Innovative power transmission solutions for the oil & gas industry
Proven, reliable mechanical power transmission solutions for the oil & gas industry

David Brown Santasalo offers an extensive range of gears and transmissions for all stages of the oil, gas and petrochemical process. Working in partnership with our customers, we understand your operating environment and engineer solutions that are reliable, durable and meet your needs exactly.

We work to always maximise availability and lower the total cost of ownership for you and your customers globally.

Think reliability. Think David Brown Santasalo

• Durable, reliable low maintenance mechanical power transmission solutions
• Maximum gearbox interchangeability for easy drop-in replacements
• All gearboxes conform to the latest ISO, AGMA, DIN and API (high speed) standards, including marine insurance standards (DNV, ABS, GL) where required
• Custom engineered solutions designed to enable OEMs and end users to optimise their package offering
• Global network comprising 7 manufacturing facilities and 23 service centres for local oil and gas expertise and customer support
The upstream, midstream and downstream oil and gas process

We understand the demands of the oil and gas process and our experience in supplying gears and transmissions to this market for more than 80 years ensures we are equipped to deal with any challenge, at any stage of the process, anywhere in the world.

1. Mud/frac pump drives
2. Drawworks gears
3. Top drive gears
4. Rotary table gears
5. Crane slew and winch gears
6. Jack up rig gears including jacking pinions and fixation systems
7. Anchor winch gears
8. Gen-set high speed gears
9. Right angled fire water pump gears
10. High speed pump drive
11. Compressor drive
12. Process pump reducer drive

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**Upstream**

- Offshore
  - Drilling
  - Hydraulic frac pumps
- Onshore
  - Production Wells
  - Gas/Oil
  - Water

**Midstream**

- Transport
  - Offloading/Transfer Pumps
  - Gas Injection Lift
  - Gas Sales
  - Fuel Gas
  - Gas Injection Lift

**Downstream**

- Gas processing, refinery, product distribution and storage
  - Crude Oil
  - Distillation Unit
  - Reformer
  - Cracker
  - Petrochem
  - Fertilizer
  - Sulfur Recovery
  - Alkylation
  - Ethers
  - Polymerization
  - Aromatics
  - Extraction
  - Transport
  - Distribution & Storage
Almost three centuries of engineering expertise

David Brown Santasalo has a dedicated global team of design engineers experienced in providing tailored solutions for all applications in the oil and gas industry. Our engineers work with you to provide optimised designs using state of the art software, equipment and processes.

Gear design
- David Brown Santasalo designs to API, AGMA, JIS, DIN or ISO standards
- Tooth modifications to achieve optimal performance
- Designed using the latest software design tools for power transmission solutions

Housings, couplings and shafts
- Designed for thermal efficiency
- Designed using the latest software design tools for FEA analysis and 3D modelling (Solid Edge)

Gear manufacturing across 4 continents
David Brown Santasalo has unrivalled capability to manufacture and assemble gears in North America, Africa, Europe and Asia
- State of the art gear cutting and grinding machine tools
- Gears and gearboxes manufactured to any rating or gear grade
- Manufacture of full gear systems and loose gears to customer specified designs
- High accuracy gears up to AGMA 14 after heat treatment
- In house carburising to 3m and 4.5 length

Assembly and load testing
All gearboxes follow strict quality control guidelines and reviews before being shipped to our customers worldwide. David Brown Santasalo offers no-load spin testing and full scale load testing of standalone gear units or complete drive assemblies depending on your requirements.
- Our full load testing capabilities include the measurement of temperature, vibration and noise

Quality control
Every gearbox we make is subject to strict monitoring standards. Components are meticulously inspected for material quality and dimensional accuracy using cutting-edge gear inspection and measurement technology. Key manufacturing processes are performed in house to ensure consistent quality across all stages of production.

The result
Highly reliable gear units built to meet the intense demands of industrial processes.
The complete oil and gas industry product range

David Brown Santasalo has an extensive range of gearboxes for drilling, jack up rigs, high speed and auxiliary applications. All David Brown Santasalo gearboxes are designed and manufactured to major international standards including API, DNV and ABS to ensure a safe, reliable and durable product in service. Our main priority is to ensure you have maximum availability and productivity at the lowest lifetime cost.
The HX series

When it comes to specifying high speed gearboxes for critical applications such as pumps, compressors and generators, we use our experience in designing innovative gearboxes for some of the world’s most critical applications. Our HX high speed gearbox series combines enhanced performance, adaptability and increased reliability to deliver a standard range that has the flexibility to meet your specific requirements.

Key features

• High speed gear systems for applications up to 60MW
• Customisable product range that’s flexible to suit your application and need for rapid delivery and minimal downtime
• Designed and manufactured to all major international standards including API613, API677, AGMA6011, AGMA421.06 and DIN
• Available as a full package solution including lubrication system, barring drive and clutches
• Five year warranty available

Design features

• Double helical gearing as standard, however single helical gearing is available to suit specific requirements
• Designed to limit sound pressure levels to meet low noise emission standards
• Flexible gear case configuration allows for the positioning of oil inlets to minimise pipe runs
• Oil reservoirs and housings that enclose moving lubricated parts are designed to minimise contamination by moisture and dust
• Designed to operate at maximum efficiency and minimum oil quantity, however integrated or standalone lubrication systems can be provided

Product range includes:

Low ratio gearbox including ratios 1.2 to 4.1 - Optimised ratios beyond 4.1 are available on request

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High ratio gearbox including ratios 4.1 to 8.5 - Optimised ratios beyond 8.5 are available on request

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HX800 and HX900 available in a fabricated case design
Top drives and drawworks

David Brown Santasalo provides a comprehensive range of gearing products and solutions for capital drilling equipment such as top drives and drawworks. Working to our customers’ designs, we can produce high quality gearing at any of our 7 manufacturing facilities worldwide.

David Brown Santasalo can also offer a comprehensive turnkey solution for gearbox supply utilising our global supply chain and fully equipped assembly and test facilities. We form collaborative relationships with our customers and add value through our core engineering knowledge.

Key features
- Supply of single components through to fully tested gear units
- We optimise gear and gearbox design to our customers’ specifications using our global manufacturing capabilities
- Expertise in uprating and redesign
- All gear systems are designed and manufactured to major international standards for ultimate performance and reliability

Design features
- Spur, helical and planetary gearing
- Typical sizes range from 1/2”Ø to 288 P.D., although larger dimensions can be accommodated
- Wide range of gearing technologies available

Pressure pump drives

David Brown Santasalo delivers tailored loose gearing and full pressure pump drive gear systems to OEMs and end users across the globe. Almost three centuries of combined gearing innovation in assurance critical industries enables us to design and manufacture any type of loose gear at any size, as well as complete gearbox systems for:

- Hydraulic fracturing
- Cementing
- Acidizing
- Mud pumping

Key features
- Loose gearing manufactured to any size
- Gears are lightweight, compact and strong to support HP increase
- Flexible gearbox mountings aligned with our customers’ specific pump arrangement
- All pressure pump gears are designed to the latest international standards for complete quality assurance

Available gear designs
- Herringbone arrangements for main crank gears
- One or two speed reducers between the diesel prime mover
- Multi-stage reducers to truck power take off unit
- Planetary or spur main drives available
- Two speed parallel shaft intermediate step down gearboxes
- Side mounted, end mounted and internal gearing arrangements depending on pump specifications

Typical capabilities

<table>
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<tr>
<th>Type</th>
<th>Spur gears</th>
<th>Helical gears</th>
<th>Internal gears</th>
<th>Bevel gears</th>
<th>Gear racks (spur or helical)</th>
<th>Spline shafts</th>
<th>Sprockets</th>
<th>Double helical gears</th>
<th>Ground gears (with or without crowning)</th>
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<td>288” P.D.</td>
<td>36”</td>
<td>10” - 12”</td>
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<td>0.5 P.D.</td>
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<td>288” P.D.</td>
<td>3/4 D.P.</td>
<td>80”</td>
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The above shows our typical capabilities. If your required size is above the dimensions listed above, please contact your local David Brown Santasalo office.
Jack up rig gearboxes, pinions and fixation systems

David Brown Santasalo jack up rig gears are designed for use in jack-up rigs, self-propelled offshore lift boats and any other offshore vessels where leg elevation is required to provide a stable platform to address the needs of offshore workers. Successful operation of these vessels is highly dependent on an effective jacking and fixation system. Often working in difficult conditions, David Brown Santasalo gearboxes deliver intense torque and optimum performance even in severe storms.

Jack up gears – key features
- Jack up gears for all major rig designs including Le Tourneau, Gusto and Keppel FELS arrangements
- Typical ratios from 7000 – 9000 rpm
- Output speeds from 0.1m – 0.3m/min
- Typical rated jacking capacities from 80 – 500 tons
- Typical rated preload capacities from 80 – 600 tons
- Typical rated normal holding capacities from 150 – 800 tons
- ABS/DNV compliance

Jack up pinions – key features
- A range of module sizes available from 50 – 105 MOD
- Heat treatment enables conformation to AGMA 14
- Fully compliant to ABS and DNV international standards for complete assurance

Fixation systems – key features
- Complete range of helical and planetary gearing technology to match each application
- High overload capacity and low backlash
- Compact and lightweight designs enable higher torque production within the same space envelope
Other gear systems for oil & gas industry applications

David Brown Santasalo offers a range of auxiliary products for the oil and gas industry which are tailored to suit our customers’ exact requirements. Using our proven track record of meeting the demands of the oil and gas industry, we design auxiliary gearboxes to be flexible, reliable and cost effective.

Firewater pump gearboxes

David Brown Santasalo has vast experience in supplying quality spiral bevel gearing for offshore vertical pump applications from mine hoists and associated equipment in many types and sizes, to full gearing drives. We understand the demands of the upstream oil and gas processes and our firewater pump gearboxes are designed to be flexible, reliable and cost effective.

Key features
- Spiral bevel gearing
- Proven design capability up to 6MW
- Rolling element bearings
- Thrust bearings designed to carry pump loads
- Hollow shaft design available
- Precision engineered for smooth and quiet operation
- Sprag clutches can be incorporated

Crane slew and winch drives

David Brown Santasalo’s two or three stage planetary design crane slew and winch gears are designed to guarantee reliability within our customer’s exact specifications. We provide an adaptable range of slew and winch gears that are capable of handling even the most demanding offshore environments.

Key features
- Planetary gearing design
- Single or double helical gearing can be incorporated
- Optimised performance using proven engineering expertise
Geared for service

We understand that fast response is key to anyone who needs gearbox service and repair in the oil and gas industry. Our global network of manufacturing and service facilities spanning 6 continents ensures we can provide support to you and your customers wherever you are, whenever you need us.

With almost three centuries of gear unit design and manufacturing expertise, we understand how to maintain and service even the most difficult, mission critical gear units to ensure optimal results and long gear unit life – regardless of the brand.

As a full service solution provider, we not only provide support for all David Brown Santasalo gearboxes, we can also service and repair other manufacturers’ units and our heritage brands.