



Manufacturing and Service Centres

South Africa

Benoni
T +27 (0) 11 748 0000
F +27 (0) 11 421 2963
Northern Cape
T +27 (0) 53 723 0000
F +27 (0) 53 723 0002
southafrica@davidbrown.com

Australia

Bullii
T +61 (0) 2 4283 0300
F +61 (0) 2 4283 0305
Mackay
T +61 (0) 7 4842 3222
F +61 (0) 7 4842 3232
Perth
T +61 (0) 8 9365 5555
F +61 (0) 8 9365 5556
australia@davidbrown.com

Canada

Montreal
T +1 514 457 7700
F +1 514 457 7265
canada@davidbrown.com

Chile

Antofagasta
T +56 (55) 492 800
chile@davidbrown.com

France

Thann
T +33 (0) 389 370 113
F +33 (0) 389 373 936
france@davidbrown.com

India

Hosur
T +91 (0) 4344 420054
F +91 (0) 4344 420050
india@davidbrownbharatforge.com

Indonesia

Surabaya
T +62 31 891 0976-77
F +62 31 891 0978
indonesia@davidbrown.com

Philippines

Subic Bay
T +63 47 250 2407
philippines@davidbrown.com

UAE

Dubai
T +971 (0) 4 887 0274
F +971 (0) 4 887 0275
dubai@davidbrown.com

UK

Huddersfield
T +44 (0) 1484 465 500
F +44 (0) 1484 465 501
West Bromwich
T +44 (0) 121 557 6334
F +44 (0) 121 520 0951
uk@davidbrown.com

Approved David Brown service and repair facility

Sweden

Goteborg
Moventas service and repair centre
T +46 31 710 20 50
F +46 31 710 20 60
service@moventas.com

France

Craywick
SGM service and repair centre
T +33 (0) 389 370 113
F +33 (0) 389 373 936
france@davidbrown.com

Sales Offices

Australia

Melbourne
T +61 (0) 393 774 444
F +61 (0) 393 774 445
australia@davidbrown.com

Chile

Santiago
T +56 (2) 2234 5000
chile@davidbrown.com

India

Bangalore
T +91 (80) 4235 2800
F +91 (80) 4235 2820
india@davidbrown.com

Indonesia

Sidoarjo
T +62 (31) 891 0977
F +62 (31) 891 0978
indonesia@davidbrown.com

Singapore

Temasek Boulevard
T +65 6866 3238
singapore@davidbrown.com

USA

Virginia
T +1 855 693 2432
usa@davidbrown.com

high speed gears

parallel shaft drives

The sugar industry driven by David Brown

split torque main mill drives

planetary transmission mill drives

tailored loose gears

service and repair




Product catalogue



Gearbox
Emergency helpline
T +44 (0) 1484 465666

Print date 10/14 Revision date 10/14

Global version

 Moventas approved service and repair centre

The information contained in this catalogue has been obtained through sources deemed reliable but cannot be guaranteed as to its accuracy. Any information of special interest should be obtained through independent verification and consulted with a David Brown representative.
In the interest of continuous development, David Brown reserves the right to alter designs and specifications without prior notice.
David Brown is certified to ISO9001:2008. Your David Brown representative should be consulted prior to product selection and use. 3X terms and conditions apply. Contact your local David Brown representative for details and to check eligibility.



The sugar industry driven by David Brown

Designed specifically for use in sugar mills, David Brown's range of low speed, high torque transmissions deliver a compact and cost effective solution to shredding, cutting and extraction applications across the globe. Drawing on a wealth of experience and a vast worldwide technical capability, David Brown delivers a range of geared products that are specifically designed to meet the needs of the sugar industry. Highly focused on partnering some of the largest sugar producers in the world, we have a commitment to increase your output, extend service life and drive your plant reliability forward.

David Brown's low speed, high torque transmissions deliver a compact and cost effective design. Custom designed gearboxes range up to 1500kW to suit our customers' exact requirements. David Browns High Speed HX range covers powers up to 54MW, catering for the full range of steam turbine applications.

Tried and trusted by the global sugar processing industry, showcasing our ability to cope with loading spikes often encountered in sugar processing.

Geared for sugar processing excellence

- Extensive experience and local engineering support in the same time zone, ensuring quick turn-around
- Versatility and adaptability for existing and new equipment
- Easy drop in replacement options including upgrades
- Dedicated engineering solutions to increase plant capacity

Custom engineering capabilities

- Wide range of sugar processing products from shredding to sugar crystallisation
- Bespoke design and repair of gearboxes for the sugar industry: engineering, design, manufacturing, service and sales

Applying **our expertise**
across the entire
sugar production process



Milling and shredding applications

Sugar mills wash, chop, and shred sugar cane using revolving knives. Shredded cane is repeatedly mixed with water and crushed between rollers in the milling tandem; David Brown gearboxes can be found throughout the milling process.

Products

- Couplings
- STX main mill drives
- PTX mill drives



Steam turbine applications

The energy efficiency of the sugar manufacturing process is emphasised by the recycling of bagasse to generate the power required to run the mill.

In older sugar mills, steam turbines are used to drive the sugar mills. David Brown can offer units from our HX range which are well matched to the high input speeds from steam turbines.

In more modern plants where steam is raised and then used to drive larger steam turbines driving generator packages, the David Brown HX range of high speed units extends to cover the much higher powers encountered, with powers up to 54MW.

Solids burned for fuel in a mills steam boiler, can make a sugar mill very energy efficient, any extra burnt solids can be used to generate electricity for sale.

Products

- Couplings
- HX series high speed units



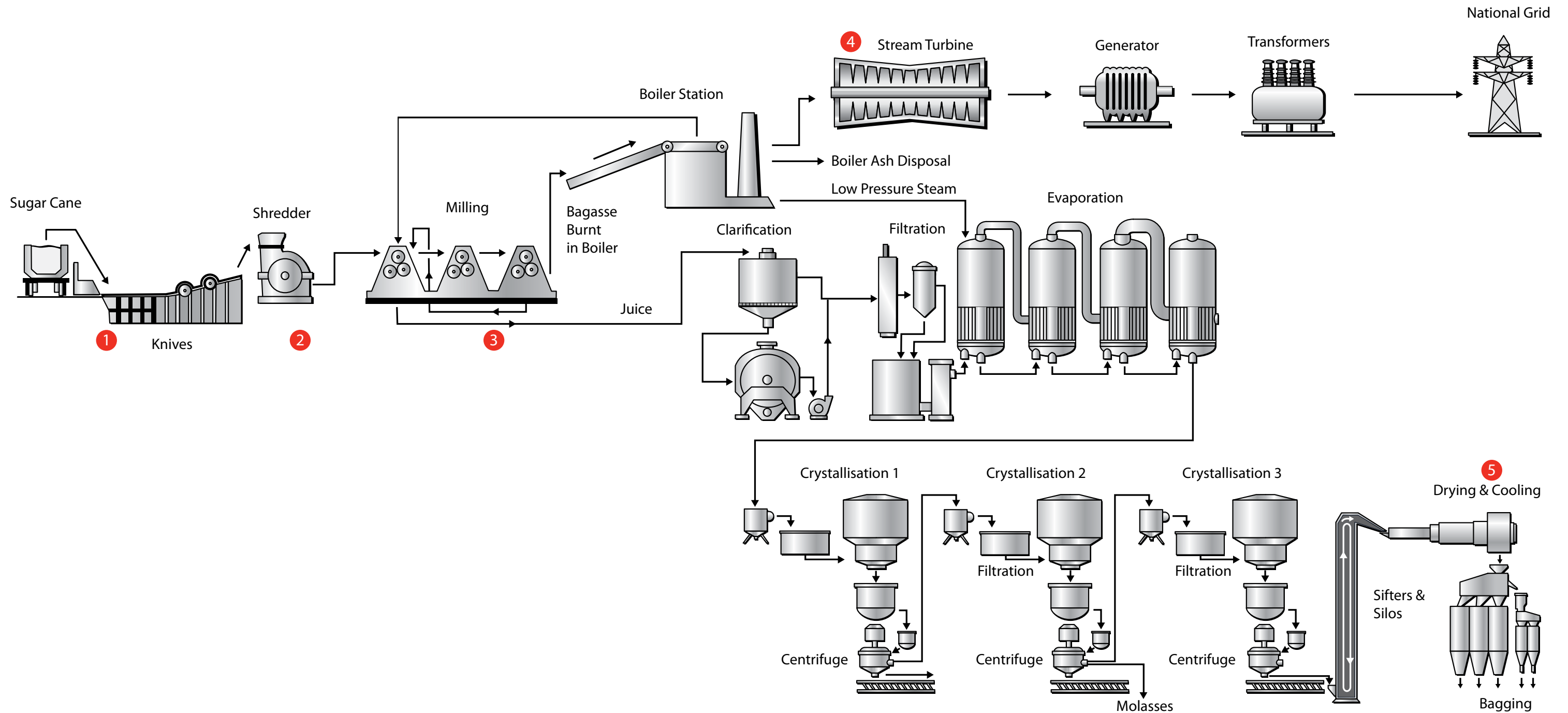
Sugar extract processing

Sugar containing juice is boiled until it thickens into a syrup from which the sugar crystallises, the crystals are spun in a centrifuge where a portion of the molasses is removed to produce raw sugar, and the raw sugar is traditionally dried before shipment to a refinery. White sugar is then crystallises, dried and packaged. David Brown products can be found throughout the processing of sugar extract.

Products

- Mill drives for dryers

The sugar process



David Brown - innovation across the sugar process

David Brown sees the bigger picture and understands that in the sugar processing industry, customers need gear systems that provide absolute reliability, maximum availability and complete assurance. Our global network of manufacturing and service centres deliver rapid global support wherever you are, whenever you need us.

- ① Knife drives, feeder table drives
- ② Shredder drives, feeder drum drives
- ③ Mill gear drives, HX series high speed units for steam turbine drives, PTX, STX
- ④ HX series high speed units for steam turbine generator drives
- ⑤ Mill drives for dryers

Proven engineering expertise

David Brown has a dedicated global team of design and application engineers, experienced in providing tailored solutions for all power transmission applications in the sugar industry.

All designs are optimised using state of the art design tools and crafted using the latest manufacturing equipment.

Housings, couplings and shafts

- Designed to be thermally efficient
- Using the latest software design tools for FEA analysis FEA and 3D modelling

Gear design

- David Brown design to AS/AGMA, JIS, DIN or ISO standards
- Designed to achieve optimal gear load conditions
- Using the latest software design tools for power transmission (vibration and noise analysis)

Assembly and load testing

All gearboxes and associated sugar products following strict quality control guidelines and review before being shipped to our customers worldwide.

Our full load testing capabilities includes the measurement of temperature, vibration and noise and provision for supply of full inspection and documentation packs.

David Brown offers no-load spin testing and full scale load testing of stand alone gear units or complete drive assemblies depending on customer requirements.

Testing facilities vary worldwide with capabilities to test gearboxes exceeding 3MW.

State of the art manufacturing capabilities

David Brown has global engineering and manufacturing facilities equipped with latest gear manufacturing equipment machine tools.

- David Brown is fully accredited to ISO 9001
- Worldwide facilities manufacturing
- Girth gears to 14.4m in diameter and up to 105,000kg in weight
- Pinions tailored to suit your requirements
- Annulus / internal ring gears up to 12m in diameter
- Induction hardening of external or internal gears to 4.5m in diameter
- Case carburising to 3m diameter and 4.5m length
- Nitrided heat treatment can be available on request
- David Brown operates a zero defect policy

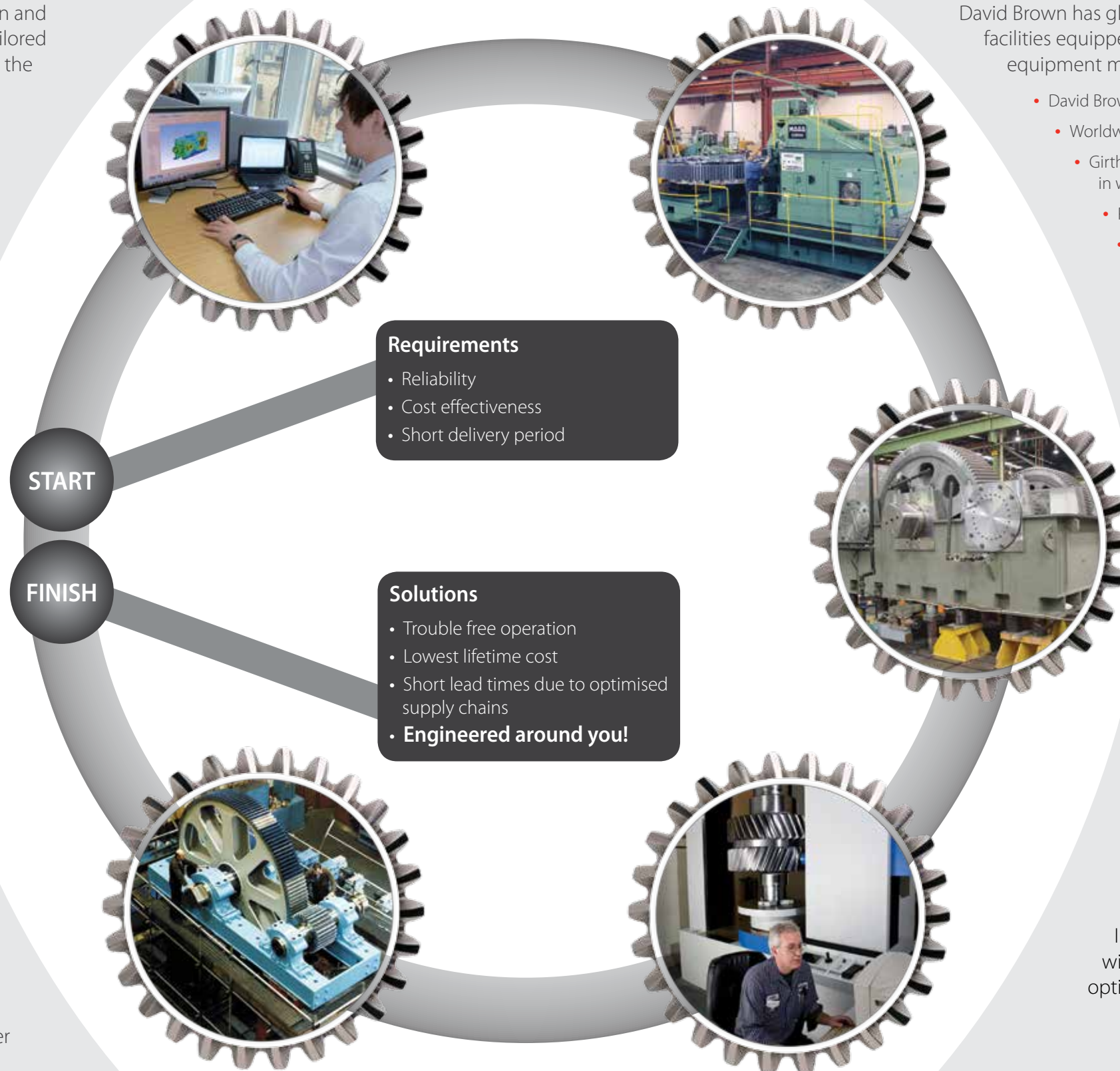
Quality control

Equipped with the latest and best gear inspection equipment available.

Modern manufacturing and service facilities showcase our abilities.

David Brown utilises the latest onboard and stand alone gear measurement technology.

Inspection equipment is integrated with manufacturing processes to ensure optimum quality at minimum lead time.



With proven expertise and global capabilities,
David Brown gives you peace of mind
throughout the whole process



Engineering and manufacturing capabilities

David Brown has a dedicated global team of design and application engineers to provide around the clock support. David Brown products are designed using state of the art design software for gears, shafts and housings, aiming to be your complete gearing authority.

We have skilled technicians and engineers ready to solve your gearbox and associated product needs. We can design from scratch or service and upgrade an existing product. Whether you wish to change the ratio of an existing gearbox, or replace the entire drivetrain, David Brown is your one-stop gearbox shop. We can evaluate your current gearbox and offer replacements which have higher ratings to maximise your process.

Send us your gearbox during a regular shutdown and we will evaluate its condition. We can also make drop in replacement assemblies that will minimise downtime.

A team of skilled professionals provide expert assistance either working from detailed engineered drawings or from sample pieces. If required, original engineered specifications and drawings can be designed and developed. David Brown is your complete sugar industry solution provider however complex or time dependant your requirements are.

David Brown manufactures gears and gearboxes to any rating or gear grade currently in existence and draw on their wealth of engineering expertise across the world.

Quality and testing

David Brown utilises some of the industry's most sophisticated gear inspection machines. This ensures David Brown products are of the highest quality and robustness.

Our fully automatic CNC controlled gear measuring machines are designed for larger work piece diameters up to 2600mm.

These measuring machines are suitable for testing spur and helical gears as well as hobs, shaper cutters, worm gears and bevel gears. The machines are critical to establish the exact lead and pitch of the gear to ensure manufacturing processes are constantly checked with design intent.

High speed gears



David Brown offers a full range of high speed gearboxes optimised for applications for the sugar industry. Based on the industry leading HX range of pre-engineered high speed gearboxes, users can benefit from years of design experience, and quality control experience, backed up by David Browns low cost global supply chain.

Typical applications range from steam turbine inputs to main mill drives up to multi megawatt steam turbine/generator drives for cogeneration systems for the sugar industry.

Our customers need a gearbox that's reliable, flexible and cost effective. David Brown's HX series is ideal for challenging applications such as pumps and compressors, where failure is simply not an option. Our gearboxes are renowned for their ability to operate in extreme conditions including 50°C highs in the Middle Eastern deserts and -42°C temperature lows in Siberia.

We work with you to supply a high speed gearbox that's adaptable from our core range. Features such as oil connection locations, bearing options and lubrication systems are flexible, enabling us to develop a solution that fits to your exact operating environment but still gives complete cost effectiveness.

We have a successful history in supplying the following critical applications:

Key benefits

- A core platform that's adaptable to meet your requirements
- HX gearboxes can be designed and manufactured to comply with API613 or AGMA standards
- Optimised for low noise and vibration
- Fast solutions with quick delivery schedules
- Ability to supply lubrication systems, instrumentation, barring drives and clutches

Key features

- A high speed gearbox that's adaptable from our core range
- Rotating elements for all HX gear units are dynamically balanced to ensure that the residual balance is lower than that given in the design calculations
- Our gearboxes are renowned for their ability to operate in extreme conditions
- Thorough examination and analysis after test with dedicated test bays

Centrifugal pump drives:

- Sea water/produced water injection pumps
- Flowline booster pumps
- Pipeline booster pumps
- LNG send out pumps for filling tankers
- Boiler feed pumps
- Decoking pumps
- Descaling pumps

Compressor drives:

- Gas injection
- Gas production
- Gas boosting/transmission
- Gas compression to LNG
- Gas recompression
- Boil off gas compressors for LNG

Power generation

- Turbo generator packages



Parallel shaft drives

Highest quality | international quality standards | designed to last



Based on David Brown's renowned range of industrial reducers, applications specific drives for the sugar industry can be rapidly configured from standard designs and components. High torque direct mill drive units can be provided fitted with input and output couplings and can be fitted with integral reversing drives and lubrication systems.

Configurations can include intermediate drives to link between conventional high speed turbine input drives and open geared mill drives.

Key benefits

- High torque density
- Multi stage gear unit for low output speeds
- Multiple configurations available to suit all requirements

Key features

- Wide range of sizes and designs for a 'fit and forget' solution
- Options for foot mounted, flange mounted or shaft mounted options
- Material options available on request
- Available as 2, 3, 4 and 5 stage gearbox options
- Available with square drive shaft option

Flexible design to meet your specific needs and requirements

Split torque STX mill drives

Can be fitted with integral reversing drive and supplied with integral lubrication system either fitted onto the main unit or supplied as a free standing skid.

Years of experience in supplying high powered split torque drives for demanding applications has enabled David Brown to configure the STX range of split torque units specifically configured for sugar mill main drive applications.

With torques ranging up to 8MNm (1500 kW at 4 rpm with a service factor of 2.3), the STX units cover a high range of sugar mill duties with torque to spare.

The split torque configuration means a compact, low cost drive, but with the benefit of high reliability and ease of maintenance. The unique “flat” configuration means on even the largest drives, all gearing and bearings can be accessed in just a few hours by removal of the lightweight top cover.

Designed to enable quick access for inspections and routine maintenance:

- The horizontal split case design enables the top cover to be removed in <1 hour
- Quick and easy access to gears, bearings and spray bars
- Inspection can be conducted whilst in “barring” mode with top cover off

Designed for simple maintenance and repair, reducing cost and time:

- Gearbox assembly enables individual shafts to be removable without disturbing others
- Gears and bearings mounted by oil injection method so that individual shafts can be simply stripped and overhauled if required
- Shaft assembly designed for quick bearing replacement

Robust and reliable design:

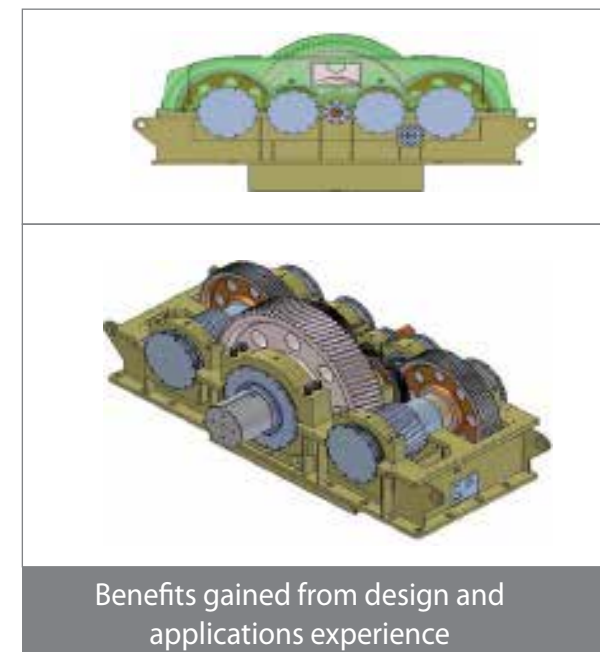
- All gears are case hardened and ground using latest heat treatment and machining capabilities
- No overhung gears, all shafts supported with bearings at each end

Gear wheels manufactured from solid single forgings:

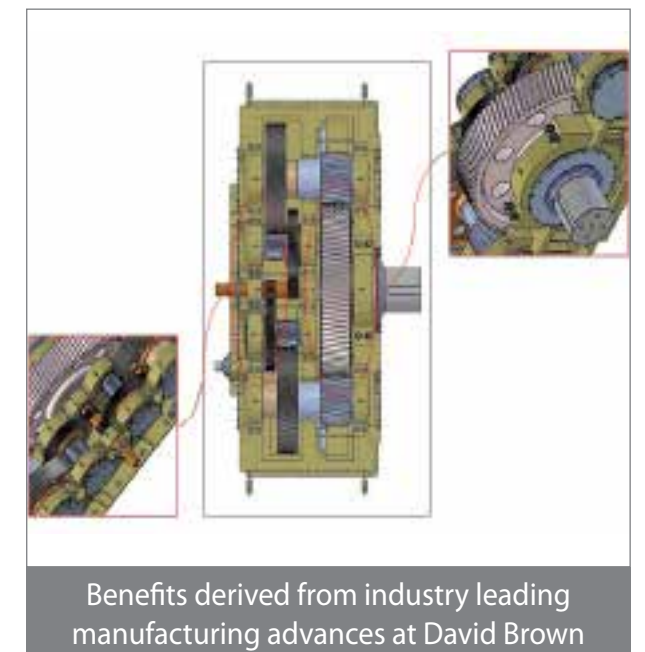
- ‘Leading edge’ heat treatment enables heat treatment of even the largest diameter gears (derived from naval marine technology)
- Single piece, forged main wheels for increased reliability/durability at the highest power requirements

Compact in size and footprint:

- Latest manufacturing technology enables increased power capability from the same physical footprint, more ‘power dense’ enabling mill power upgrades within same footprint



Benefits gained from design and applications experience



Benefits derived from industry leading manufacturing advances at David Brown



Planetary transmission PTX mill drives

Developed to cover a wide range of demanding industrial applications, David Brown's planetary transmission (PTX) range has now been configured to provide a range for all sugar mill main drive applications. With torques up to 8 MNm (equivalent to 1500kw at 4 rpm with a service factor of 2.3) means a compact low cost solution for even the highest power mill drives.

At the heart of the David Brown PTX range are the advanced technology planetary cells. The planetary cells each contain a central sun gear, three planet gears mounted in a carrier, and a stationary annulus gear. The high speed input shaft connects to the sun gear. The sun gear meshes with and drives the three planet gears. The planet gears mesh with and react against the fixed annulus gear, in turn causing the carrier and output shaft to rotate.

The high power to weight ratio of the David Brown PTX gear units comes from the use of high quality precision components combined with the principle of load sharing between the planet gears and the sun gear. Load sharing results in smaller and lighter gears. In the PTX gear units, the sun gear is radially free to float giving equal load distribution to the three planets.

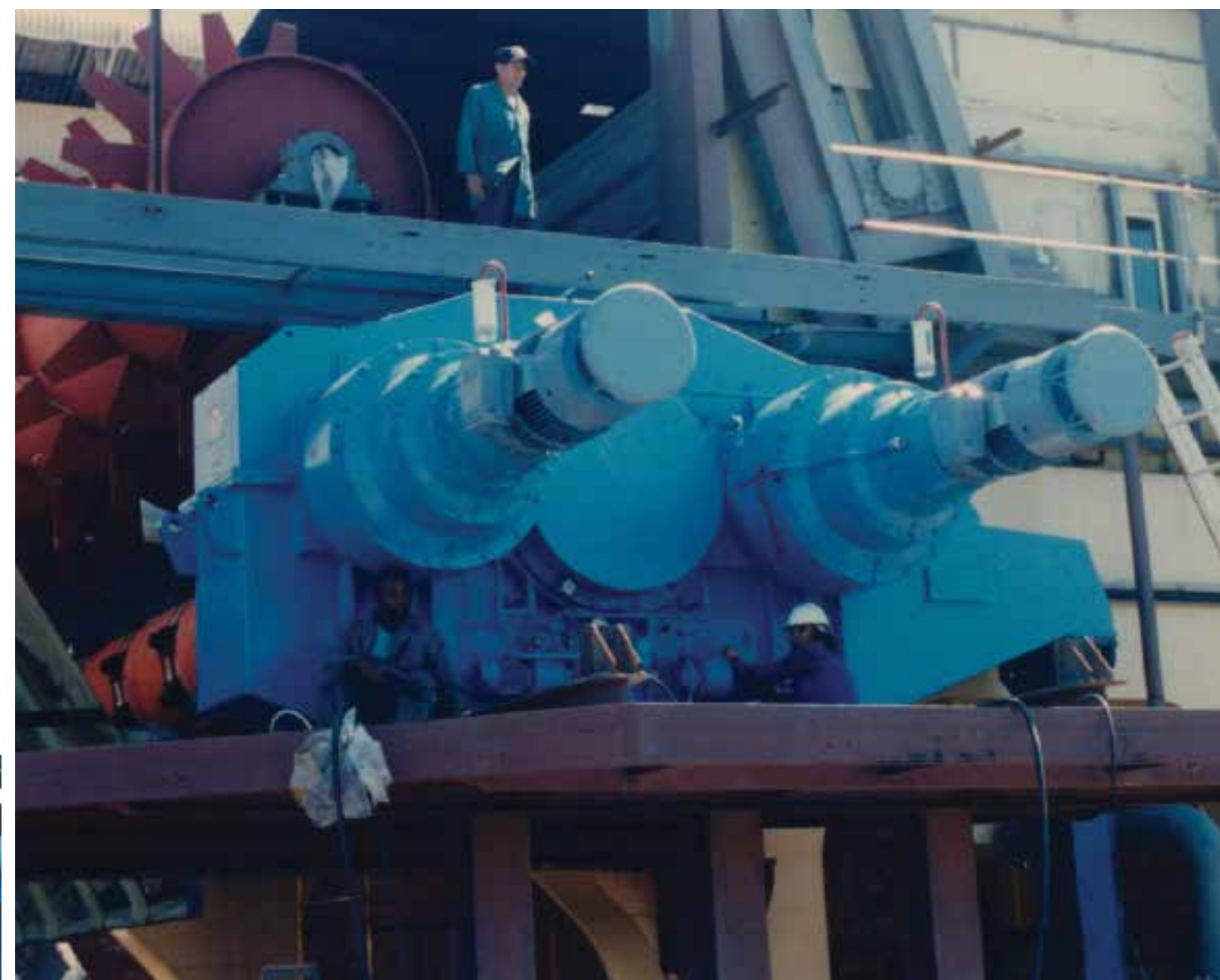
Typically, the David Brown PTX unit will be less than half the weight of a conventional helical gear unit providing the same torque. The weight and size advantage offers the engineering systems designer much scope for creative power-transmission solutions often at significantly lower cost.

Key benefits

- Output torques up to 8000 kNm
- Full range of ratios available
- Compact two, three or four stage planetary gearboxes
- Can be combined with spur gear or bevel input stages
- Low noise characteristics
- Available with hydraulic and electric motor options

Key features

- Variable mounting positions
- Robust gear unit housing
- Adapted designs to suit all requirements
- Particularly suited for high gear ratios
- For all applications which require uninterrupted running at low speed
- Available with square drive shaft option



Tailored loose gears

David Brown works at the very heart of the sugar industry, providing tailored loose gearing for OEM'S and end users across the globe. With a reputation for quality and engineering excellence, David Brown knows gear manufacture like no other supplier. Using our world class engineering and manufacturing facilities, including high quality low cost supplies through our global factory network, we can supply loose gears for all sugar industry applications.

Scope can include manufacture to print, with quality managed to David Brown global quality standards. Reverse engineering capabilities available through our worldwide service centre network means gears can be manufactured from samples, including improved quality, reliability and power transmission capabilities.

Key features

- David Brown is one of the few gear specialists that has the capability to manufacture loose gears at any size, globally
- All gears are designed to the latest major international standards such as ISO, DIN, APV and AGMA
- Combines high quality, adaptability and reliability for maximum availability



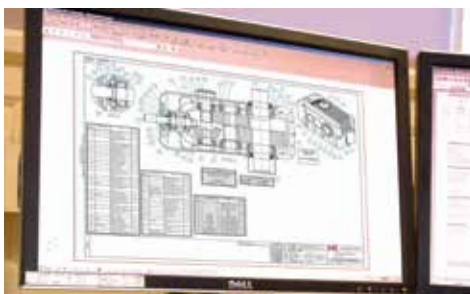
More than 150 years of gearing innovation in assurance critical industries enables us to design and manufacture any type of loose gear at any size, as well as complete gearbox systems designed to our customers' specifications.



Service and repair driven by David Brown

Global service centres repair and refurbish all gearbox types including worm, planetary, parallel, helical and spur gears. David Brown can repair any damaged gearbox, including the remanufacture of broken or pitted gears and shafts. We can repair almost anything, whatever the make or model.

David Brown is recognised as a sugar gear specialist, with existing facilities operating close to its customers. We focus on building and maintaining long term relationships with all our key channel stakeholders; OEMs, engineering houses, prime maintenance contractors and sugar operators.



Advice

- Giving our customers sound technical advice with speedy repairs and upgrades
- Offering the best solution to fix your problem
- Maximise operational ability



Quotations

- Competitively priced at your specified lead time
- Honest and professional service



Project management

- Co-ordinate teams to offer repairs and redelivery of your gearbox and other associated products
- Pro-active to work around you
- Fully supported teams, backed by a global network and expertise



Site services

- Global fast response, with the best and dedicated engineers
- In situ inspections
- Full asset management services
- Warrant parts and services to minimise downtime impact
- Gearbox repairs and upgrades



Spares

- David Brown can offer spares for all David Brown products and manufacture any required parts for non David Brown gear units



Repairs

- David Brown can offer repairs on or offsite on all makes and models of gearboxes and associated products for the sugar industry



Lifetime support



We are proudly collaborative and pride ourselves on the long term relationships we have with our customers – even if it’s just advice they need, our customers know they can always rely on David Brown to provide an honest, professional perspective.

In situ inspection

Using the latest in video endoscope technology, our service engineers inspect your gearbox to ensure all components are running smoothly. Regular in situ inspections can help identify issues before they cause failure so they are an ideal way to reduce expenditure on emergency repairs.

Gearbox repair

Depending on your gearbox model, our engineers can often conduct repairs in situ to reduce downtime to its lowest level. If your gearbox cannot be repaired at site, our proposals team will strive to minimise the costs associated with removing your gearbox from its application.

Gearbox upgrade

To ensure your application operates smoothly, David Brown will thoroughly inspect your gearbox to provide full technical reports and upgrade recommendations for gearboxes experiencing serial failure. Our global manufacturing capability facilitates design and manufacture of new, upgraded components to ISO 9001:2008.

Strategic spares management

Reducing unscheduled downtime and maintaining high performance operations through strategic component replacement can help you manage your operating costs more effectively.

David Brown provides comprehensive strategic spares management plans designed specifically for your application and its operating environment.

Full asset management

Our asset management programmes proactively look after your gearbox with regular inspection, carefully scheduled repair and upgrades. As part of your asset management programme we can hold drop in replacement gearboxes to ensure minimal downtime and maximum operational ability.

3X extended warranties

David Brown has recently introduced 3X - a full three year extended warranty on any brand of gearbox that’s serviced, repaired or upgraded by David Brown at our manufacturing and service facilities across the globe.

With 3X your gearbox will be installed, commissioned and maintained at regular service intervals by a specialist David Brown service engineer local to you. You will have access to round the clock support through our global network of service and repair centres as well as the option to install CMA5, a well proven remote condition monitoring system for extra assurance.

