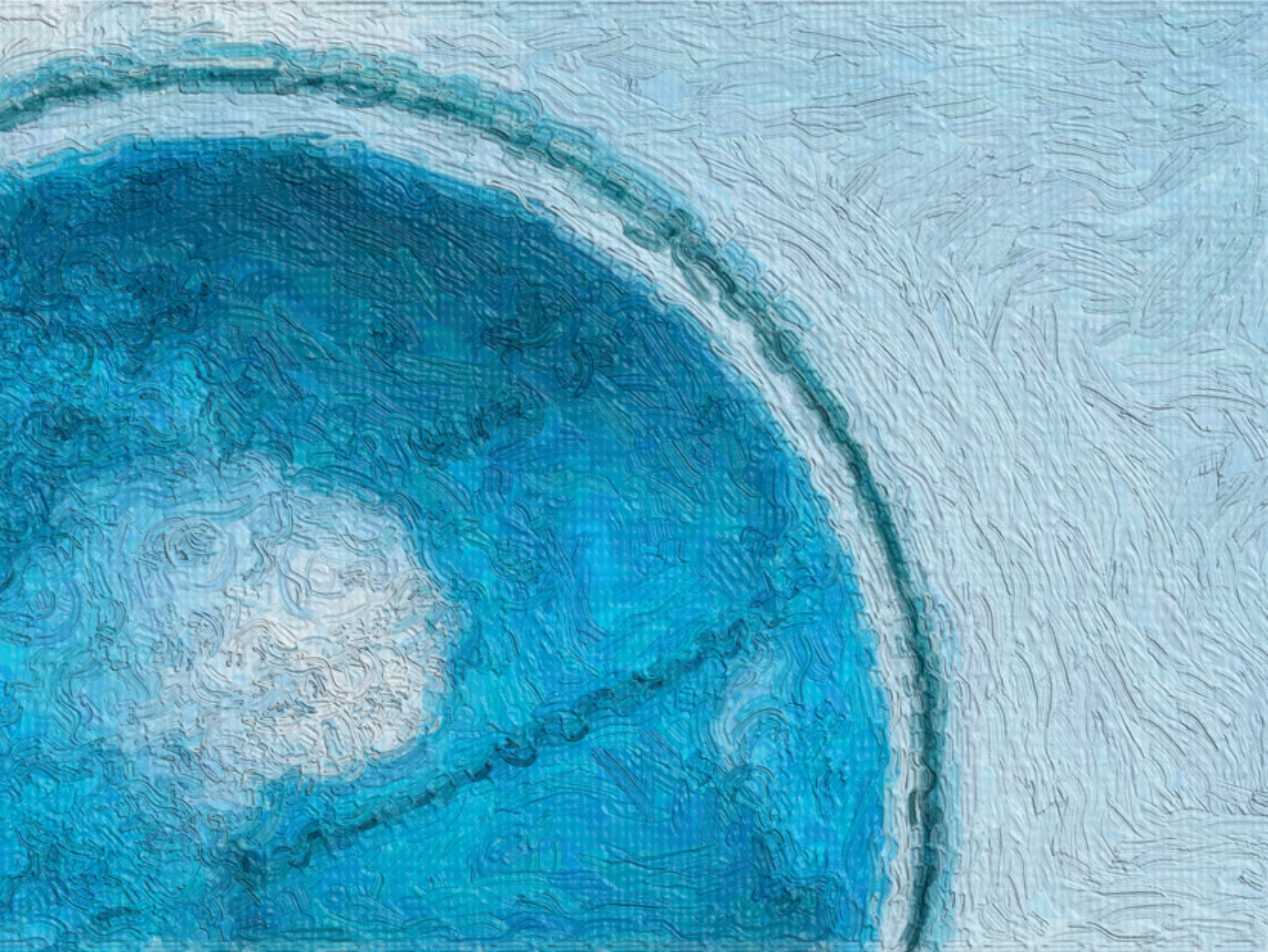
— Hydraulics

— Pneumatics

— Linear Motion and Assembly Technologies

— Electric Drives and Controls

— Service Automation



**Rexroth Bosch Group**  
World Leader in Drive & Control



**NARVAN ARRA**  
Committed to Environmental Issues



## Rexroth Bosch Group

In May 2001, Bosch Rexroth AG became a 100 percent subsidiary of Robert Bosch GmbH. This was the result of the merger of the Bosch Automation Technology (established in 1886) business unit of Robert Bosch GmbH with Mannesmann Rexroth AG (established in 1795).

In 2007, Bosch group had 240,000 employees worldwide and a turnover of 47 billion Euros.

Bosch Rexroth: A Drive and Control company belonging to the Bosch Group, is the world leader of all the associated technologies for drive, control and motion as listed below:

- Hydraulics – Industrial and Mobile
- Pneumatics
- Linear Motion and Assembly Technologies
- Electric Drives and Controls
- Service Automation

The Narvan Arra – Bosch Rexroth partnership has progressed since its commencement in 1997, following on from four years of consultancy and project management initiated in 1993 with Narvan Arra's Managing Director, Kamran Kavian.



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## **Narvan Arra Company**

Established in 1997, Narvan Arra's prime objective and vision of its Managing Director Kamran Kavian, was to inspire a quality culture within Iran's industry and infrastructure. Whether engineering, procurement, management, integration or implementation; initiation and facilitation is our proficiency.

Narvan Arra was the first company in Iran to align with international standards, and the first Iranian service company to be awarded the ISO9001:2000 certification for quality management and assurance system, also recognized by SGS.

### Our Services:

- Marketing and Sales
- Contractual and Commercial
- Project Management and Coordination
- Technical Services
- Training and Transfer of Technology
- System Engineering
- Maintenance and After Sales Support



### Related Companies:

**Lunar International;** (United Kingdom)  
Contractual, Management and Banking

**Pars Narvan Arra Kish and Narvan Arra Kish;** (Kish Island - Iran)  
Import & Export Facilities

**Kemya Enterprises;** (United Arab Emirates)  
Commercial and Banking Facilities



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Narvan Arra is the exclusive partner of Rexroth Bosch Group in Iran.



## Industrial Hydraulics - Energy Technology

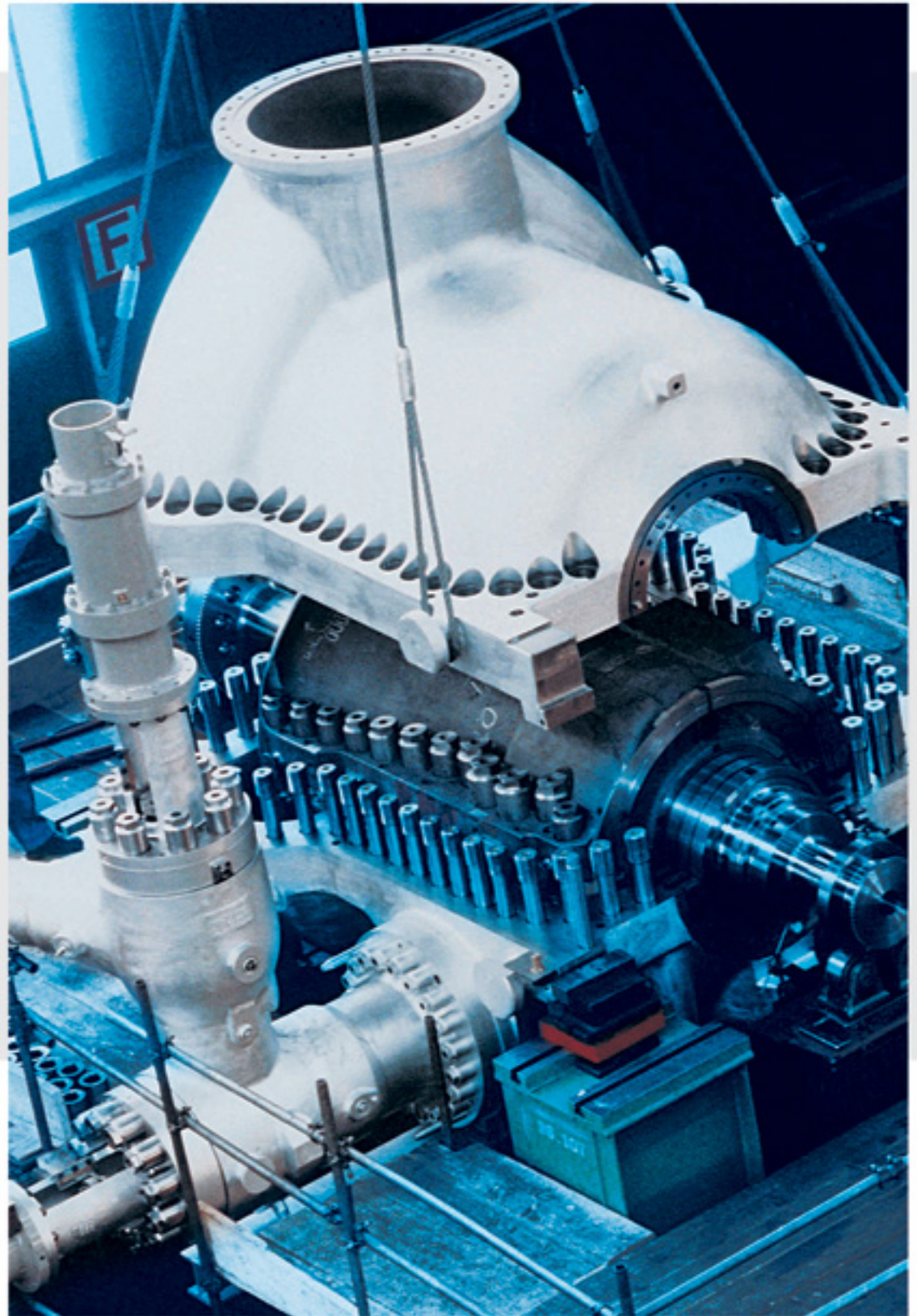
Bosch Rexroth has supported the energy industry in Iran through system engineering, design and supply of hydraulic systems to steam and gas turbine manufacturers.

### Gas Turbines:

- Oil supply unit
- Complete solutions for fuel control (hydraulic control actuators and fuel valves)
- Lifting oil systems
- Turbine starter

### Steam Turbines:

- Oil supply unit
- Actuators for power control
- Control actuators for bypass stations



These components cover the power range of 60 to 240 MW for gas turbines and 50 to 1,000 MW for steam turbines.

We have provided hydraulic skids and actuators for 160 MW steam and gas turbines for Tuga (belong to MAPNA Group- having a share of 86% of Iran's total nationwide grid capacity).





## Industrial Hydraulics - Steel Industry

Due to the ever-higher quality demand of continuously cast and rolled products, the number of hydraulic drives in modern steelworks is growing. The advantages of hydraulic actuator drives include their immense power density combined with good controllability – even in challenging environments.



### System solutions for the following applications:

- Electric furnaces
- Blast furnaces
- Pipe carriage system
- Continuous casting plant
- Hot rolling mills
- Cold rolling mills
- Strip finishing lines

### Completed Projects:

Mahshahr Pipe Mill: Pipe Carriage System

Ahwaz Pipe Mill: Pipe Carriage System

Khuzestan Steel: Zamzam I and Zamzam II  
Direct Reduction Plants

### Some Important Customers:

Mobarakeh Steel Complex, Isfahan Steel, Khuzestan Steel, Iran National Steel Industry Group, Kavian Steel, Sadid Industrial Group (Mahshahr Pipe Mill, Sadid Rikhtegar, Sadid Pipe and Equipment Co.), Ahwaz Rolling and Pipe Mill, Ahwaz Pipe Mill





## Industrial Hydraulics - Materials Handling

The Rexroth Drive & Control concept, with power packs, cylinders, gearboxes and electronics are tailored to the application at hand, consisting of components from our standard product range. This ensures international availability of spare parts and local service knowledge.



Design and supply of hydraulic and electronic systems used in various types of cranes (gantry, double boom gantry, harbor and floating), side arm charges, stackers, etc. for ship loading and unloading facilities are all Bosch Rexroth specialties.

Our system packages cover following applications:

- Container handling
- General cargo handling
- Bulk handling
- Materials handling specials



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## **Industrial Hydraulics - Offshore**

The hostile environmental conditions make designing offshore drive installations a specialty.

Bosch Rexroth has been successful at the completion of a large number of projects and system packages in this field for the following applications:

- Jacking
- Skidding
- Heave compensation
- Deck Matting



## **Marine Engineering**

Modern shipping is inconceivable without hydraulics - key functional units on ships are hydraulically powered. Because of the harsh and aggressive environment, the technology has to satisfy high standards of stability, reliability and durability. No principle is better at meeting these expectations than hydraulics.

- Winch drives
- Rudder systems
- Cargo pumps
- Hatch covers
- Bow and stern gates
- Ramps and lifts
- Propeller drives
- Controllable pitch propellers
- Subsea applications

Ships start their life on land and return there once in a while for overhaul, repair or maintenance. A sophisticated and efficient way of lifting, lowering and shifting such heavy weights is by using a shiplift system. Bosch Rexroth supplies shiplifts with hydraulic or electrical drives.





## Industrial Hydraulics - Civil Engineering in Dams

Facing an increasing worldwide power demand, particularly in developing countries, the significance of gaining energy by hydropower is rising accordingly. In recognition of this, Iran is constructing dams and hydropower plants, many are completed or under construction.

In this area, Bosch Rexroth and Narvan Arra have designed and implemented hydraulic, electronic drive and control systems for the many major dams in Iran.



### Hydraulic drives for:

- Turbine intake gates
- Draft tube gates
- Outlet gates
- Irrigation gates
- Radial gates

In spite of different requirements and besides reliable availability, all drive systems have one characteristic in common; the highest degree of operational safety – a matter of course for the engineers of Bosch Rexroth.

### Some sample projects are as follows:

- Karkheh Dam: Intake, bottom outlet & spillway gates
- Karun III Dam: All gates
- Masjed Soleyman Dam: Intake, bottom outlet & spillway gates
- Marun Dam: Intake, bottom outlet & spillway gates
- Kowsar Dam: Spillway gates

And many other projects including Shahid Rajaei, Raeisali Delvari, Alavian, Ahar, Shahid Abbaspour and Alborz dams.



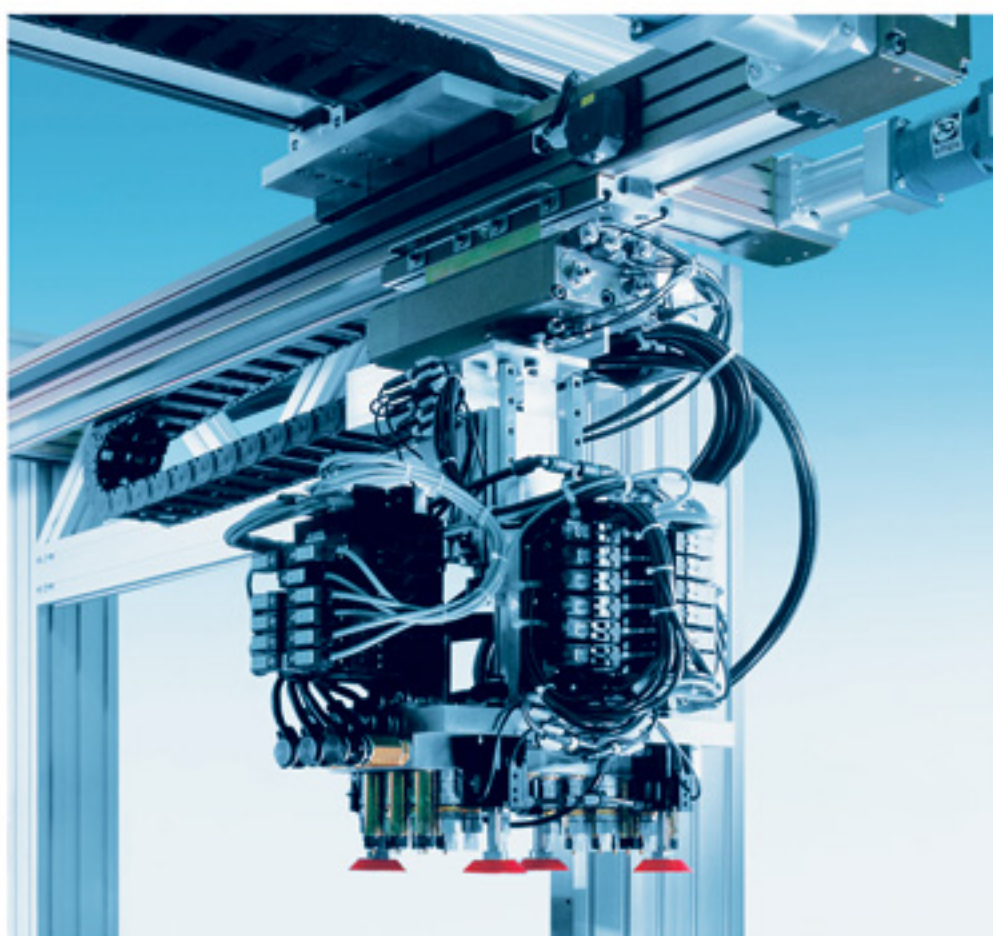


## **Pneumatic**

As an experienced equipment manufacturer Bosch Rexroth provide control systems for engines, clutches, gears, jet propulsions and controllable pitch propellers upon which the shipbuilding industry, owners, shipping companies and shipyards rely. Bosch Rexroth Pneumatic components also cover trucks, buses and tooth chain drive applications.

Our scope of supply and services would include:

- Standard products including cylinders, valves and compressed air components.
- Tailor made systems according to the requirements of the customer.



We provide unique solutions in automation of machineries and production lines in the following industries:

Automotive, Food and Packaging, Pulp and Paper, Textile, Assembly and Handling

**Some Important Customers are:**

- Iran Khodro
- Iran Copper Industry
- Mobarakeh Steel Complex
- Iran National Steel Industry Group
- Rahan Tavan Company
- Khuzestan Steel Company
- Shahid Ghazi Pharmaceutical Company
- National Iranian Oil Product Distribution Company
- Pars Oil Company





## Mobile Hydraulics

Bosch Rexroth are able to provide the most suitable and practical solutions for whatever needs to be driven hydraulically or controlled electronically in construction and agricultural machineries. The solutions come in the form of components, modules or integrated systems.



- Agricultural machineries
- Lift trucks
- Tractors
- Loaders
- Excavators
- Soil compactors
- Mobile cranes
- Tunnel boring machines

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## References of cooperation with Iranian Companies:

### Iran Combine Manufacturing:

Hydraulic steering orbitrols, 2 and 3 stage pumps and integrated control blocks for 955 & 1165 combines.

### Iran Tractor:

Hydraulic steering orbitrols for mass production of MF285 and MF399 tractors.

### Sahand Lift Truck:

Design and manufacturing of first 2.5 tons hydrostatic lift truck in Iran including design of the hydraulic circuit, supply of components and systems for prototype assembly, testing of the prototype in Bosch Rexroth test centers in Germany and issuing the certificate.



## HEPCO:

As supplier of hydraulic components for mass production of the following machines:

- Wheel excavator      ▪ Wheel loader      ▪ Grader
- Crawler excavator      ▪ Bulldozer      ▪ Backhoe loader      ▪ Soil compactor (static and vibratory)

## Development Projects:

For developing of new machines such as wheel loader, soil compactor and excavator, following the design of the hydraulic circuit, Bosch Rexroth has provided the components for prototype manufacturing, tested and certified the machine hydraulic systems.



## Linear Motion

Reliable guided movement and precise positioning – this is the comprehensive expertise of Bosch Rexroth in Linear Motion and Assembly Technologies. We offer you a special combination of production reliability, speed, and accuracy, so that you can profit from the knowledge and services of a technology leader and solution provider.

### Industries:

- Automotive
- Machine tools
- Woodworking
- Printing and converting
- Food and packing
- Mounting and handling



Some of the projects implemented in Iran based on the Bosch Rexroth system engineering and equipment:

- Peugeot 206 gearbox assembly line (Niroo Moharake Iran)
- Peugeot 206 axle assembly line (Mehvarsazan Iran Khodro)
- Alternator and starter assembly lines (Iskra Auto Electric)
- 3 Axis gantry pick & place robot (Saipa Heavy Dies Man.)



NARVANARRA





## Electric Drives & Controls

Our products and systems in this business unit are divided into 6 categories; industrial drives, automation systems, control components, safety systems, tightening systems and resistance welding systems.

Our expertise lays in offering the highest quality standards, wide range of modern components and tailor-made solutions.

### Industries:

- Automotive
- Food processing
- Packaging machineries
- Sheet metal & foundry
- Machine tools
- Printing and converting
- Woodworking



### Some sample projects:

#### National Engine Assembly Line (EF7) Tightening Systems

All the tightening stations in Iran National Engine (EF7) production line are designed and supplied by Bosch Rexroth and commissioned by Narvan Arra engineers.

#### Peugeot 206 & 405 Assembly Lines Robotic Welding Systems

Iran Khodro Company has used almost 300 welding control stations from Bosch Rexroth in their Peugeot 206 body assembly shop.



## **Training, Technical and Engineering Services**

All the systems and components are covered by Bosch Rexroth's general terms of guarantee. After sales support is provided locally in Iran exclusively by Narvan Arra.

Services would include:

- Technical guidance and consultancy help desk.
- Engineering Services, i.e. supervisory services on commissioning, maintenance and operation.
- Spare part service.
- Optimisation and retrofitting of old systems.
- Training services.



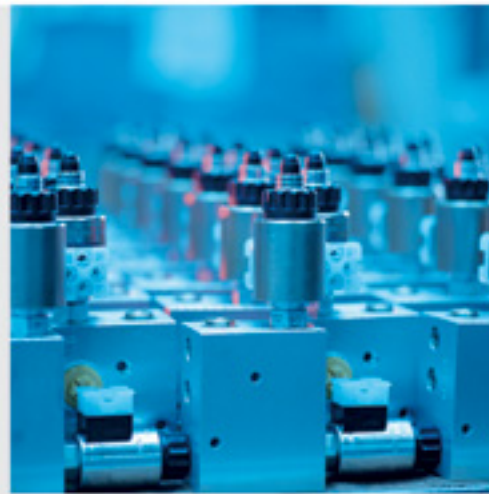
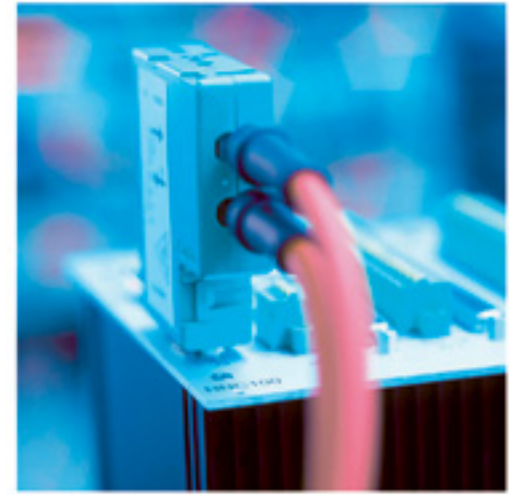
**Samples of activities in this area are as follows:**

- Troubleshooting of Zam Zam I Project.
- Troubleshooting and fault finding in fan drive systems.
- Calibration and setting of engine speed in Stan Tugs.
- Schematic analysis for hydraulic circuit in copper production line for National Iranian Copper Industries Company.
- Hydraulic training seminar; "An introduction to hydraulic proportional technology".
- Electric Drives & Controls hardware and software training; "Tightening and press fit systems" & "Intelligent drive, logic & motion control".
- Hydraulic training seminar; "Application of hydrostatic systems in Mobile Hydraulics".

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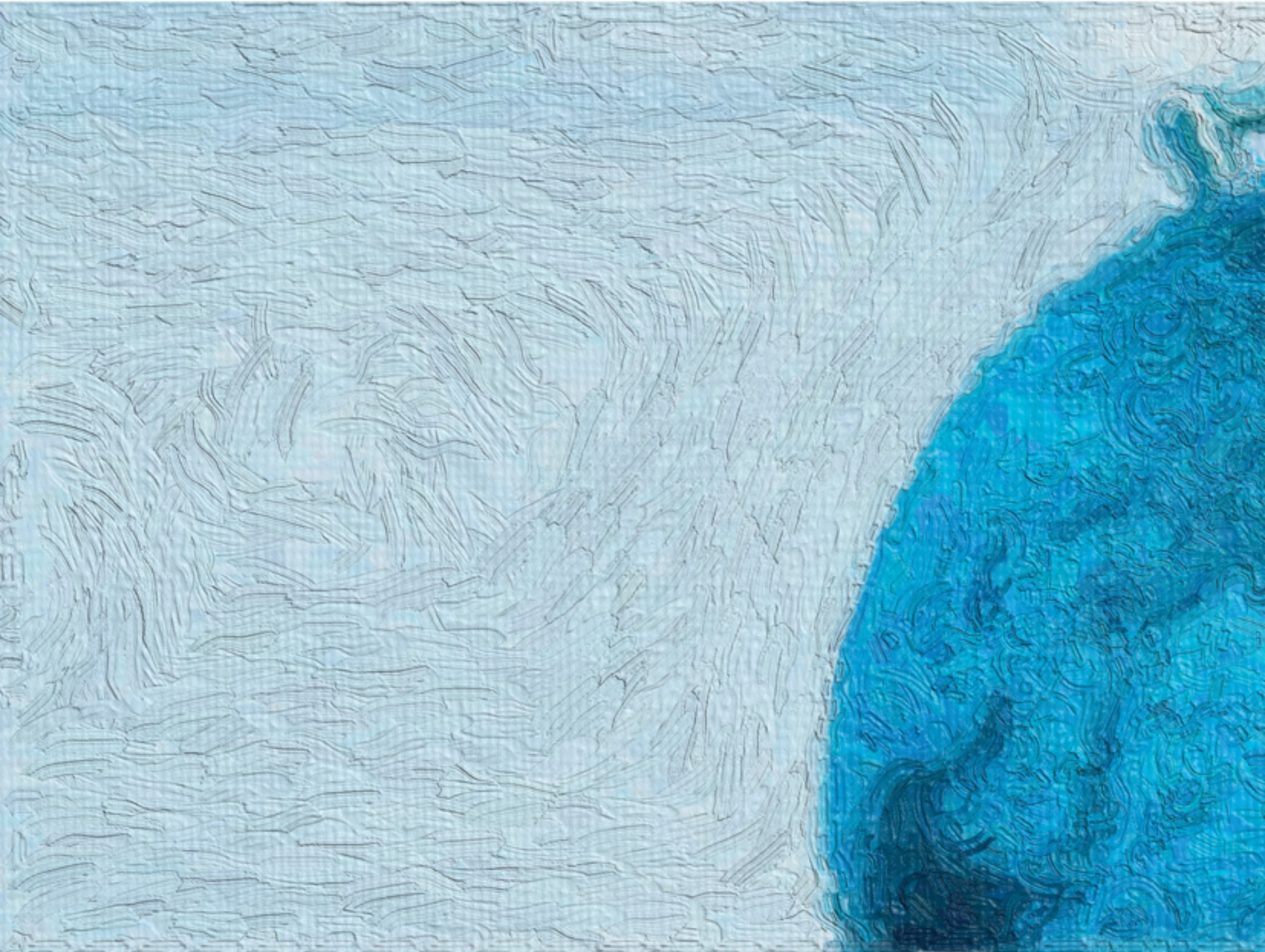
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