

# Sumitomo Drive Technologies



RELIABLE EXCELLENCE  
IN INDUSTRIAL  
GEARBOX SOLUTIONS

Hansen Industrial Transmissions NV

# History

1920ies	1930ies	1950ies	1960ies	1970ies	1979	1980ies	1984	1990
<p>In 1923 La Mécanique Générale is founded in the centre of Antwerp, Belgium producing custom made gears as from the mid twenties. In '29 David Hansen joins the company: a gradual but complete shift to the production of gears &amp; gear units takes place.</p>  	<p>In 1939 the company moves to Edegem (Antwerp), more rural site but offering great opportunities for expansion.</p>	<p>David Hansen invents &amp; designs the unique "Hansen Patent" gear unit standardisation concept and founds sister-company MGH for research &amp; marketing. The company grows from a modest gear unit manufacturer into a world leader in gear technology. In '56 the 10,000<sup>th</sup> gearbox is produced.</p> 	<p>In 1966 La Mécanique Générale &amp; MGH merge into "Machinery &amp; Gears Hansen" with branches on all continents and a global distributor network. In '68 the 55,000<sup>th</sup> gear unit is assembled. By then "Hansen Patent" product demand boomed and expansion support for both mechanical equipment &amp; production halls was found with the British holding company Thomas Tilling.</p> 	<p>In 1972 a broader &amp; enforced range "Hansen Patent II" gear units, adapted to the market needs of that era is launched. In line with international expansion the name changes into Hansen Transmissions International (HTI) which becomes synonymous with innovative gear units. Sumitomo Heavy Industries becomes the Japanese licensee for "Hansen Patent gear units". In '73 HTI joins AGMA.</p> 	<p>A continuous investment policy to stay up-to-date with modern machines &amp; technologies makes HTI the trendsetter that launches its third generation of standardised gear units Hansen Power Plus. The export figure of "Hansen" in '79 is 82%.</p>	<p>In 1981 HTI wins the Belgian Export Oscar and produces the one million<sup>th</sup> gear for the 250,000<sup>th</sup> gear unit.</p> 	<p>The 60<sup>th</sup> company anniversary is marked with a new production hall for gears; technology evolves fast with e.g. Q-Manuals, PC's, CAD/CAM; first steps for expansion in S.E. Asia; HTI is 1<sup>st</sup> to install a CNC bevel gear grinder &amp; invests in new machining centres for JIT finishing of housings; British Tire &amp; Rubber (BTR) acquires Thomas Tilling.</p> 	<p>HTI is the 1<sup>st</sup> gear unit manufacturer to obtain ISO 9001 certification. 1993, HTI &amp; Brook Crompton merge into Brook Hansen. Launch of "HANSEN P4", 4<sup>th</sup> generation of gear units containing all technologically innovative baggage gathered over many years together with customers from various industries. Siebe + BTR merge into Invensys plc and HTI becomes part of the Rexnord gear &amp; power transmission division.</p> 

Dear reader,

Since 1923, Hansen Industrial Transmissions (HIT) has been at the forefront of power transmission technology. We have grown to become a world leading manufacturer of industrial gear units and of complete and reliable drive solutions from grid connection to machine shaft for a wide variety of applications in a broad range of industries. In parallel HIT offers complete servicing for all brands of industrial gear units. Today, HIT is part of Sumitomo Heavy Industries' Power Transmission & Controls Group. As such we combine the strengths of both Hansen industrial gearboxes and Sumitomo gear drives and act as single source for two of the world's most reputed brands in durable industrial gear drives. Long standing customer relations, a continuous strive for product and technology leadership and keeping pace with today's market requirements enabled us to shape and implement this complementary product merger.

Worldwide, our skilled staff, business and service partners strive for reliable excellence in industrial gearbox solutions, offering a wealth of experience and expertise, the result of years of close and interactive cooperation with a distinguished record of customers. This brochure describes how we work and the solutions & services we provide. As such it reflects our complete portfolio of Sumitomo Drive Technologies products, complete drive solutions and services. We hereby invite you to find out how we differentiate ourselves and how you can benefit from our experience and expertise, either through our website or by contacting your local representative, sales centre or one of our authorised business partners.

Hansen Industrial Transmissions nv

2001	2004	2006	2008	2010	2011	2013
<p>Invensys sells Rexnord and HTI is again an independent company within Invensys (looking for a company to acquire HTI). In 2004 HTI is acquired by Allianz Capital Partners &amp; Apax and in 2005 HTI establishes its own sales office in Shanghai, China.</p> 	<p>HTI launches the Hansen M4ACC product range for air cooled condensers, a monobloc concept designed for OEM market. A functional gear drive solution with the same strong technical features as the P4 product.</p> 	<p>HTI is acquired by Suzlon Energy Ltd. India; "Hansen Industrial Gearbox Services" is established to offer an extensive package of maintenance. HTI receives the Export Lion 2005 trophy (Best Performer category).</p>  	<p>The company in Edegem becomes HQ for HTI "Business Unit Industry" and the company celebrates its 85<sup>th</sup> anniversary.</p> 	<p>Legal entity Hansen Industrial Transmissions nv (HTI) is created.</p> 	<p>HTI is acquired by Sumitomo Heavy Industries Ltd.</p> 	<p>HIT celebrates its 90<sup>th</sup> anniversary.</p> 

### What differentiates us ?

Our mission: HIT commits to being the most dedicated and reliable partner providing industrial gearbox solutions

- by creating and supplying high quality products and offering first class after-sales service throughout the entire lifetime of customer applications
- by enhancing the talent and passion of our people to enable long-lasting partnerships.

# Application focus



## AIR COOLED CONDENSERS

A dedicated design has been developed and offers a cost efficient solution with optimised gear geometry for lower noise levels. The monobloc concept ensures higher stiffness of the housing. As a standard, these units come with a lantern housing that allows for alignment free connection of a motor on the top of the gear unit.

- B** Ref. BRM604
- C** Ref. CAM604EFDS

## WET COOLING TOWERS

For the wet cooling tower drives, we offer 11 sizes up to 100kNm, allowing an accurate selection. Designed for very humid environments, with increased distance between the propeller and high speeds shaft to reduce vibrations. The e-motor can be positioned outside the cooling tower, connected to the gearbox through a disc coupling.

- B** Ref. BRM604
- C** Ref. CAM604EFDS

## AERATORS

For gear units with vertical output shafts, the drywell (standard in Hansen P4) and the dedicated bearing arrangements are making the HIT gear units the first choice for these applications. For brush aerators, the gear units are equipped with heavy duty sealing arrangements designed for these very rough working conditions.

- B** Ref. BRM608
- C** Ref. CAM220EFDS

## SCREW PUMPS

Our industrial gearboxes are designed especially for use in screw pump applications and are supplied in parallel or right angle executions. A backstop prevents the residing water in the screw pump from rotating the pump backwards. V-belt drives connect the motor with the high speed shaft of the gear unit. Protection guards can be made according to EC Machinery Directive or OSHA (USA) standards.

- B** Ref. BRM605
- C** Ref. CAM220EFDS

## CONVEYORS

Depending on customer preferences and project necessities, such as inclined installation, environment, serviceability etc., a wide variety of gear unit package drive solutions can be provided. These may include different motor assemblies (lantern, motor base, bed plate), backstops and auxiliary drives, all part of our range of options.

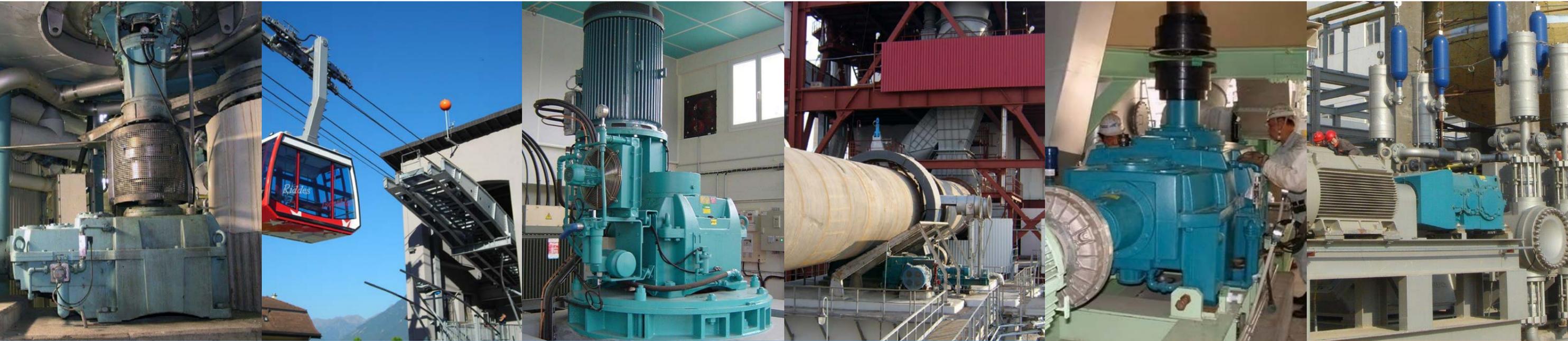
- B** Ref. BRM612
- C** Ref. CAM220EFDS

## MIXERS & FLOTATION CELLS

Complete drive packages and gear units with a large variation in overhung loads, very wide speed range and leak-free operation, suited for atmospheric or pressurized vessels in explosion proof and corrosive environments. Equipped with special designed heavy duty bearing arrangements to take up the high external forces acting on the low speed shaft. Vertical units, equipped with a drywell to avoid any oil contamination of the process. A special low speed shaft arrangement is foreseen to take up the high external forces. Low speed shaft equipped with a rifle bore for the process air.

- |                          |                          |
|--------------------------|--------------------------|
| Mixers                   | Flotation Cells          |
| <b>B</b> Ref. BRM608     | <b>C</b> Ref. CAM220EFDS |
| <b>C</b> Ref. CAM220EFDS |                          |

# Application focus



## PULP & PAPER

HIT offers its gear units and complete drive packages with dedicated designs for demanding application environment conditions with integrated features for maintenance friendly drives. An application designed sealing system for trouble-free operation is offered and low noise & vibration levels are guaranteed.

- B** Ref. BRM609
- C** Ref. CAM220EFDS

## PEOPLE TRANSPORT

For many years, HIT has been a recognized supplier of gearboxes for funicular railways, gondolas, aerial and underground tramways etc. Offering a balanced and complete range of solutions for applications in this field, reliability and durability take precedence above all else.

- Cable cars
- B** Ref. BRM619

- Ski lifts
- B** Ref. BRM631
  - C** Ref. CAM220EFDS

## WATER TURBINES

To help turbine constructors in making the best possible investment decision, HIT provides a series of gearboxes for small hydroelectric power stations. With the assistance and expertise of our in house specialists, we can answer your demands and easily determine the correct transmission ratio.

- B** Ref. BRM620
- C** Ref. CAM220EFDS

## MILLS & KILNS

HIT offers the right solution for these very demanding applications and can cater for the main drive, creep drive and required drive package components together with the application engineered lubrication and cooling system.

- C** Ref. CAM220EFDS

## TOASTERS

“Durability first” is the driver used at the development of these severe application duty gear units. Dedicated sealing and lubrication systems, control equipment as well as centralised oil drain tubing together with application oriented auxiliary drive design make the P4 gear units the second to none solution for toaster drives. HIT also delivers drive components (couplings etc.) especially designed for this application. HIT offers drives suitable to work in a well defined ATEX environment.

- B** Ref. BRM625
- C** Ref. CAM220EFDS

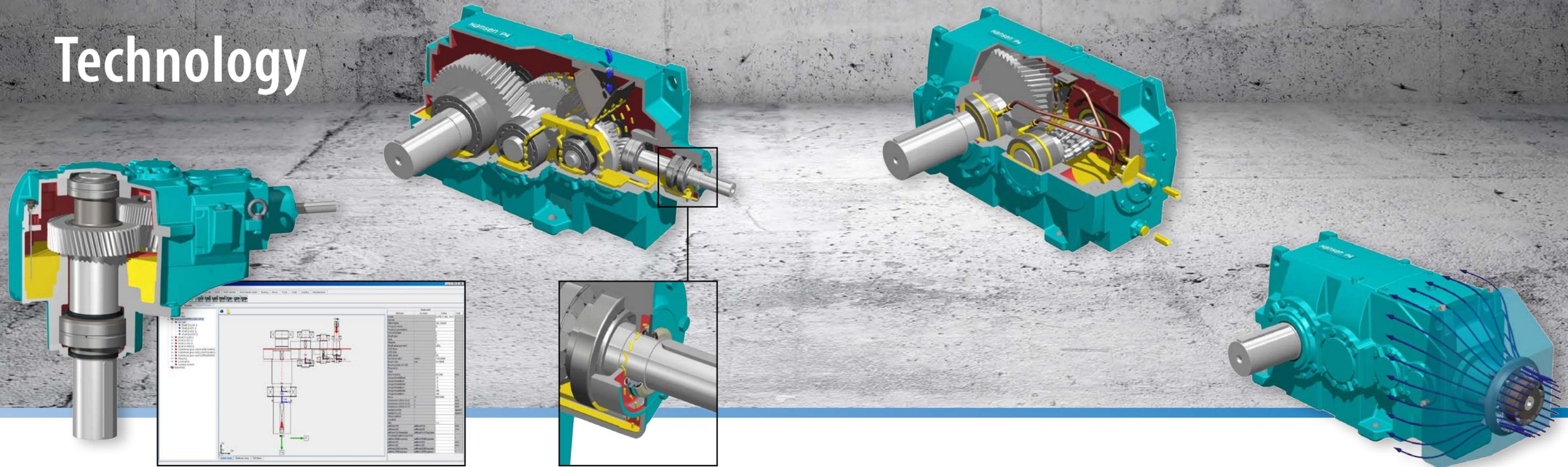
## BLOWERS, COMPRESSORS & PUMPS

Single and multistage gear units, capable of working both as a reducer and an increaser. To accommodate for the often higher speeds, special lubrication precautions have been taken.

Multi megawatt multistage drives and a range of single stage gear units especially designed to meet the requirements for vacuum pumps drives, head-box feed pumps and centrifugal pump drives are available.

- |   |                          |
|---|--------------------------|
| Blowers & Compressors                   | Pumps                    |
| <b>C</b> Ref. CAM220EFDS                | <b>C</b> Ref. CAM233EFDS |
| <b>C</b> Ref. CAM233EFDS (single stage) | <b>C</b> Ref. CAM626E    |

# Technology



## APPLICATION ORIENTED SOLUTIONS

Gearboxes to exactly match application demands:

- dedicated horizontal and vertical housings
- enlarged housings for increased thermal rating
- integrated drywell for vertical applications
- vertical housings with mounting feet symmetric around low speed shaft to evenly distribute loads
- increased bearing span for robustness against overhung loads
- optimized bearing configurations
- non-standard ratios
- different shaft arrangements possible
- easy painting system selection (corrosion category)

## ADVANCED CALCULATION SOFTWARE

WinCarat, HIT's advanced calculation tool, is used for calculation of mechanical and thermal rating, bearing lifetime, effect of overhung loads, bearing and shaft frequencies, estimation of noise level, re-lubrication intervals, etc.

WinCarat enables fast and reliable optimization of the gear unit design compliant to customers' requirements.

## NEVER A DRY START-UP

Centralized oil filling in P4 gear units guarantees initial oil lubrication at start-up. During operation, optimized splash lubrication with oil flow through the bearings is assured.

## MAINTENANCE FREE SEALING SYSTEM

The unique Oil-lock™ system, standard on all P4 gear units, offers a maintenance free sealing on the high speed shaft extension. It is designed to keep the oil in and dirt out without the need for expensive periodic maintenance interventions.

## OPTIMIZED LUBRICATION SYSTEMS

For high-power gear units and increased speeds, a controlled oil supply to gears and bearings, assuring maximum cooling effect and lubrication efficiency, allows reducing the necessary oil volume in the gear unit and leads to an optimized thermal behaviour.

## OPTIMIZED COOLING FEATURES

Standard available solutions for optimal cooling to increase thermal rating and reduce gearbox temperature:

- radial or axial fan(s)
- motorized fan
- cooling coil (seawater resistant is standard)
- oil-to-air cooler
- oil-to-water cooler

Selection depending on customers' preferences and application requirements.

## What differentiates us ?

- dedicated **horizontal and vertical** housing design
- split plane **above oil level** for easy maintenance
- low noise and vibration levels
- customized solutions - Fit for purpose
  - full technical support
  - think with the customer



# Products



**HANSEN P4**  
MULTI STAGE



**HANSEN P4**  
HEAVY DUTY SINGLE STAGE



**HANSEN P4**  
SINGLE STAGE



**HANSEN M4 ACC**



**PARAMAX®**



**HANSEN I4**



## HANSEN P4 MULTI-STAGE GEAR UNITS

- 19 standard sizes with torque ratings from 6 to 1100 kNm
- reduction ratios from 6.3 to 630
- specific housings for horizontal and vertical applications – both with horizontal split
- solid or hollow low speed shaft
- parallel or right angle shaft configuration
- standard options: lantern housing, cooling devices, instrumentation
- contact us for special options

**B** Ref. SMM405

**C** Ref. CAM220EFDS

## HANSEN P4 SINGLE STAGE GEAR UNITS

- available in 5 sizes and in parallel horizontal configuration
- variable centre distances
- monobloc units available in sizes C through G
- power ratings from 100 kW up to 4 MW
- reduction ratios between 1.2 and 5.6

**C** Ref. CAM233

## HANSEN P4 HEAVY DUTY SINGLE STAGE GEAR UNITS

- available in 4 sizes in parallel horizontal configuration
- power rating up to 12 MW
- reduction ratios between 2.5 and 5.6.
- extension to the single stage offering
- predesigned ratio available within 1% of the requested ratio
- dedicated pressure lubrication system

**C** Ref. CAM626

## PARAMAX®

- torque ratings from 2.6 to 552 kNm
- parallel right angle shaft configuration
- reduction ratios from 6.3 to 500
- cost efficient solution
- standard options: lantern housing, cooling devices, instrumentation

**C** Ref. SMM999345

**C** Ref. G2002E

## HANSEN M4 ACC AIR COOLED CONDENSER DRIVES

- monobloc housing – available in 6 sizes
- torque range from 20 to 70 kNm
- wide range of reduction ratio's.
- complies with standard spec for gear units of the Cooling Technology Institute
- helical gear design (AGMA) for maximum load capacity, minimum losses & quiet operation
- low speed shaft bearings allow considerable thrust loads
- low speed shaft with drywell construction
- optional built in backstop prevents fan from “windmilling”
- cost effective, efficient solution for air-cooled steam condensation plants

**C** Ref. CAM604EFDS



**➔** for applications ▶ see page 4

## HANSEN I4 INVERTIBLE GEAR UNITS

- horizontal right angle configuration with horizontal split housing
- available in 6 sizes from 6 to 108 kNm
- reduction ratios from 6.3 to 90
- no need for separate drives for left & right hand orientation of gear unit drives on multiple drive conveyors
- decrease of stock number for spare gear units: significant cost and space savings
- standard options include lantern housing, labyrinth seals & baseplate

**What differentiates us ?**

- focus on industrial gearbox solutions
- application oriented product ranges
- engineered-to-order philosophy
- low maintenance product concepts
- complete drive package solutions

# Completing our gearbox portfolio



PLANETARY



HIGH SPEED



BUDDYBOX



CYCLO DRIVE 6000

## SEISA DRIVES

### HIGH SPEED GEAR DRIVES

- 14 standard frame sizes
- equipped with plain bearings
- special application specific layouts possible
- standard options: turning device, lubrication / cooling unit, vibration monitoring, ...

### PLANETARY & BEVEL PLANETARY

- 26 standard sizes with torque ratings from 0.5 to 736kNm
- reduction ratio's from 5 to 1400
- solid or hollow low speed shaft
- special application specific layouts possible, even for higher torques (up to 11.750kNm)

➔ for additional information ▶ [www.seisa.co.jp](http://www.seisa.co.jp)

## COMPLETING OUR GEARBOX PORTFOLIO

### CYCLO BEVEL BUDDYBOX®

- ratios from 21:1 to 2.599:1
- torque ratings from 226 Nm to 18.000 Nm
- power: 0.12 to 30 kW

➔ for additional information ▶ [www.sumitomodrive.com](http://www.sumitomodrive.com)

### CYCLO HELICAL BUDDYBOX®

- ratios from 21:1 to 2.599:1
- torque ratings from 47 Nm to 11.568 Nm
- power: 0.12 to 30 kW

➔ for additional information ▶ [www.sumitomodrive.com](http://www.sumitomodrive.com)

### CYCLO DRIVE 6000

- ratios from 6:1 to 119:1 (single stage – 34 sizes)  
104:1 to 7.569:1 & larger (two-stage – 56 sizes)
- torque ratings from 7,5 Nm to 68.200 Nm
- power: 0.12 to 55 kW

➔ for additional information ▶ [www.sumitomodrive.com](http://www.sumitomodrive.com)

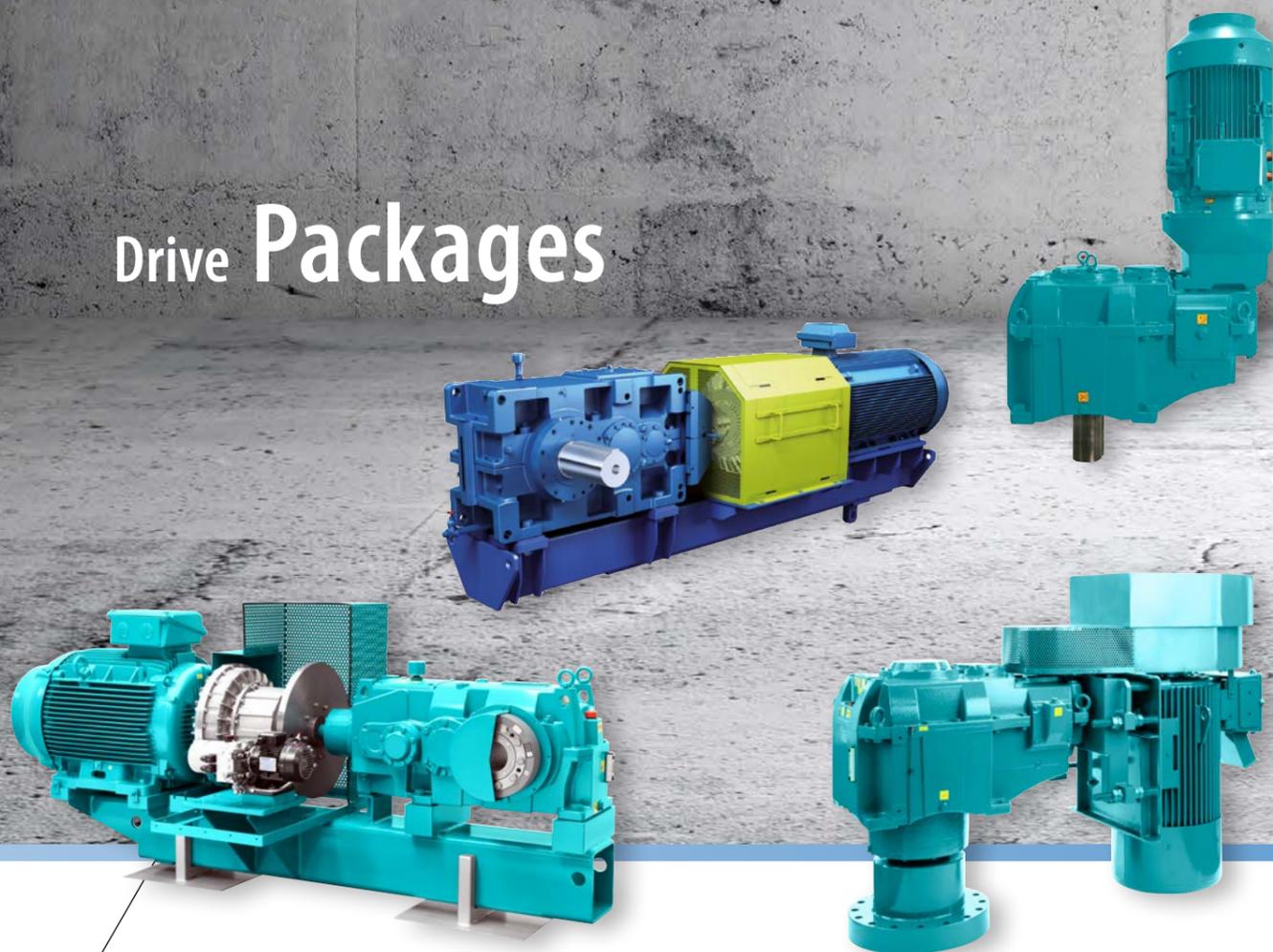
### ELECTRIC MOTORS

➔ for additional information ▶ refer to factory

### COUPLINGS & BRAKE SYSTEMS

➔ for additional information ▶ refer to factory

# Drive Packages



## COMPLETE DRIVE PACKAGES

### HORIZONTAL CONFIGURATION

Frequently used in conveyor systems, mill drives, extruders, pumps and various material handling operations, horizontal drive packages consist of a parallel or right-angle gear unit, input and output coupling and an electric motor, mounted on a common bed or base plate. Other configurations may include lantern housings for flange motors, hydraulic couplings, V-belt transmissions, etc. ...

Additional features can be incorporated:

- auxiliary drives may include an in-line or right-angle geared motor connected to the main drive by chain, freewheel or clutch coupling
- disc or drum brakes
- foot- or shaft mounting of the drive package using a hollow shaft or a flange coupling.

### VERTICAL CONFIGURATION

Many applications e.g. mixers and agitators, surface aerators, etc. require a vertical output shaft configuration.

A typical vertical drive package consists of a parallel gear unit fitted with a lantern housing to accommodate a flange motor, a flexible input coupling and a rigid flange output coupling.

Other configurations include:

- standard gear units with increased bearing span or a variety of optional bearing/output shaft arrangements to absorb a wide range of external loads.
- designs with hollow output shaft arrangements, V-belt connections between the motor and the input shaft of the gear unit and variable speed drives, either electronic or mechanical.

# Industrial Gearbox Services



ALL BRANDS



## INDUSTRIAL GEARBOX SERVICES

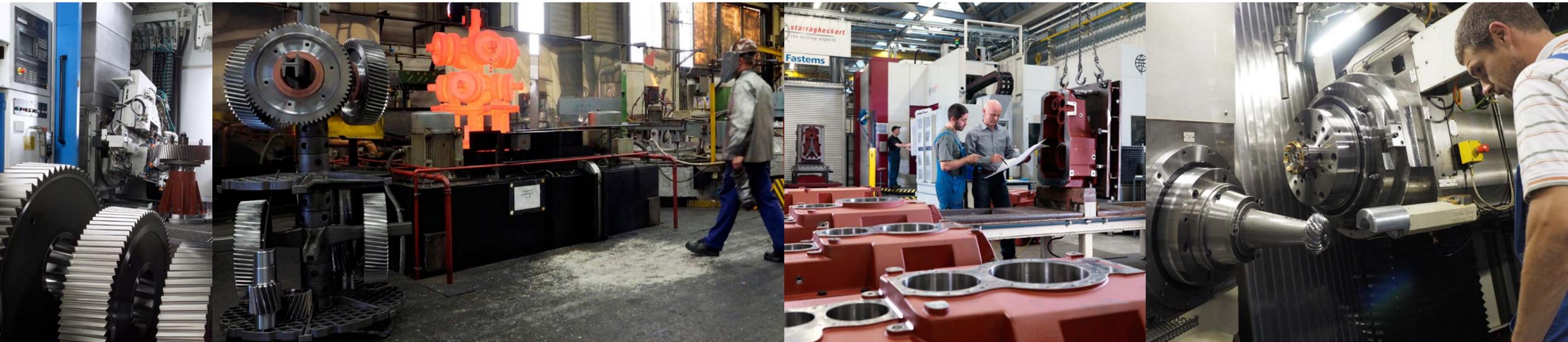
- spare parts & repairs for HIT & Non-HIT gear units (obsolete & non-obsolete)
- all-in-one spare kits (refer to factory)
- breakdown management
- on-site interventions
- repairs in-house & on-site
- separate in-house production facility for spare parts
- large technical expertise & dedicated resources
- global network Authorised Service Partners



### What differentiates us ?

- we service all brands of industrial gearboxes
- Plug & Play solutions for obsolete gear units
- +90 years of gear technology experience
  - dedicated 24/7 service hot-line  
+32 3 450 1234
- predictive & preventive maintenance programs
  - customised spare parts management
- in-house & on-site customer expert training programs

# Production



Both employee and system flexibility are essential to productivity. Highly skilled machine operators can run a variety of machines, depending on the customers' orders and workload. Employee training is strongly emphasized and concentrates on

- Quick Response Manufacturing (QRM) with focus on shortening lead times
- Total Productive Maintenance (TPM) increasing machinery availability
- Single Minute Exchange of Dies (SMED) decreasing set up times
- Six Sigma for faultless manufacturing processes
- 5S to monitor work efficiency and cleanliness

## What differentiates us ?

- in-house expertise ensuring quality of raw materials such as cast iron & steel
- state-of-the-art and in-house technology for heat treatment, cylindrical & closed loop bevel gear grinding and machining of housing
- systematic re-evaluation of working methods' efficiency and cost
- top notch productivity with the latest in CAD/CAM flexible manufacturing systems and CNC machinery



# A standard of quality



## QUALITY THROUGHOUT

Every aspect of our activities starting with the system operators till our after sales services offering is impregnated by a total commitment to quality. Both gear & housing manufacturing dispose of a fully equipped and air conditioned test lab. In-house test facilities are used for load testing and measuring.

Fully committed to total quality assurance, Hansen Industrial Transmissions in 1991 was the first in its industry to receive the ISO 9001 certificate for its quality management system.



## Sumitomo Drive Technologies



181 Power Street, Glendenning, New South Wales

T. +(61)2-9208-3000

F. +(61)2-9208-3050

E. [shau.sales@shi-g.com](mailto:shau.sales@shi-g.com)

[www.hansenindustrialgearboxes.com](http://www.hansenindustrialgearboxes.com)

