



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

Rubber Processing

Value-engineered power transmission solutions
for the rubber processing industry



Proven, lightweight mechanical power transmission solutions for the global rubber processing industry

From standard gear systems through to specialist custom engineered units, David Brown Santasalo offers an extensive range of products and services for the world's rubber processing industry. Working from 7 global manufacturing facilities and 24 service centres, we can meet your needs, whether that's for one drive system or thousands.

With increasing demands for efficiency and productivity in a competitive global market place, we understand the critical nature of gearboxes to your process and know that there's no room for compromise on performance or reliability. In a world economy reliant on rubber products, failure is not an option.

Geared for industry excellence

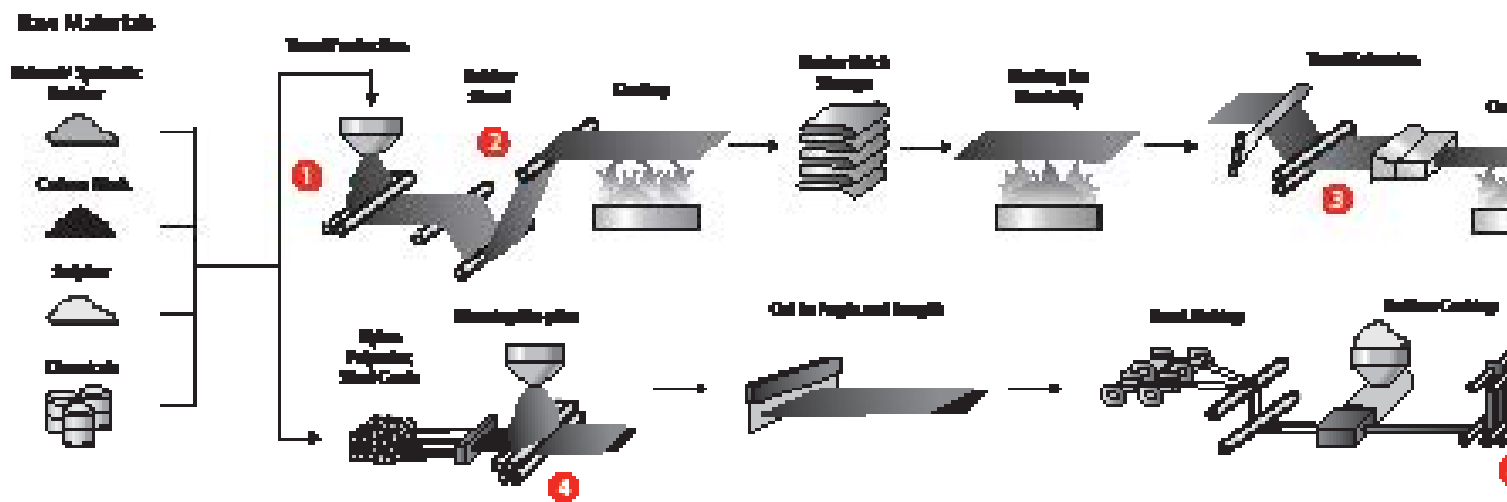
- Extensive range of products with applications across the whole process
- Manufacturing and supply chain capabilities optimised to deliver high quality, cost effective solutions
- State of the art design tools, quality processes and test facilities
- Local engineering and service support for any gearbox brand, including third party gear systems

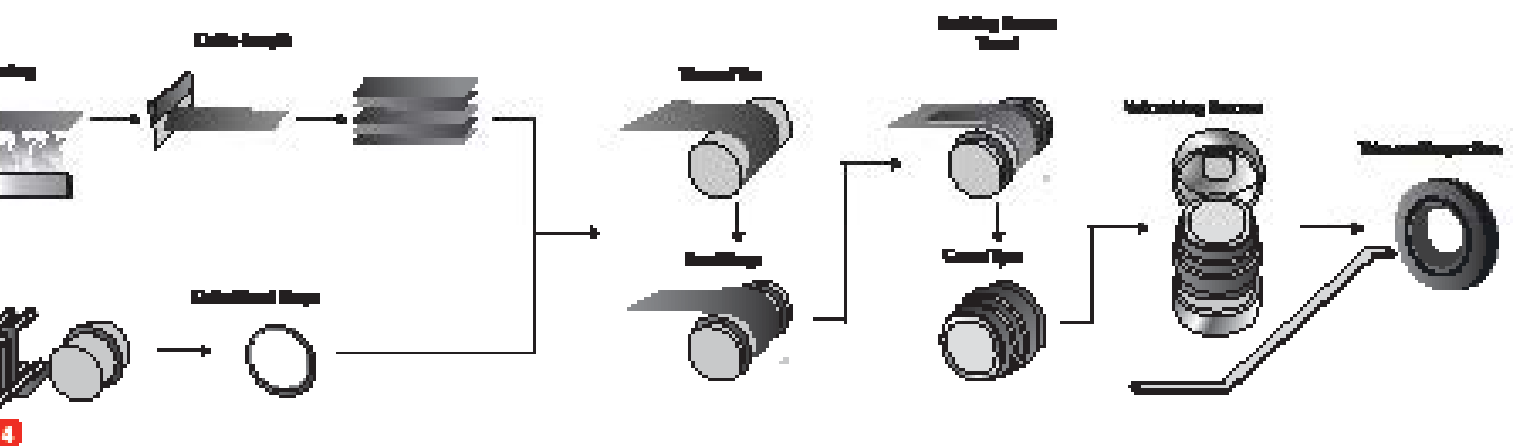


The tyre manufacturing process

We understand the challenges our customers face at each stage of rubber processing. With almost 300 years of combined gear engineering expertise, David Brown Santasalo can be relied upon to deal with any challenge, at any stage of the process, anywhere in the world.

- 1 Custom designed mixer drives with single or twin output shafts
- 2 Extruder drives available with hollow shafts, designed to handle high thrust loads
- 3 Mill drives with twin output shafts
- 4 Calender drives with multiple output shafts as required
- 5 Conveyor drives





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 rubber 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 AS/ AGMA, JIS, DIN or ISO standards
- Tooth modifications to achieve optimal performance
- Designed using the latest software design tools for power transmission solutions

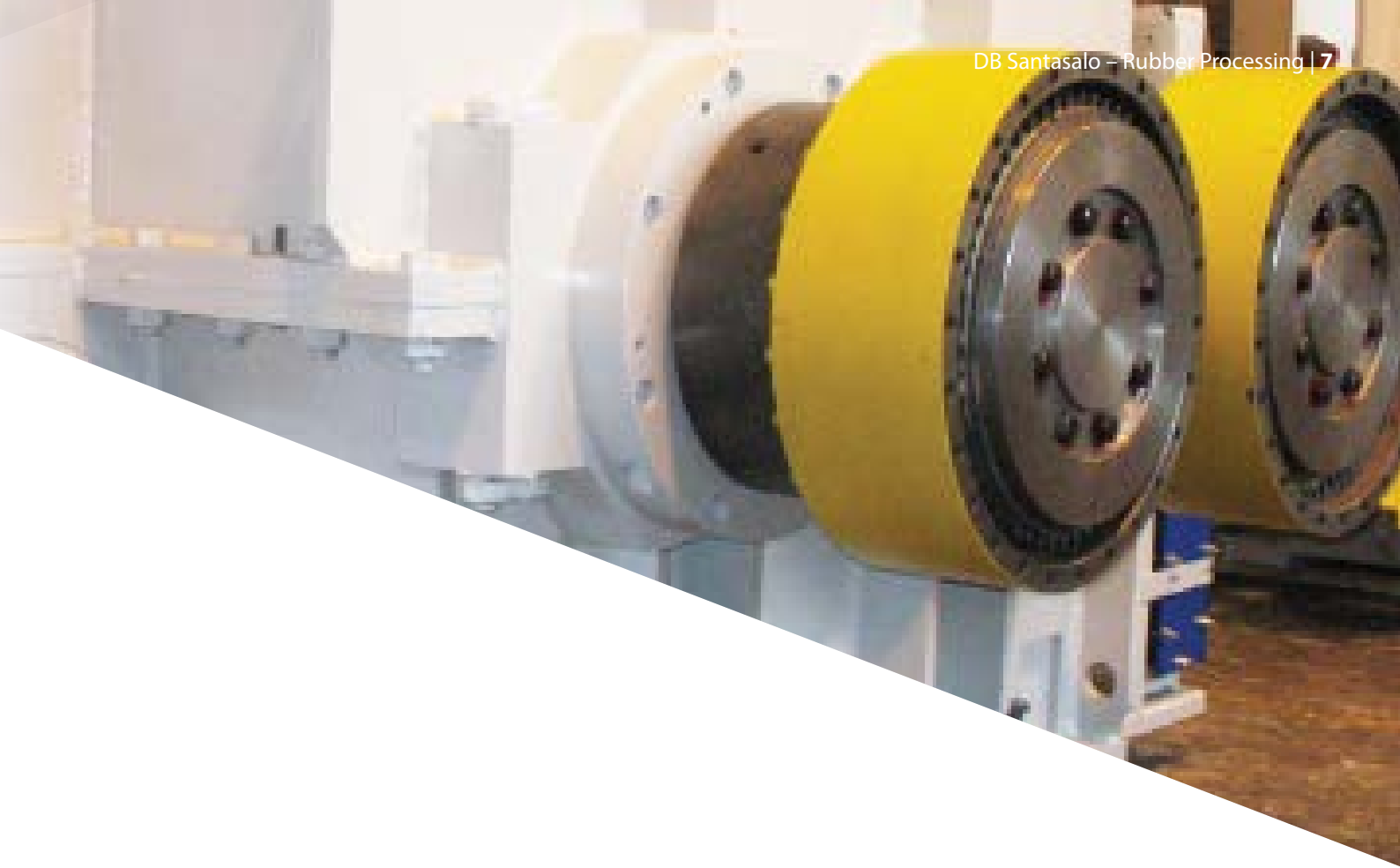
Housings, couplings and shafts

- Designed for thermal efficiency
- Designed using the latest software design tools for FEA analysis and 3D modelling

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 rubber processing product range

David Brown Santasalo has an extensive range of gearboxes for all rubber processing applications. All David Brown Santasalo gearboxes are designed and manufactured to major international standards 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.



Internal mixing

- Unidrive twin output drives
- Change speed options



External mixing and milling

- Twin outputs
- Geared friction ratio drives
- Independent drive with twin output shafts



Extrusion

- Integral thrust bearings
- Hollow output shaft options
- Customised for best gearbox - application fit



Calendering

- Inclined Z configuration drives
- L and inverted L configuration drives



Gearbox service and repair

- On site service and maintenance
- Gearbox repairs
- Spares
- Support for David Brown, Santasalo and third party gearboxes



Drop-in replacement and upgrade

- Drop-in replacements for all gearbox makes and models
- Ability to increase capacity in the same space envelope



Mixers and Mills

Working with the world's leading rubber equipment OEMs and end users, David Brown Santasalo has developed a wide range of proven products for mixer and milling applications.

In today's highly competitive industry, efficiency increases have led to higher power requirements for mixing and milling equipment. Our product range complements this with power capacities up to 3,000kW.

Enclosed mixers

We have a full range of solutions for Banbury-type mixers, which feature twin contra-rotating output shafts to drive the interlinked mixer rotors. For other enclosed mixers, David Brown Santasalo can provide gearboxes with single or double input shafts, allowing greater flexibility in positioning of motors.

Output shafts are normally geared together to provide contra-rotating same speed operation. A typical mixer package can also include indexing couplings to allow for accurate relative positioning of the drives to the rotors. Options are also available to allow independently driven output shafts, where the synchronisation of the output shafts is achieved by electronic control of the motors.

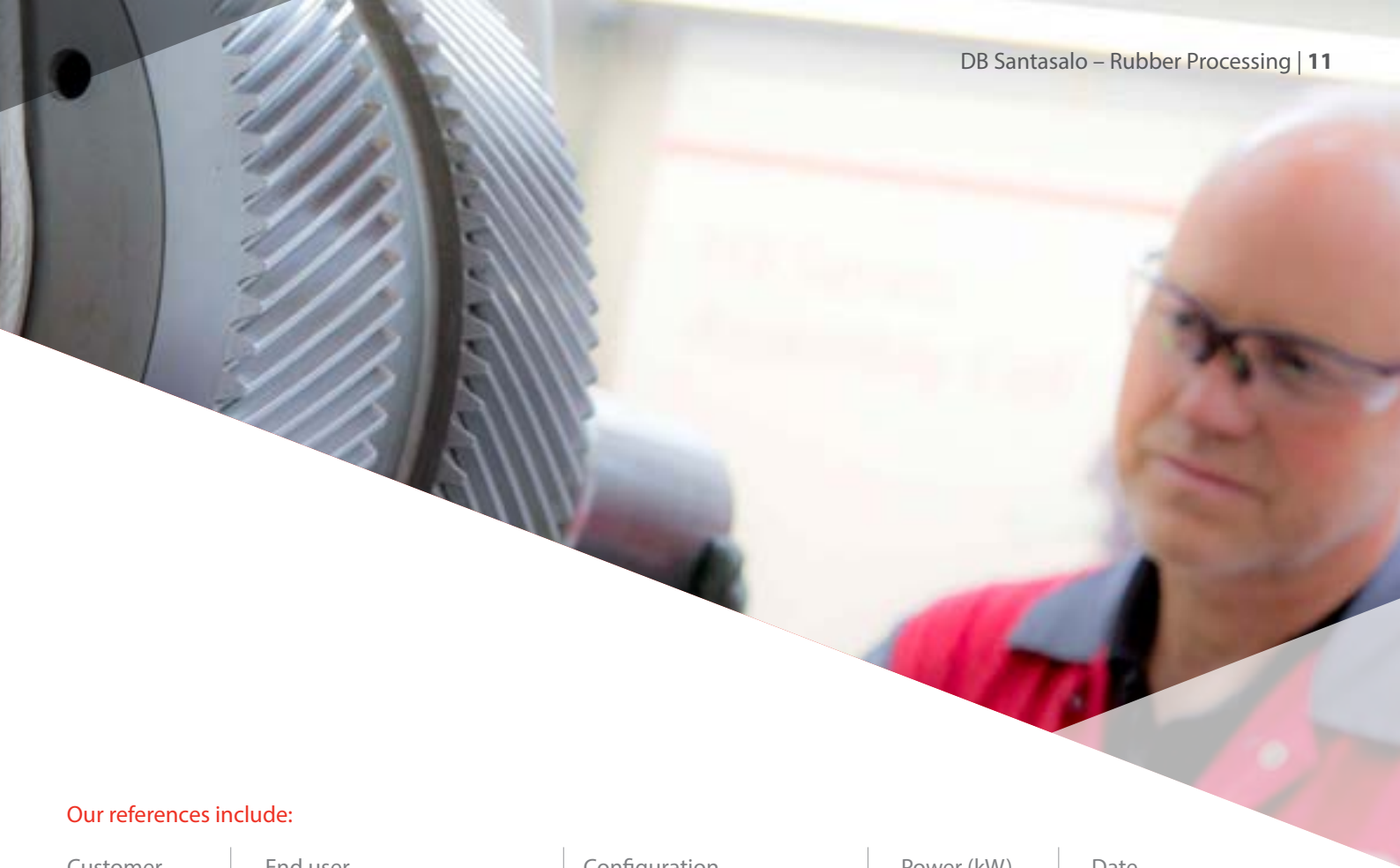
External mixers (mill drives)

Independent drives with twin motor inputs and twin non-geared outputs offer even greater flexibility for process control, offering variable friction ratios to the mill rolls. David Brown Santasalo can offer complete packages including couplings, baseplates and onboard lubrication systems, delivering a one stop shop for rubber mixing applications.

For external mixers (mill drives) special configurations have been developed to give a small ratio difference (friction ratio) between the twin rollers required for effective milling of rubber compounds.

Key features

- 1 motor - 2 outputs - output speed with 'ISO speed' or friction ratio
- 2 motor - 2 outputs - output speed with 'ISO speed' or with friction ratio
- 2 motor each driving an output independently - friction ratio can be set up through the inverter on the motors



Our references include:

Customer	End user	Configuration	Power (kW)	Date
Farrell	Czech Republic	Banbury mixer	1200	1996
Farrell	Poland	F370	1400	1983
Farrell	UK	F270	1500	1978
Francis Shaw	Portugal	Enclosed mixer	570	1992
Francis Shaw	Russia	2 speed	525	1988
Francis Shaw	Spain	Enclosed mixer	1400	1987
Francis Shaw	UK	Enclosed mixer	1500	1987
Pirelli	Italy	Enclosed mixer	2750	1988
Goodyear	Turkey	F270 2 speed	750	1990
Michelin	US and Germany	H4T800 mixer	2x1050	2005 onwards
Michelin	US, Brazil	H5T770 mixer	2x1500	2009 onwards
Michelin	Poland, Brazil	K4T845 mill with friction ratio	1050	2006 onwards
Michelin	USA	K4T710 mill with friction ratio	850	2000
Pirelli	Italy, Brazil, Argentina, Russia	Enclosed mixer	2500	1988
Michelin	USA	3 speed mixer	300	2005



Extruders

David Brown Santasalo has a long history as a supplier of special purpose gear units for extrusion processes, particularly in rubber extrusion for tyre manufacture.

Through long standing relationships with both OEMs and major end users, we have optimised our gearbox solutions to fully meet our customers' process requirements. We deliver gearboxes for all types of extruder process and can optimise pre-engineered designs or design a fully customised solution.

In the extrusion process, as well as transmitting the high torque to drive the extruder screws, the gearbox has to react the thrust load from the extruder as the material is forced through dies. Our range of extruder gearboxes incorporate high capacity rolling element thrust bearings fitted into a rigid housing to disperse loads through the casing, without risk of internal misalignment of the gears.

The output stage of the reducer is custom designed to interface exactly with our customer's extruder. This customisation will typically include an accurately machined mounting flange, precision machined to locate the gearbox onto the extruder body. The output shaft can include features to directly drive the extruder screw, including hollow shaft versions. The output shaft can also include a gear to provide an auxiliary drive directly from the gearbox output shaft.

David Brown Santasalo extruder drives can be supplied with integral lubrication systems allowing easy installation.

Key features

- Integral thrust bearings in a rigid housing available in both cast and fabricated configurations
- Integral lubrication systems available with no external oil connections
- Hollow output shafts to suit our customers' extruder configurations
- External drive teeth on output shaft
- Supports high thrust loads
- Complete design flexibility to incorporate any extruder design

Our references include:

Customer	End user	Power (kW)	Date
Baker Perkins	UK plastics factory	Various	2007
Iddon Brothers	UK rubber processor	95	1995
Farrel	UK tyre plant	125	1995
Farrel	UK BASF	2000	1998
Farrel	Poland tyre plant	260	1983
Francis Shaw	Various	37 to 260	1980 onwards
Farrel Bridge	UK tyre manufacturer	375	1988
APV Baker	UK plastics plants	various	1990
Carter Brothers	Indonesia tyre plants	562	1995
Rockwell	UK plastics plants	Various	1990
Michelin	Poland, Thailand, Brazil,	590	2006 onwards
Michelin	Poland, Thailand, Brazil,	300	2006 onwards
Michelin	Various locations	75	1990 onwards



Calenders

Gearboxes for typical calender applications will often feature multiple output shafts, which drive the calender rolls. These rolls are used to process premixed rubber into continuous sheets, often incorporating strengthening materials such as fibres and cords, for example when producing tyres and conveyor belts.

David Brown Santasalo calender gearboxes can be custom designed to deliver a range of power outputs and ratios for all types of calender configuration.


Options are available with multiple outputs to drive various types of calender rolls:

- Two roll vertical
- Two roll horizontal
- Two roll offset
- Three roll vertical
- Three roll offset
- Four roll vertical
- Four roll 'L'
- Four roll inverted 'L'
- Four roll 'S' and 'Z'
- Four roll inclined 'Z'

Our references include:

Customer	Configuration	Date
Iddon Brothers	3 roll	1997
Iddon Brothers	4 roll 'Z'	1990
David Bridge	Inverted 'L'	1970
David Bridge	4 roll 'Z'	1971
Farrell Bridge	Inverted 'L'	1973
Farrell	4 roll inverted 'L'	1989
Farrell	Inclined 'Z'	1970



The image shows several large, thick rolls of black rubber sheet stacked in a warehouse. The rolls are tightly wound, creating a series of concentric circles. The rubber has a slightly textured surface. In the bottom left corner, there is a red triangular graphic element. The text is overlaid on the right side of the image.

**Calender drives are available
in a number of configurations,
with options available for
multiple outputs.**

Geared for service

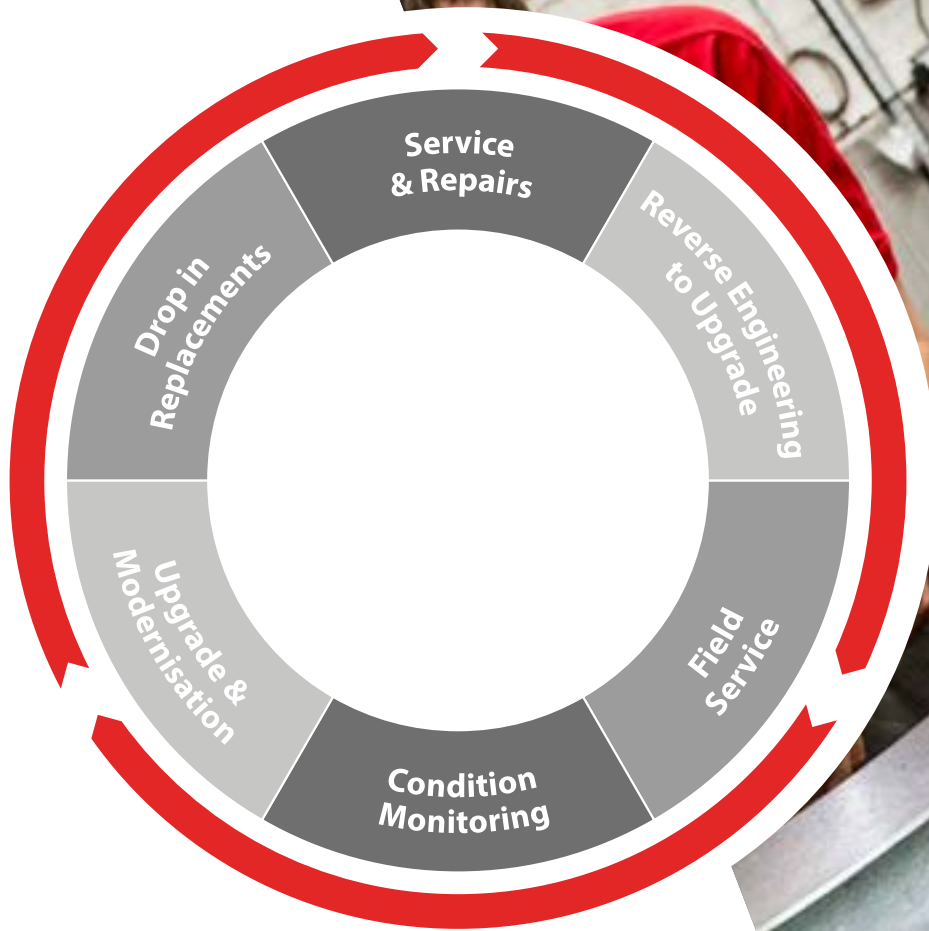
We understand that fast response is key to anyone who needs gearbox service and repair in the rubber industry. Our global network of manufacturing and service facilities spanning six continents ensures we can provide support to you and your customers wherever you are, whenever you need us.

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.



<div><div></div></div> <div>Manufacturing & service</div>	<div><div></div></div> <div>Service centers</div>	<div><div></div></div> <div>Sales</div>
Canada	Australia	Brazil
China	Canada	China
Finland	Chile	France
France	Dubai	USA
India	Germany	
South Africa	Indonesia	
UK	Peru	
	Philippines	
	South Africa	
	Sweden	
	USA	



David Brown Santasalo understands how to service mission-critical gear units to ensure optimal results and long gear unit life

We can even offer our 3X three year warranty package on gearboxes serviced, repaired or upgraded at David Brown Santasalo manufacturing and service facilities globally.*



* 3X terms and conditions apply.

Gearbox service, repair and upgrade for any brand, anywhere in the world.

Our dedicated service engineers deliver rapid, reliable support to ensure your gear system - whatever the make or model - is up and running in the fastest possible time.

Before



After



Before



After



Before



After



Hassle-free drop in replacements for rubber industry gearboxes

Our longstanding experience in developing rubber industry gearboxes enables us to understand the specific challenges and arduous duty cycles experienced in rubber manufacture. Using almost 300 years of combined gear engineering expertise, we are able to create engineering solutions to improve the capability and reliability of the gearboxes in service.

For existing installations, replacement units can be reconfigured to deliver greater powers as well as allow for increases in speed or mixing torque. These units are manufactured using advanced techniques and superior materials - often fitting in the same space envelope and in many cases with interchangeable mounting positions.

Key features

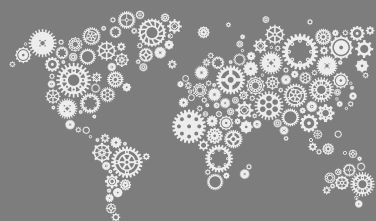
- Retrofit replacements have total dimensional interchangeability including shaft sizes and positions and can be installed without modifications to foundations, couplings or other critical equipment
- Gearboxes can be upgraded from their original design for enhanced performance
- Our aim is to minimise risk, cost and time for gearbox swap out and re-installation for our customers globally

Intelligent condition monitoring



GearWatch Condition Management Solution is a smart, compact and value-adding tool for predictive and preventive remote monitoring.

Locating potential problems before they affect process availability, GearWatch measures, records and analyses data, reporting any changes in measured parameters in real time via the internet 24 hours a day, 7 days a week.



Europe

Finland
Jyväskylä & Hyvinkää
T: +358 293 401000
E: finland@dbsantasalo.com

France
Bordeaux
T: +33 547 745 402
E: france@dbsantasalo.com

France
Thann
T: +33 389 370 113
E: france@dbsantasalo.com

Germany
Wuppertal
T: +49 202 24 14 0
E: germany@dbsantasalo.com

Sweden
Göteborg & Gällivare
T: +46 31 710 20 50
E: sweden@dbsantasalo.com

UK
Huddersfield
T: +44 1484 465500
E: uk@dbsantasalo.com

Americas

Brazil
Sorocaba, São Paulo
T: +55 15 3031 5300
E: brasil@dbsantasalo.com

Canada
Cambridge, Ontario
T: +1 519 621 6390
E: canada@dbsantasalo.com

Canada
Montreal
T: +1 514 457 7700
E: canada@dbsantasalo.com

Chile
Santiago
T: +562 2234 5000
E: chile@dbsantasalo.com

Chile
Antofagasta
T: +56 55 249 2800
E: chile@dbsantasalo.com

Peru
Arequipa
T: +51 9 7763 7240
E: peru@dbsantasalo.com

USA
Greer, SC & Salt Lake City, UT
T: +1 864 627 1700
E: usa@dbsantasalo.com

Asia Pacific

Australia
**Bull
T: +61 2 4283 0300
E: australia@dbsantasalo.com**

Australia
Mackay
T: +61 7 4842 3222
E: australia@dbsantasalo.com

Australia
Perth
T: +61 8 9365 5555
E: australia@dbsantasalo.com

China
Suzhou
T: +86 512 6299 8852
E: suzhou@dbsantasalo.com

China
Tianjin
T: +86 135 1245 2820
E: tianjin@dbsantasalo.com

India
Tamil Nadu
T: +91 4344 277 740
E: india@dbsantasalo.com

Indonesia
Surabaya
T: +62 31 8910977
E: indonesia@dbsantasalo.com

Malaysia
Kuala Lumpur
T: +60 (3) 9207 9700
E: malaysia@dbsantasalo.com

Philippines
Subic Bay
T: + 63 047 250 2407
E: philippines@dbsantasalo.com

Africa

South Africa
Benoni
T: +27 11 748 0000
E: salessa@dbsantasalo.com