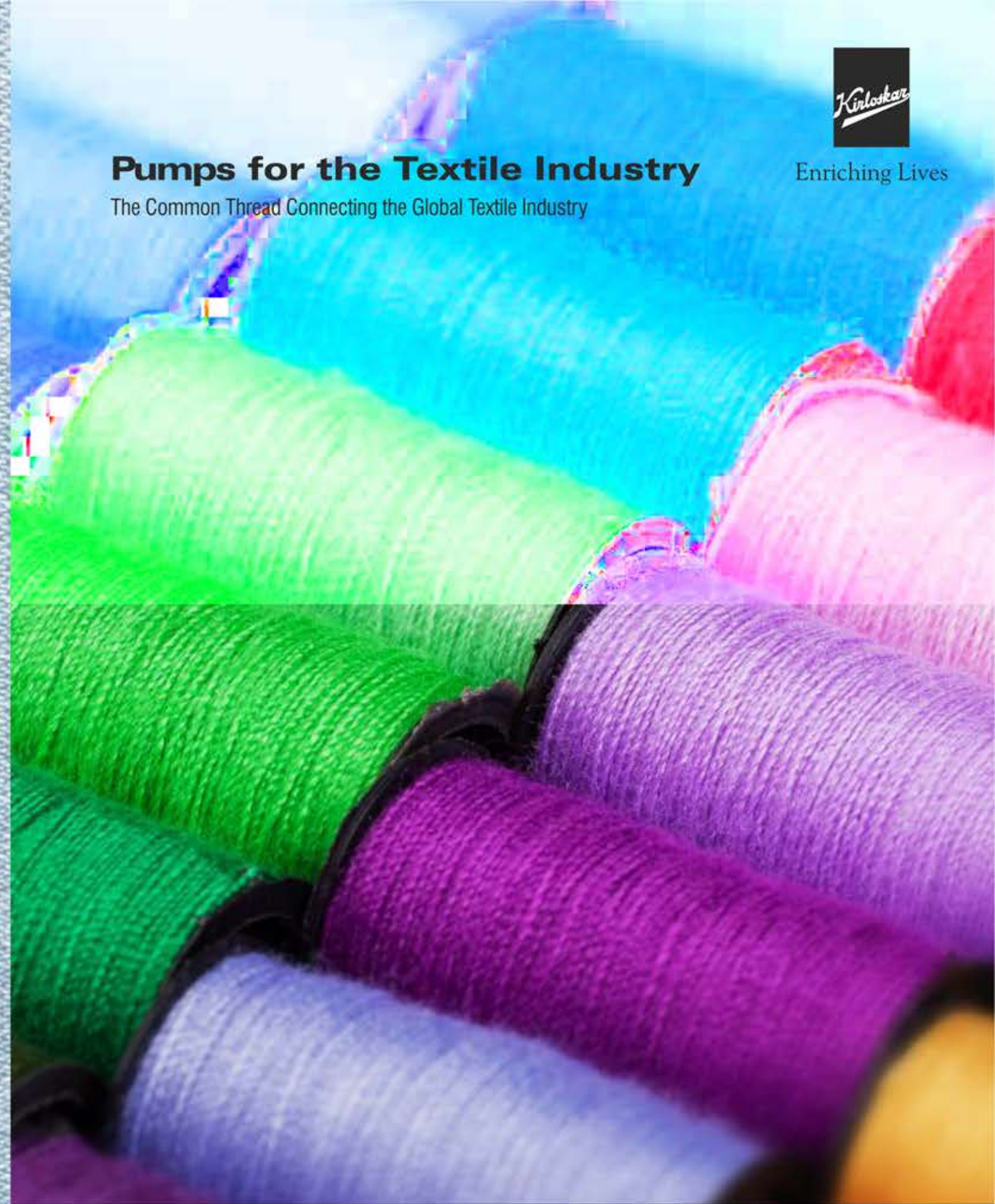




Enriching Lives

Pumps for the Textile Industry

The Common Thread Connecting the Global Textile Industry



Enriching Lives

KIRLOSKAR BROTHERS LIMITED

A Kirloskar Group Company
Established 1888

OUR COMPANIES



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KIRLOSKAR BROTHERS LIMITED

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Why Kirloskar?

- Optimised pumping solutions across market segments from concepts to commissioning
- Largest manufacturer and exporter of centrifugal pumps from India
- Provider of energy efficient pumping solutions to core sectors
- State-of-the art integrated manufacturing facilities
- Manufacturer of the largest pumps by size and horsepower in India
- Commands the highest market presence amongst pump manufacturers in India

Kirloskar Brothers Limited (KBL) is a world-class manufacturing company with expertise in engineering and manufacture of systems for fluid management.

Kirloskar Brothers Limited was established in 1888 and incorporated in 1920, KBL is the flagship company of the \$ 2.1 billion Kirloskar Group. KBL, a market leader, provides complete fluid management solutions in the areas of water supply, building & construction, power plants, industry, irrigation, oil & gas and marine & defence. We engineer and manufacture industrial, agriculture and domestic pumps, valves and hydro turbines.

In 2003, KBL acquired SPP Pumps, United Kingdom and established SPP INC, Atlanta, USA, as a wholly owned subsidiary of SPP, UK, to expand its international presence. In 2007, Kirloskar Brothers International B.V., The Netherlands and Kirloskar Brothers (Thailand) Ltd., a wholly owned subsidiary in Thailand, were incorporated. In 2008, KBL incorporated Kirloskar Brothers Europe B.V. (Kirloskar Pompen B.V. since June 2014), a joint venture between Kirloskar International B.V. and Industrial Pump Group, The Netherlands. In 2010, KBL further consolidated its global position by acquiring Braybar Pumps, South Africa. SPP MENA was established in Egypt in 2012. In 2014, KBL acquired SyncroFlo Inc., the largest independent supplier of commercial and municipal domestic water booster pumps.

To further strengthen its global position, in 2015, Kirloskar Pompen B.V. acquired Rodelta Pumps International, The Netherlands.

KBL has joint venture cooperation with Ebara, Japan since 1988 for the manufacture of API 610 standard pumps & multistage pumps. Kirloskar

Corrocoat Private Limited is a joint venture between KBL and Corrocoat, UK since 2006. KBL acquired The Kolhapur Steel Limited in 2007 and Hematic Motors in 2010.

KBL has eight manufacturing facilities in India at Kirloskarvadi, Dewas, Kondhapuri, Shirwal, Sanand, Kaniyur, Kolhapur and Karad. In addition, KBL has global manufacturing and packaging facilities in Egypt, South Africa, Thailand, The Netherlands, United Arab Emirates, United Kingdom and United States of America. KBL has 12,700 channel partners in India and 80 overseas. KBL also has widest network of authorised service centres and authorised refurbishment centres across the country.

All the manufacturing facilities of KBL are certified for ISO 9001, ISO 14001, ISO 50001, BS OHSAS 18001 and SA8000. In addition, the Kirloskarvadi plant is also certified for N & NPT Stamp. KBL's corporate office in Pune is certified for ISO 9001 & SA8000.

The factories deploy total quality management tools using European Foundation for Quality Management (EFQM) model. The Kirloskarvadi plant of KBL is a state-of-the-art integrated manufacturing facility having Asia's largest hydraulic research centre with testing facility up to 5000 kW and 50,000 m³/hr.

KBL is the ninth pump manufacturing company in the world to be accredited with the N and NPT certification by American Society of Mechanical Engineers (ASME).



KBL in Textile Industries

KBL is a world-class pump manufacturing company with expertise in fluid management solutions for various applications in the textile processing.

We offer an extensive range of high quality process and utility pumps for the textile industries.

With the textile industry being water intensive, optimum utilisation of water and available energy resources holds prime importance in the industry. In this industry, water is majorly consumed during chemical (wet) processing of textiles, steam generation, humidification (spinning process) and other utility purposes as well as in water treatment plants and cooling towers.

KBL offers complete end-to-end pump solutions for various processes in the textile industries, such as intake, utility, effluent treatment, boiler feed and fire-fighting. These solutions are eco-friendly, user friendly and ensures high reliability. They offer low life cycle cost and substantial energy savings.



Our Strengths

- Comprises one of Asia's largest Hydraulic Research Centres with state-of-the-art testing facilities
- Manufacturer of large split case pumps
- Manufacturer of large vertical turbine pumps
- Manufacturer of concrete volute pumps
- Manufacturer of large size valves
- Sump model testing and actual scaled down model
- Executing large turnkey projects from concept to commissioning
- Service network – 24x7

Applications and Services

- Intake
- Intake & Utility
- Utility
- RO System
- Process-Dyeing and Washing
- Utility & Process
- Pressure Boosting System
- Effluent Treatment Plant
- Thermopac
- Boiler Feed Pump
- Fire Fighting Pumpset
- Energy Audit
- Lowest Life Cycle Cost (LLC)TM Pump
- Customer Service & Spares

Intake

Vertical Turbine Type - VT



Features:

- Dry pit/wet pit arrangement available
- Low submergence
- Gland packed/Mechanical seal
- 50Hz/60Hz availability
- Radial/Axial/Mixed Flow Type

Operating Range:

- Delivery size: 150 mm to 2200 mm
- Capacity: Up to 45,000 m³/hr
- Head: Up to 240 metres
- Temperature: (-)10° C to 90° C

Intake & Utility

Split Case - UP



Features:

- Gland packed/Mechanical seal
- 50Hz/60Hz availability
- Good suction performance and low NPSH
- Vibration free performance
- Vertical option available

Operating Range:

- Delivery size: 50 mm to 1200 mm
- Capacity: Up to 25,000 m³/hr
- Head: Up to 160 metres
- Temperature: (-)10° C to 90° C

Split Case - SCT



Features:

- Pump axis horizontal or vertical
- Gland packed/Mechanical seal
- 50Hz/60Hz availability
- Stable Characteristics

Operating Range:

- Delivery size: 50mm to 350 mm
- Capacity: Up to 4500 m³/hr
- Head: Up to 330 metres
- Temperature: (-)10° C to 100° C

Utility

End Suction Type - DB



Features:

- Back pull out design
- Single Stage, Single Suction, Horizontal Shaft type
- Gland Packed/Mechanical Seal
- 50Hz/60Hz availability

Operating Range:

- Delivery size : 32 mm to 300 mm
- Capacity: Up to 1900 m³ /hr
- Head: Up to 35 metres
- Temperature: (-)10° C to 90° C

End Suction - Mixed Flow Type - MF



Features:

- Low head, high capacity pumps
- Gland packed/Mechanical Seal
- 50Hz/60Hz availability
- Option available in horizontal as well as vertical delivery position

Operating Range:

- Delivery size: 200mm to 650mm
- Capacity: Up to 7000 m³ /hr
- Head: Up to 30 metres
- Temperature: 5° C to 140° C

RO System

Inline Vertical - KCIL/KSIL



KCIL

KSIL

Features:

- Energy efficient, superior hydraulics
- Reliable cartridge mechanical seal
- Corrosion resistant
- Compact, lightweight and durable
- IE2 efficiency class motor

Operating Range:

- Delivery size: Up to 100mm
- Capacity: 0.4 to 240 m³ /hr
- Head: 6 to 323 metres
- Temperature: (-)20° C to 120° C

Process-Dyeing & Washing

End Suction Process Pump Type - KPD



Features:

- Back pull out design
- Oil lubricated bearings
- Top Centre line delivery
- Gland Packed/Mechanical seal
- 50Hz/60Hz availability
- Foot/centreline mounting

Operating Range:

- Delivery size: Up to 350mm
- Capacity: Up to 1550 m³/hr
- Head: Up to 225 metres
- Temperature: (-)50° C to 350° C

Sump Pump Type - KPDS



Features:

- Vertical submerged, single stage, single suction pump
- Vertical shaft arrangement
- Side discharge pump with space saving installations

Operating Range:

- Delivery size: 20 mm to 200 mm
- Capacity: 0.5 to 750 m³/hr
- Head: Up to 150 metres
- Temperature: Up to 90° C

Utility & Process

End Suction Pump Type - CPHM



Features:

- Confirming to DIN 24256/ISO 2858
- Back pull out design
- Gland Packed/Mechanical Seal
- 50Hz/60Hz availability

Operating Range:

- Delivery size: 20 mm to 200 mm
- Capacity: Up to 750 m³/hr
- Head: Up to 150 metres
- Temperature: (-)30° C to 90° C

Pressure Boosting System

Hydro Pneumatic System - HYPN



The Pressure boosting pump system keeps desired pressure in the pipeline at par with demand from multiple loads. These kind of systems are useful in case of varying water requirement. The total water requirement is divided by multiple pumps, which run in parallel with variable speed drives. As per demand, number of pumps as well as speed will vary for facilitating optimisation of energy.



Types of system:

- Constant speed with pressure tank
- Cascade System-MX (Only 1 VFD common to all pumps)
- All Pump VFD System-EX (all pumps having their individual VFD)

Our Offerings

Pumps

Long and short coupled pumps, Single and double suction pumps, Vertical inline multistage pumps, Horizontal multistage pumps and Submersible pumps

Motors

IE2 and premium efficiency

Control Panel

Wall and floor mounted panels

Accessories

Skid (Suction and Discharge header, NRVs, Isolating valves, Pressure switch/Pressure transmitter), Pressurized tank, Solenoid valves, Float switches

Service Backup

24x7 Service backup, Energy audit, Operation and Maintenance Contract

Wide Range of Pump Offering for Pressure Boosting System:

End Suction Pumps



Specifications and Feature

System Flow	Up to 5000 m ³ / hr (22000 USgpm)
System Head	Up to 120m (394 ft)
Liquid Temperature	(-)20° C to (+)100° C
Frequency	50Hz/ 60Hz
Mounting	Skid/Customized Mounting
Casing	Cast Iron/Cast Steel/CF8M(SS)
Impeller	Cast Iron/Bronze/Cast Steel/CF8M(SS)

Split Case Pumps



Specifications and Feature

System Flow	Up to 10000 m ³ / hr (44000 USgpm)
System Head	Up to 240m (788 ft)
Liquid Temperature	(-) 20°C to (+)100°C
Frequency	50Hz/ 60Hz
Mounting	Skid/ Customized Mounting
Casing	Cast Iron/Cast Steel/CF8M(SS)
Impeller	Cast Iron/Bronze/ Cast Steel/CF8M(SS)

Vertical Multistage Pumps



Specifications and Features

System Flow	Up to 400 m ³ / hr (1760 USgpm)
System Head	Up to 240m (788 ft)
Liquid Temperature	(-) 20°C to (+)120°C
Frequency	50Hz/ 60Hz
Mounting	Skid/Customized Mounting
Pump head and Base	CI/ SS
Impeller	SS304/SS316 (All wetted parts)

Horizontal Multistage Pumps



Specifications and Features

System Flow	Up to 4000 m ³ / hr (17600 USgpm)
System Head	Up to 850m (2788 ft)
Liquid Temperature	(-) 20°C to (+)100°C
Frequency	50Hz/60Hz
Mounting	Skid/Customized Mounting
Casing CF8M(SS)	Cast Iron/Cast Steel/CF8M(SS)
Impeller	Cast Iron/Bronze/ Cast Steel/CF8M(SS)

Effluent Treatment Plant

End Suction Solid Handling Pump Type - SHM/SHL



Features:

- Solid size up to 105 mm
- Back Pull out design
- Gland Packed/mechanical seal
- Available in vertical execution
- 50 Hz/60 Hz available

Operating Range:

- Deliver size: Up to 200 mm
- Capacity: Up to 800 m³ /hr
- Head: Up to 90 metres
- Temperature: (-)10° C to 140° C

Submersible Pump Type - i-NS



Features:

- Impellers are with two or multi vanes in semi open and enclosed type
- Permissible solid size up to 100 mm
- Double mechanical seal with back to back arrangement
- 50Hz/60Hz availability

Operating Range:

- Delivery size: Up to 150 mm
- Capacity: Up to 300 m³ /hr
- Head: Up to 50 metres

Sump Pump Type - SHS



Features:

- Vertical submerged, single stage, single suction pump
- Vertical shaft arrangement
- Side discharge pump with space saving installations

Operating Range:

- Delivery size: Up to 300 mm
- Capacity: Up to 1500 m³ /hr
- Head: Up to 90 metres
- Temperature: (-)10° C to 90° C

Thermopac

Thermic Pump Type - AT



Features:

- The pump is integral foot mounted casing for a given temperature range
- More reliable for thermal isolation for volute casing
- Balanced or unbalanced maintenance free standard mechanical seal
- No additional cooling required (air cooled)
- Pump with grafoil packing at stuffing box cavity and sintered bearing

Operating Range:

- Delivery size: 32 mm to 80 mm
- Capacity: Up to 250 m³/hr
- Head: Up to 100 metres
- Temperature: 180° C to 350° C

Boiler Feed Pump

Multistage Pump Type - RKB



Features:

- Ring section diffuser casings
- Stuffing box cooling for high temperature application
- Available in vertical configuration
- Optional orientation available for suction branch
- Hydraulic thrust balancing by balancing holes
- Multi-outlet feature enables usage of the pump for different delivery pressure

Operating Range:

- Delivery size: 250 mm
- Capacity: Up to 850 m³/ hr
- Head: Up to 850 metres
- Working pressure: 40 to 64 bar
- Temperature: (-)30° C to 140° C

Fire Fighting Pumpset

Fire Pumps - FM and UL Listed



Features:

- Meet NFPA 20 and UL 448
- Controller is mounted with pressure transducer, drain valve and pressure recorder, weekly timer
- Starts engine automatically when system pressure falls below specified pressure
- Motor controllers with power monitoring, loss of phase, phase reversal, low voltage etc.

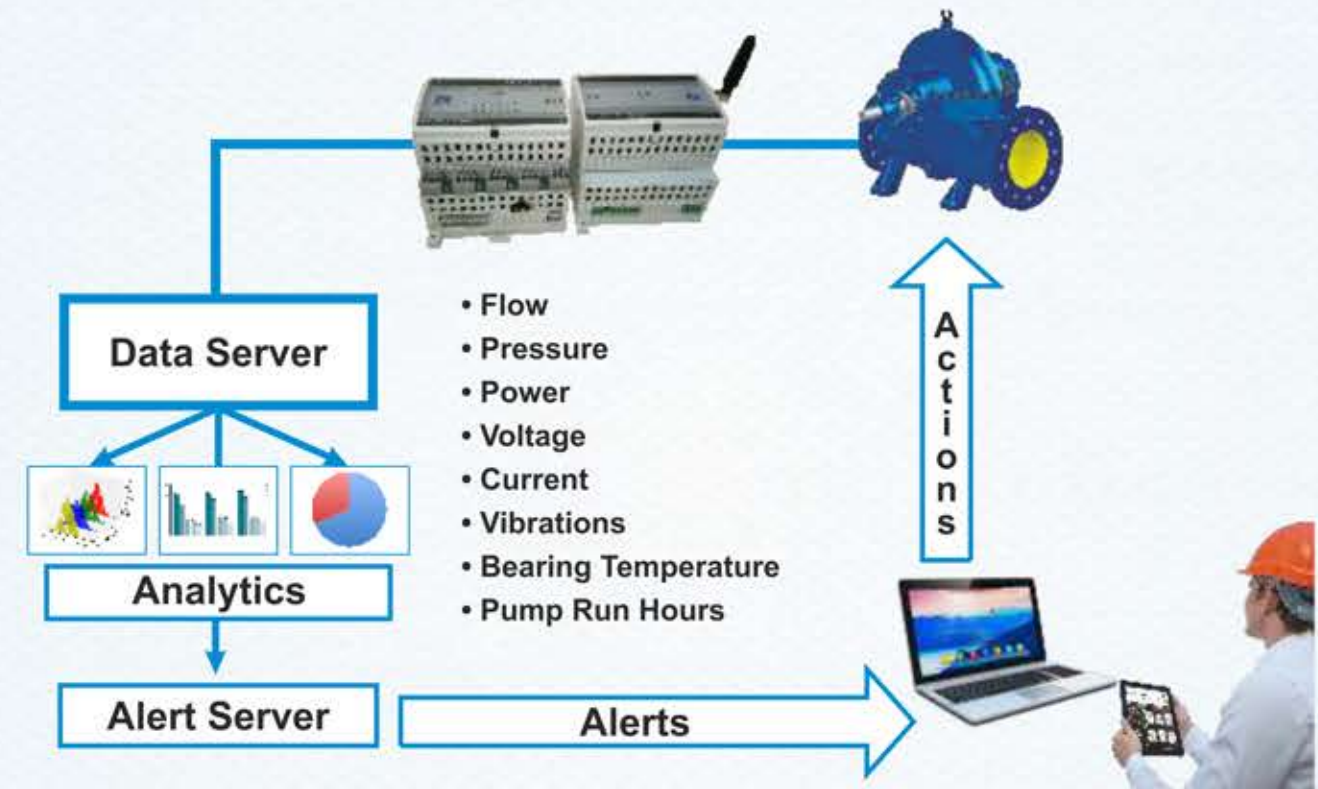
Operating Range:

- End suction pumpset flow range: Up to 1250 USgpm
- Horizontal Split case pumpset flow range: Up to 5000 USgpm
- Vertical Turbine pumpset flow range: Up to 5000 USgpm



KIRLOSMART

KirloSmart-Remote monitoring Solutions



KBL offer intelligent pumping solution for remote condition monitoring using in house designed solutions "Kirlosmart", which is a condition monitoring unit.

Condition monitoring enables a person to view process parameters through internet. The key features of remote condition monitoring of pumpsets include:

- Monitoring of operational behaviour of the pump or pumping system
- Monitoring and analysis of faults
- Diagnostics in case of faults
- SMS alerts and e-mails in case of faults with daily reports through e-mails for record and analysis

The condition monitoring system is very useful in cases where pumps or pumping systems are catering to critical processes or applications. This is done by capturing data from pressure transmitter, flow meter, vibration sensors, bearing RTD and energy meters.

Web based monitoring can be carried out for the following parameters:

- Flow
- Pressure
- Vibration
- Bearing temperature
- Voltage
- Current
- Energy consumption

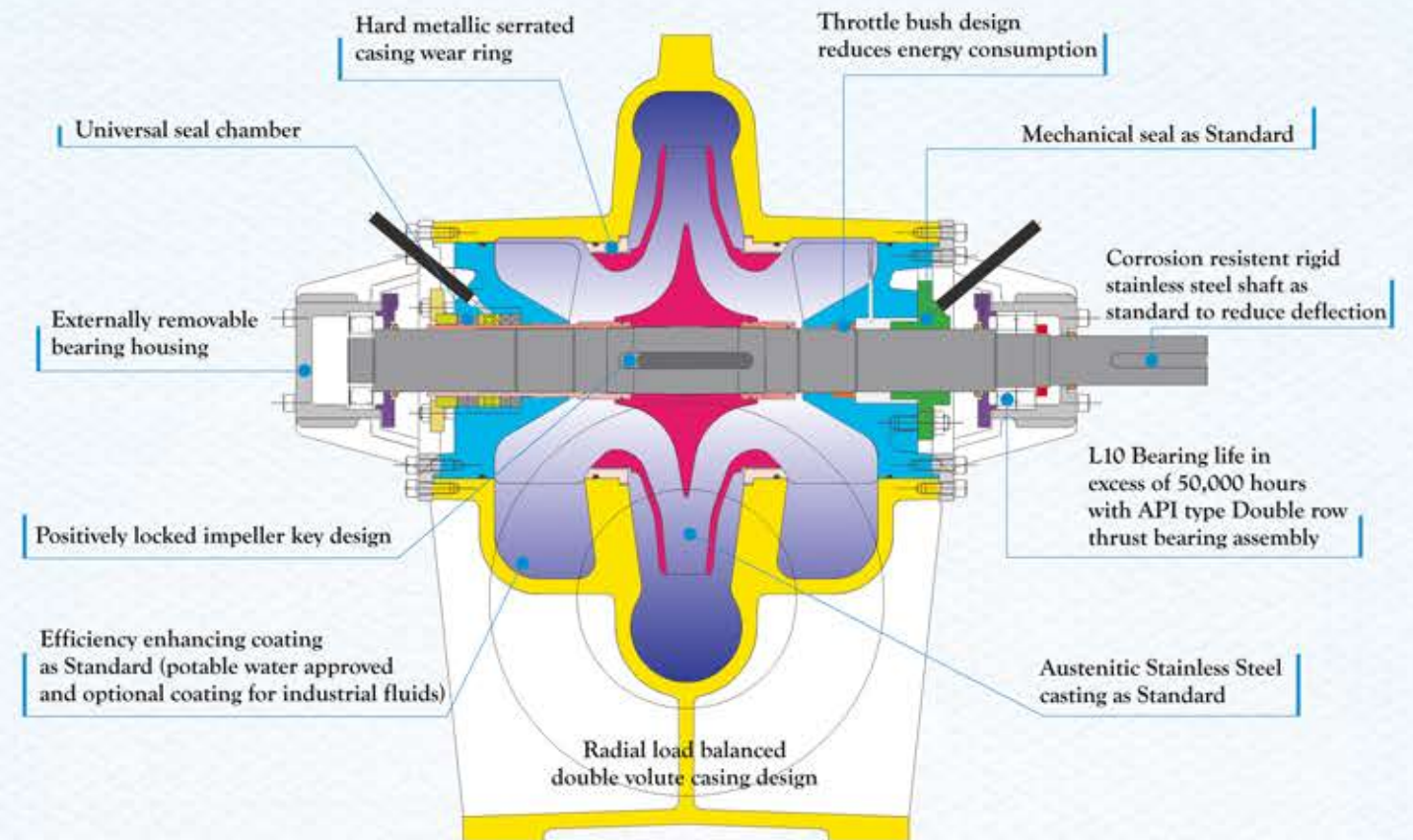
Benefits of the system:

- Monitoring is possible anytime by anyone and anywhere
- Alerts via SMS and e-mails can trigger early attention and rectification and result in lesser down time - Weekly reports enable the user and KBL to analyse the overall health of the pumpsets and, thus preventive maintenance can be planned accordingly
- Planning of spares requirement is possible based on these parameters
- Involves onetime investment, which reduces operational costs
- Provides immediate status of system performance
- Increases equipment life and thus reduces cost of repairs
- Improved process and plant reliability
- Reduces man-hours (labour costs) required for troubleshooting
- Includes web-based user configurable dashboard for live and trend data
- Facilitates integration with existing PLC and automation system

LOWEST LIFE CYCLE COST (LLC)TM PUMP

- The Life Cycle Cost (LCC) of any equipment is the total "Lifetime Cost" incurred to purchase, install, operate, maintain and dispose it. Typically out of the total cost of running the equipment, the energy cost works out to 80-85% vis-à-vis capital cost of 5-10%
- It is in the fundamental interest of the user to evaluate the Life Cycle Cost of different pumping systems before installing a new pumping station and/or carrying out a major overhaul
- Capital expenditure should be thoroughly evaluated vis-à-vis total Life Cycle Cost over a period of 20 to 25 years

Typical Cross-sectional view of LLC Horizontal Split Case Pump



Applications:

- Water Supply
- Effluent Treatment Plant
- Industrial Utility Services
- Cooling Tower Circulation
- Sea Water Handling
- Desalination Plants

Benefits:

- Enhance Product Life
- Sustained Efficiency - Saving Energy
- Accelerated Capital Cost Recovery
- Reduced Maintenance - Reducing Down Time
- Reduced Carbon Footprint
- Cost Effective Solution

ENERGY AUDIT

An energy audit is an inspection, survey and analysis carried to facilitate energy conservation in order to reduce the amount of energy input into the system without affecting performance. Industrial energy audits monitor consumption and locate the source(s) of wastage, so that they can be plugged. Even as the industry today strives for more energy there is serious need to reduce energy consumption as it leads to rise in cost of the product as well as pollution. However, this has a larger impact on contribution of organisation's profitability and curtailing both can have a make or break impact on any organisation.

KBL's Audit Approach

Kirloskar Brothers Limited has set up an Energy Audit Cell, wherein our team of BEE certified energy managers and auditors undertakes and evaluates actual performance measurement of pumps and motors. The results are compared against the designed performance level. The difference between observed performance and intended performance is the potential for energy and cost savings. Specifically, the audit helps to identify actions for improving energy performance.

Recommendation for suitable pumps & motors and bringing improvements in the pump piping layout are suggested based on the findings. Energy audit also helps to decide on how to budget energy use, plan and practice feasible energy conservation methods that will enhance energy efficiency, minimise energy wastage and thereby reduce energy costs.



KBL-LLC HSC Pumps Range

	SCT-LLC Pump Series		UP-LLC Pump Series	
	50 Hz	60 Hz	50 Hz	60 Hz
Capacity	Up to 3500 m ³ /hr	Up to 4500 m ³ /hr	Up to 5000 m ³ /hr	Up to 6000 m ³ /hr
Head	Up to 300 m	Up to 166 m	Up to 69 m	Up to 95 m
Liquid Temperature	-10°C to 120°C	-10°C to 120°C	-10°C to 120°C	-10°C to 120°C
Turbidity (TDS)	Up to 3000 ppm	Up to 3000 ppm	Up to 3000 ppm	Up to 3000 ppm



CII Award for LLC Pump



India Design Mark Award for LLC Pump

Customer Services & Spares

Our various service offerings enable ease of access, which ensures quicker turnaround time and helps in faster resolution of issues.

- Service capabilities: More than 30 technically competent KBL service engineers and 64 authorised service dealers operate across India for delivering 24x7 reliable services
- SAP CRM 7.1: CRM 7.1 is a simple and powerful web-based tool, seamlessly integrated with SAP ECC. CRM 7.1 provides a single interface for all our services, right from submitting quotations, issuing orders and quicker delivery of spares to complaint registration for providing faster service. It also provides our customers with regular updates on special offers for spares, service camps, training schedules and other relevant information
- Our customers help-desk is always prepared to help resolve all customer issues

