



Cement  
Chemicals  
Defence  
**Fibre, paper & tissue**  
Food & beverage  
Marine & port operations  
Metals  
Mining & minerals  
Oil & gas  
Panelboard  
Power generation  
Rail  
Rubber  
Sugar  
Water & wastewater

## Fibre, Paper & Tissue

Proven power transmission solutions  
for all fibre, paper & tissue applications



## Innovative mechanical drive solutions for the fibre, paper and tissue industries

David Brown Santasalo is a leading provider of industrial gear systems for process industries across the globe. With almost three centuries of combined gear design, manufacturing and service expertise alongside a track record of reliable performance, David Brown Santasalo is your ideal power transmission solutions provider.

**Throughout our 285 years of combined gear engineering history, David Brown Santasalo and our predecessors have manufactured products under several brands:**

- ASEA
- David Brown
- Moventas (Industrial)
- Metso Drives
- Parkano Gears
- Rauma-Repola
- Santasalo
- Sauerwald (SaWa)
- Valmet Power Transmission
- Wärtsilä

David Brown Santasalo can provide service solutions for all of these brands.





Wood handling

Chemical pulping

Mechanical pulping

Chemical recovery

Stock preparation

Recycling

Paper making

Finishing

Tissue production

Panelboard production

## Increased efficiency of key applications

Availability in the fibre, paper and tissue industry is directly related to product performance and David Brown Santasalo delivers mechanical power transmissions you can rely on.

From tailored-made designs to standard modular solutions, our gear systems are engineered to provide maximum operational performance. Our extensive installation base includes global OEM and end-user customers and some of the most productive fibre, pulp, paper and tissue processing machines are driven by David Brown Santasalo gears.

Not only that, we can provide full service support for the life of your machines. We are experts when it comes to the service, repair and upgrade of gear systems, including our heritage brand products and third party solutions.



## Wood handling

### Chipper, debarking & conveyor drives

Decades of experience in the design and manufacture of mechanical power transmission technology for fibre, paper and tissue applications ensures David Brown Santasalo is a reliable supplier of gear units for wood handling applications.

#### Chipper drives

David Brown Santasalo chipper gear units are supplied with their own pressure lubrication and cooling systems. By utilising two or more electric motors to power the gear unit, a major cost saving is realised in both the electric motor and electric utility costs.

#### Conveyor drives

David Brown Santasalo has an optimal drive solution for conveyors in wood yards. A wide range of accessories, including backstops, motor mounts, V-belts and belt guards are available for our conveyor drive units.

#### Debarking drives

We can supply mechanical drive solutions for debarking drum drives, including the gear units, ring gear, couplings and foundation accessories on a turnkey basis.





## Chemical & mechanical pulping

### Cooking, washing, bleaching, filter & refining drives


Chemical pulping is used for materials that need to be strong, or combined with mechanical pulp to give additional product characteristics. The kraft process is the most popular chemical pulping method, with the sulphite process being second.

#### **Cooking, washing & bleaching drives**

Large bore, hollow shaft gear units demonstrate David Brown Santasalo's expertise in application specific gearbox design. Examples of our innovative solutions include integrated features which allow the gear unit to withstand high forces caused by the driven equipment's rotor. Additionally, our special seal arrangement allows the gear unit to operate in the most demanding conditions.

#### **Filter drives**

David Brown Santasalo has proven technology in the field of filter drives. Our large hollow shaft gear units, used in both drum and disc filters, integrate the low-speed bearing of a gear unit as support for the whole filter. The integrated design results in substantial cost savings.



## Chemical recovery

### Clarifier, feeder, lime kiln & lime mud mixer drives

Stringent environmental regulations and chemical costs make efficient chemical recovery increasingly important. Characterised by operational reliability and high efficiency, David Brown Santasalo drive solutions offer maximum performance over your equipment's entire life cycle.

With decades of industry experience and continuing collaboration with top industry experts and manufacturers, David Brown Santasalo understands how to meet the challenges of your pulp, paper, fibre, and tissue processes. To ensure maximum results, every gearbox we make is optimised to match the application's exact requirements.

#### **Clarifier drives**

David Brown Santasalo clarifier drives are equipped with an overload protection device, lifting mechanism and drive monitoring unit.

#### **Lime kiln drives**

The largest lime kilns are driven by two separate drives. This design allows the ring gear tooth forces to be distributed to two drive points, making the overall drive system more cost-effective.

David Brown Santasalo can supply a turnkey installation of the mechanical drive equipment, including measurements, commissioning and documentation.





## Stock preparation

### Pulper, disc filter, refiner & pump drives

David Brown Santasalo provides a complete range of mechanical drive solutions for every phase of stock preparation. To ensure optimum performance, our gearboxes are tailored to each customer's application to achieve maximum results.

Designed and built on the foundation of our long-standing gear engineering expertise and decades of close collaboration with customers, David Brown Santasalo gearboxes have proven reliable in pulp, paper, board, and tissue applications.

#### **Pulper drives**


David Brown Santasalo pulper drives for the stock preparation process are developed in close cooperation with pulper manufacturers. Typical design features include special seal arrangements on the low speed shaft and an internal bearing arrangement to handle the forces of the rotor.

#### **Pump drives**

Vacuum pump and headbox feed pump drives are designed to withstand high load variations while operating with high power ratings.

#### **Refiner drives**

David Brown Santasalo has supplied mechanical drives for refining applications that deliver up to 32MW operating power.



David Brown Santasalo ring gears are machined to exacting tolerances and gear wear is minimised by the use of Austempered Ductile Iron (ADI) in castings.

## Recycling

### Fibre drum pulper drives

Due to the high cost of raw material for pulp production, recycled paper is an important component in fibre, paper and tissue processing.

Working directly with customers, key manufacturers, and industry experts, David Brown Santasalo has a deep understanding of the fibre recycling process. Our fibre recycling drive solutions boast an extensive global installed base, proving reliable for more than 30 years. Tailored to each application's specific requirements, David Brown Santasalo gearboxes are engineered to deliver optimum performance.

#### Drum pulper drives

Recycling and drum pulper drives comprise a David Brown Santasalo multi-segmented ring gear with the pinion attached directly to the gear unit.

**Ring gears can be supplied individually, or as part of a fully optimised package which includes:**

- Mill drive gearbox
- Ring gear - cast, fabricated or multi-segment options available
- Pinions
- Barring drive
- Auxiliary equipment including couplings, brakes, pedestal bearings and clutches





## Paper making

### Integrated roll & dryer section drives

Running at speeds of up to  $2500\text{m m}^{-1}$ , paper and board machines demand near-constant gear unit operation and require a high degree of reliability. David Brown Santasalo gearboxes are founded on more than 285 years of combined gear engineering expertise, delivering maximum performance and machine availability.

#### Integrated roll drives

David Brown Santasalo's roll drives are a perfect example of integrated drive solutions for paper machinery. Drive units for both suction and deflection-controlled rolls in press sections and calendars are available with special design gearing. These designs lower noise and vibration levels and ensure reliability, even at the highest machine speeds.

#### Dryer section drives

David Brown Santasalo has a long history of supplying machine frame gearing, which includes both shaft-mounted and special integrated gear units for dryer sections.

The DRG drive is a compact mechanical power transmission which for dryer sections, includes all necessary components built into the housing of the gear unit.

The unique internal coupling design of the DRG drive allows higher machine speeds regardless of misalignment resulting from thermal expansions, mounting inaccuracies or distortions of the machine base. David Brown Santasalo has even developed a special shaft-mounted gear unit for dryer section vacuum rolls.

#### Modular gear unit series

Our paper machinery product range features single and multi-stage helical and bevel-helical gear units, offering a wide range of standardised drive solutions for paper making machinery. Modular designs allow for the use of modular accessories including bearings, couplings, leak-proof seal designs, brakes and lubrication systems for both pressurised and splash lubricated applications.

Depending on your requirements, David Brown Santasalo gear units can be connected to central lubrication systems or delivered as stand-alone, self-cooling units, with an internal cooling coil or pressure lubrication system.

Special attention is given to practical design aspects such as the stability, usability and serviceability of a gear unit and minimised noise and vibration levels meet the demands of today's high-speed machines.



## Finishing

### Unwinder & winder drives

Calling on almost three centuries of industrial gearbox experience, David Brown Santasalo designs, develops and manufactures winder and unwinder drive systems for finishing applications. Each gear system is tailored to our customers' exact requirements for complete gearbox – application fit and maximum reliability.

#### Unwind and wind-up unit drives

With David Brown Santasalo's unwind and wind-up drive units it is possible to achieve exact paper tension and speed control in both unwind and reeling processes. The gear unit is equipped with an integrated reel spool coupling, transferring mechanism, hydraulic brakes and a pressurised lubrication unit. All sensitive machine parts are internally located for added protection and our compact design results in substantial cost savings.

#### Winder drives

David Brown Santasalo's winder drive solutions include both separately mounted helical and special tailor-made integrated gear units. These application-specific units allow for easier and more accurate speed control. Process control is improved with a modern high-speed frequency controlled brake generator coupled to the gearbox. This solution allows for lower investment costs when compared to conventional drive technology.







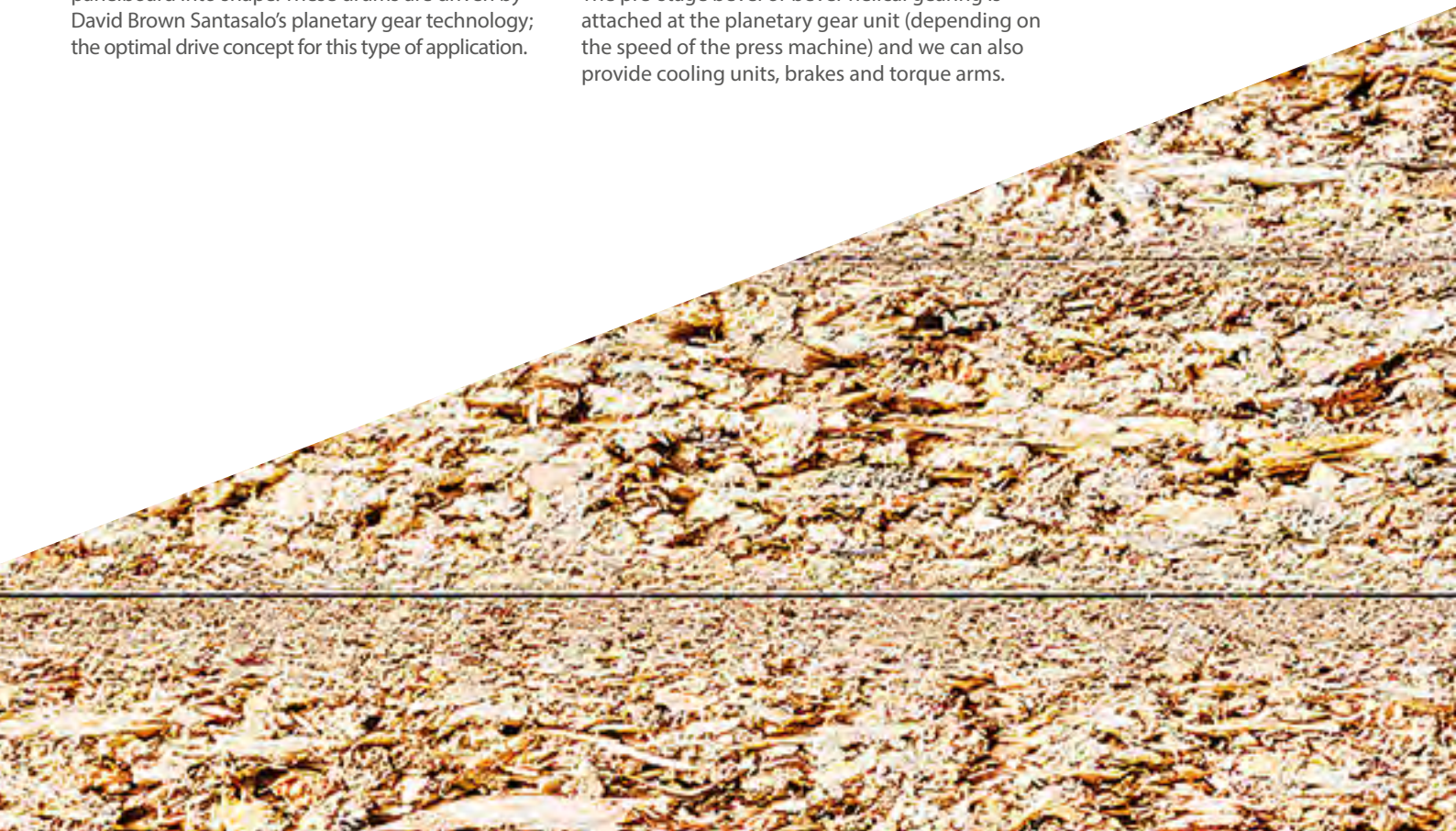
## Panelboard production

### Calendar, dryer & press section drives

Continuous presses working at speeds of up to  $2500\text{mm s}^{-1}$  are used to fabricate chipboard, high and medium density fibreboard and oriented strand board. This calls for high performance gear systems engineered to meet the requirements of each application. David Brown Santasalo utilises its long standing heritage in gear engineering for assurance critical applications to deliver press, calendar and dryer drives for the panelboard industry.

Press machinery often incorporates main drums which power the steel strips that form the panelboard into shape. These drums are driven by David Brown Santasalo's planetary gear technology; the optimal drive concept for this type of application.

We deliver a wide range of gearing options, all engineered to our customers' exact requirements. The pre-stage bevel or bevel-helical gearing is attached at the planetary gear unit (depending on the speed of the press machine) and we can also provide cooling units, brakes and torque arms.



## Tissue production

### Wire turning roll, press roll, suction roll, Yankee cylinder & reel drum drives

Tissue machines are extremely demanding applications, typically running at very high speeds (up to  $2500\text{m m}^{-1}$ ).

Characterised by stable and vibration-free operation, David Brown Santasalo tissue production drives have a proven track record of reliable performance across an extensive base of installations. Each David Brown Santasalo gear system is tailored to exact customer specifications ensuring optimal performance.

#### Yankee cylinder drives

Yankee cylinder drives incorporate the latest technology to meet the requirements of today's high speed tissue machines. A unique pre-load arrangement of the main bearing optimises load distribution, stabilising the operation of the Yankee gear unit and consequently extending bearing life.

#### Single and double input options available:

- Optimal solution for production optimised tissue machines
- Turnkey delivery including all required accessories
- Cost-effective and maintenance friendly structure
- Horizontal split lane housing delivers easy maintenance and low lifecycle costs







## Development, engineering & quality

Innovation founded on close cooperation with leading OEMs

David Brown Santasalo utilises modern calculation software, 3D-CAD systems and finite element analysis methods for the continuous optimisation of gear development.

All David Brown Santasalo fibre, paper, tissue and panelboard products are founded on long standing industry expertise and close collaboration with our customers. This means every David Brown Santasalo solution is optimised for its specific application and engineered to perform even in the most arduous environments.

We understand the duties, loads and lifecycle expectations of paper, tissue and panelboard applications. That's why we use state of the art gear design and calculation software as well as finite element analysis methods to ensure our products meet our customers' standards both now and in the future.

## 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 fibre, paper and tissue 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
- Engineered using the latest software design tools for FEA analysis and 3D modelling

### 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.

### Quality control

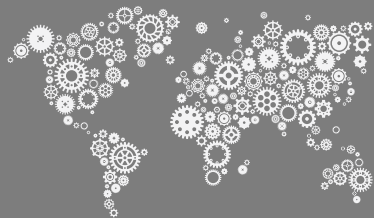
Every gearbox we make is subject to strict monitoring standards. Components are meticulously inspected for material quality and dimensional accuracy using cutting-edge gear inspection and measurement technology.

### The result

Highly reliable gear units built to meet the intense demands of industrial processes.







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