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Drive India

The SEW-EURODRIVE Customer Magazine

SEW EURODRIVE

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IoT Suite for IG

Dear Reader

The low interest and easy money macroeconomic environment that has been the norm for the last 14 years is ending decisively, both globally and in India. This is going to throw up a new world for business, and we look forward to the challenges and opportunities this new world will bring. An easing of demand will hopefully sort out the pricing and delivery challenges on the supply side, and customers can go back to buying what delivers value rather than what is available.

While the majority of our business comes from supply of products to equipment manufacturers, we have been nurturing a deepening engagement with End Users. For sure with End Users who use equipment with SEW products installed, but also to provide solutions on equipment with non-SEW products where there are problems. Our customer story in this issue features Lonsen-Kiri, a Gujarat based manufacturer of reactive dyes, where our engineering team was able to retrofit a problem gearbox with an SEW customised solution to the customer's complete satisfaction.

Our Product Story features our range of Planetary gearboxes and the features that make them unique.

Our feature article in the last issue talked about the immediate benefits we are able to provide customers with the first, free-to-use, layer of our digital interface with our products. In this issue we talk about DriveRadar® for Industrial Gearboxes, the first of our product specific rollouts for a comprehensive 24*7 fully integrated, condition monitoring system.

M J Abraham
Managing Director, SEW-EURODRIVE India

SEW gear unit solves major noise problem for Lonsen Kiri

SEW-EURODRIVE has retrofitted an existing Cycloid gearbox with SEW MC gear unit to solve a major noise problem in an agitator application at Lonsen Kiri Chemical Industries. Lonsen Kiri Chemical Industries Ltd. (LKCIL), located in Dudhwada near Vadodara in Gujarat, manufactures reactive dyes. Lonsen Kiri is a joint venture company incorporated in 2008 between China-based Zhejiang Lonsen and India-based Kiri Dyes.

A noise problem

Lonsen Kiri has a critical agitator application as part of their process where a batch has to run for 18 hours continuously in the agitator. The agitator, supplied by OEM, was powered by a Cycloid gearbox. The gearbox ran smoothly up to an output speed of 40 rpm (30 Hz supply to motor), but over this speed there was a huge noise that made the customer very worried about premature, in-process breakdown. As a result the customer could not run the application above 40 rpm which was suboptimal both for the application requirement as well as energy efficiency of the driving motor.

Challenges for the SEW team

Agitator is one of the critical applications in making dyes. Selecting a gearbox for this application requires important technical input like axial and radial loads. No such data was available to Lonsen Kiri from the OEM who had supplied the equipment. Modification of the existing lantern housing of the agitator was also not viable, which ruled out fitment of a standard, off-the-shelf SEW product.

SEW's challenge was to get accurate technical data to select an appropriate gear unit by studying the running application, and to design and supply a non-standard gear unit that did not call for modification of the existing lantern housing on the agitator.

Solution

SEW engineers worked jointly with Lonsen Kiri to accurately evaluate the required agitator technical details. Based on their rich experience in similar agitator applications, SEW suggested a robust, mono-block MC series gear unit with a modified output flange to fit the lantern housing and an IEC motor adaptor on the input side to enable the customer to use the same motor of the original layout. SEW team delivered a value added solution with an additional sandwich plate and a special LSS (Low Speed Shaft) so that no modification was needed in the customer equipment.

Customer benefits

– Cost reduction and quality improvement by running at optimal process rpm
– Energy saving by running the motor at optimal rpm
– Noise-free running
– Reduced maintenance and increased uptime
– Peace of mind for customer

Aftermath

The new SEW installation has run smoothly and without problems over the last 3 years. After experiencing the results, Lonsen Kiri has replicated this solution on two other similar agitators on their shop-floor. All three agitators are now running smoothly with the SEW solution.

Technical Specification:

– Gear unit Type: MC3PVST05
– Gear unit Ratio: 22.58
– Motor Power: 37 kW
– Operating Torque: 7780 Nm
– Service Factor: 1.99

> We appreciate entire SEW team for thoroughly studying application having noise problem of Cycloid gearbox in our RA 103 agitator and supplying SEW Gear Unit which eliminates the problem and running efficiently as per process requirements.
>
> **Hemant Kulkarni, Asst. Manager, Lonsen Kiri Chemical Ind. Ltd.**

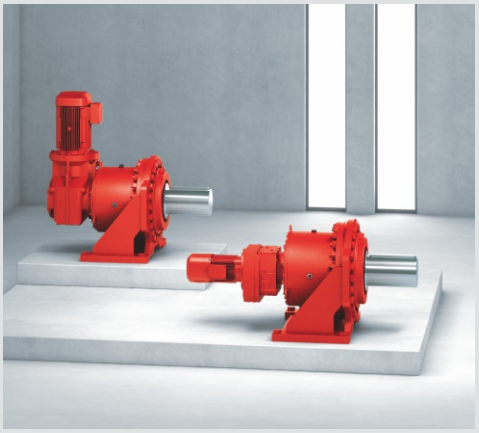
Powerful, reliable and compact: SEW planetary gear unit range covers the entire industry requirement

Conventionally, the low output speed and high torque requirement of several common applications could be achieved only by using huge transmission and gear trains or a standalone custom-built, planetary gearbox.

Today, such drives are implemented using the SEW compact, standardised planetary gear unit (P series – 2 stage planetary with 20 or 40 gear ratio) in combination with our geared motor or X series gearbox. This combination permits standardisation of the planetary unit and increases the nominal gear unit torque up to 25% resulting in space and cost savings. SEW P series units are designed to directly mount our geared motor or X series gearbox on the input side of the planetary gear unit. Couplings, intermediate flanges and adapter flanges that take up space and increase cost are eliminated.

For really heavy duty applications, SEW XP series units are customised, standalone planetary gearboxes from 2 to 4 stages with a wide range of gear ratios.

P Series
Workhorse



SEW powerful and reliable P series in combination with a 2 or 3 stage geared motor deliverers the low output speed and high torque requirements of applications in process plants like apron conveyors, slewing and pivoting gear units in bulk material handling applications, mixtures, rotary fillers, etc.

Benefits

– Transmission of high torque
– Compact design
– High permitted radial load

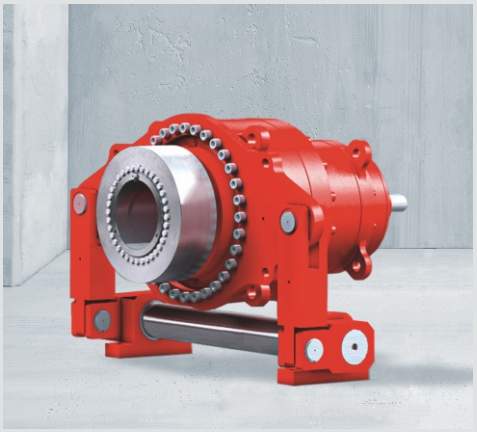
PX Series
High power density

The need for a compact, cost effective solution with high thermal rating can be fulfilled by SEW P series units in combination with a 2 stage X series bevel-helical gear unit on the input side. This combination solves the high torque requirement of many applications in bulk material handling, cement, pulp & paper, timber and recycling technology.

Benefits

– High thermal rating
– Compact design saves space
– Reduced inventory cost due to invertible housing
– Universally applicable due to distinctive modular technology

XP Series
Strong series



Highest torque requirement of heavy applications like raw material processing, heavy material handling, sugar, mixture & agitator can be fulfilled by extremely space saving, robust & reliable planetary gear unit XP series having a free input shaft.

Benefits

– Highest torque with space saving construction
– Standalone compact gear unit with free input shaft
– High flexibility with various output shaft variants including square shaft

Technical Specifications

Gear Unit Type	Stages	Gear ratio (i)	Nominal Torque kNm
P series	4 and 5 stages	100 - 4000	25 - 631*
PX series	4 stages	160 - 550	100 - 500
XP series	2, 3 and 4 stages	22 - 3600	600 - 5200

*for a defined service life

Map the future of your gearbox performance with DriveRadar® IoT Suite for IG

In conversation with Shani Parikh, Manager - SEU at SEW India, Drive India finds out how DriveRadar® IoT Suite for IG, a comprehensive, real-time condition monitoring system for industrial gear units from SEW-EURODRIVE can be used to significantly reduce downtime and maintenance costs, while at the same time increasing the service life of the gear unit.

What is DriveRadar® IoT Suite for Industrial Gears?

SEW-EURODRIVE industrial gear units are precision mechanical products used in a wide variety of industrial applications, often massive, running 24*7, and trusted at the heart of critical processes like feeding a blast furnace or driving the rubber mixer at the start of a tyre manufacturing line. These are hugely demanding, capital intensive applications where an ability to monitor the condition of the gearbox in real time with the sophistication to predict when any intervention is required would pay for itself handsomely in enhanced uptime, optimal maintenance costs and increased service life.

DriveRadar® IoT Suite for IG is a complete data collection and analysis tool which does exactly that. With an industrial gear unit from SEW, equipped with sensors from SEW, and with the DriveRadar® IoT Suite for IG from SEW, a customer with a critical application has complete confidence of an integrated package for optimum performance, predictability and reliability that the Industry 4.0 landscape enables.

DriveRadar® IoT Suites focuses on Condition Monitoring and Predictive Maintenance management that collects data digitally, evaluates this incoming data with reference to the constantly updated SEW global design database, predicts events and based on set parameters gives action or alarm notifications.

How is data acquired in DriveRadar® IoT Suite for Industrial Gears ?

Each installation has a high quality hardware package, which includes an edge processing unit and sensor technology which enables continuous, real-time condition monitoring.

This involves continuous recording of a wide range of system parameters like

– Operating hours
– Input speed and direction of rotation
– Vibration behaviour of rolling bearing and gearing

– Oil level
– Oil temperature
– Oil viscosity
– Electronics temperature
– Ambient temperature

The edge processing unit (EPU) is used to record and send the data to the SEW cloud.

How does data analysis work in the DriveRadar® IoT Suite for Industrial Gears?

The DriveRadar® IoT Suite for IG is the central application to monitor industrial gear units, do automatic analysis and evaluation using algorithm and machine learning on SEW-EURODRIVE servers.

Closing the information loop, the smartphone app for Android and iOS is the ideal way to get notifications from the DriveRadar® IoT Suite for IG for the user. The user has the option of being notified about any changes in the status of the application at any time via the app.

What are the benefits to the customers?

– Accurately predicts deterioration or imminent damage
– Protects against unplanned downtimes
– Enables precise interventions during planned downtimes to maximise component life
– Knowing replacement components required enables precise spare part management
– Easy to use and no high level of skills required
– Direct access to SEW for support through the app itself
– All of this leads to maximum uptime, maximum service life and optimum operating costs

What is the current status of DriveRadar® IoT Suit Industrial Gears project?

DriveRadar® IoT Suite for IG rolled out globally over the last year and can be used for new and existing helical and bevel-helical industrial gear units of the X series. Over a period of time it will be rolled out for all SEW industrial gear units.

Is DriveRadar® IoT Suite available for other products apart from Industrial Gears ?

DriveRadar® IoT Suite for IG is the first release under the umbrella brand 'DriveRadar®' from SEW which will eventually cover the entire SEW product range. By 2023 we will be releasing DriveRadar® IoT Suite for Inverters and Controllers. Geared motors, Electronic drives and Controllers will be primary source of condition information of the system (application). Condition information is digitized, coordinated and stored in the form of IoT data in our DriveRadar® network to provide following services.

– Condition monitoring
– Predictive maintenance
– OEE optimization & services