Water is Life . . .

. . . . We give Life to Water
A PRESENTATION BY

KIRLOSKAR BROTHERS LIMITED
# Kirloskar Brothers Limited

<table>
<thead>
<tr>
<th>Established</th>
<th>1888</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incorporated</td>
<td>1920</td>
</tr>
<tr>
<td>Core business</td>
<td>Centrifugal pumps, Valves, Hydel turbines, Pumping Projects</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Summary financials</th>
<th>(FY: 2011-12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues</td>
<td>₹ 17,687 Million</td>
</tr>
<tr>
<td>Net worth</td>
<td>₹ 7,536 Million</td>
</tr>
<tr>
<td>Pre tax profit</td>
<td>₹ 340 Million</td>
</tr>
<tr>
<td>Market cap</td>
<td>₹ 9,124 Million</td>
</tr>
</tbody>
</table>

Leader in fluid handling and largest manufacturer and exporter of Centrifugal pumps.

‘Yamuna’ – Global Headquarters, Kirloskar Brothers Limited, India, LEED Certified Platinum Rated Green Building
## Joint Ventures and Subsidiaries

<table>
<thead>
<tr>
<th>Company</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kirloskar Toyoda (1995)</td>
<td>Textile machinery and auto transmission components</td>
</tr>
<tr>
<td>Kirloskar Chillers (1995)</td>
<td>Large air-conditioning systems on turn key basis</td>
</tr>
<tr>
<td>Toyota Kirloskar Motors Limited (1997)</td>
<td>Light motor vehicles. Second largest manufacturer of utility vehicles in India</td>
</tr>
<tr>
<td>Denso Kirloskar (1998)</td>
<td>Engine radiators</td>
</tr>
<tr>
<td>Toyota Gosei (1998)</td>
<td>Non-metallic auto components such as steering wheels, dashboards, etc.</td>
</tr>
<tr>
<td>Kirloskar Tsusho (1998)</td>
<td>Steel supply to car companies and ancillaries</td>
</tr>
<tr>
<td>Toyota Kirloskar Auto Parts (2002)</td>
<td>Metallic auto components such as transmissions, steering gears, front and rear axles</td>
</tr>
</tbody>
</table>
Business of KBL

- Largest manufacturer and exporter of centrifugal pumps from India
- Leading manufacturer of Valves and Hydel Turbines
- Energy efficient innovative pumping solutions for core sectors such as Power, Water, Irrigation and Industries
- Manufactures the largest pumps by size and horsepower in India
- Commands the highest market capitalization amongst the pump manufacturers in India
- Pioneered centrifugal pumps in India and introduced the following in India:
  - Split-case pumps
  - Process pumps
  - Large Vertical Mixed flow pumps
  - Canned motor pumps
  - Metallic Volute pumps
  - Concrete Volute pumps
  - Primary / secondary moderator pumps for liquid sodium for fast breeder reactor technology for Nuclear Power Plants
Giving Life to Water

- Pumps up to 26 MW
- Valves up to 4500 mm Nominal Bore
- Hydel turbines up to 25 MW
- Turnkey and EPC Pump Projects
- Large Engineered Pumps
- Industrial Pumps
- Agricultural & Domestic Pumps
- Hydel Power Projects
- LT Induction Motors up to 315 frame

A man standing at the discharge pipe of KBL’s biggest pump & holding KBL’s smallest pump
KBL – World’s Widest Range of Energy Efficient Pumps

The Smallest and Largest pumps in the world

Over 75 types

Flow up to 120,000 m³/hr

Head up to 1200 m

EPC capabilities

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Domestic Subsidiaries

KIRLOSKAR BROTHERS LIMITED

- Cross country and submarine pipelines
- Tunneling and underground caverns
- Bridges and roads
- Civil construction

The Kolhapur Steel Limited (2007)
- Large alloy steel castings foundry
- Single piece casting of 14 Ton
- 600 Tons / month capacity

Hematic Motors Pvt Limited (2009)
- Manufacturing of stators, rotors and electric motors

Kirloskar Construction and Engineers Limited (2006)

Kirloskar Systech Limited (2010)
- System engineering for projects
  - Power
  - Water
  - Irrigation
  - Industry
- Focused engineering data for in-house use and outside contractors
- Patents and IP creation

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International Subsidiaries

KIRLOSKAR BROTHERS INTERNATIONAL B.V. (2008)

- Leading market presence in Fire Pump Packages business
- Lowest life cycle cost pump range
- Assembly units in USA and South Africa


- Sales and Packaging of centrifugal pumps with focus on European markets

Kirloskar Brothers Europe BV – The Netherlands (2008)

- Sales and Packaging of centrifugal pumps with focus on South East Asian markets

Kirloskar Brothers (Thailand) Limited – Thailand (2009)

- Manufacturing and Sales of high head multi-Stage pumps, Rubber lined slurry pumps and white metal lined bearings

Braybar Pumps Limited South Africa (2010)

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Subsidiaries and Joint Ventures

Core Competencies
- Pump energy efficiency coatings
- Sea Water application
- Single point solution provider

Opportunities
- Short paybacks on refurbishments
- Growing infrastructure and ports
- Demand for preservation of equipment life

Kirloskar Corrocoat
Private Limited
Subsidiaries and Joint Ventures

Kirloskar Ebara Pumps Limited

Core Competencies
- API process pumps
- Boiler feed pumps
- Elliot steam turbines

Opportunities
- Growing refinery and power market of India
- Need to address the market using synergy with “KBL marketing” to enhance reach
Manufacturing Facilities - India

Industrial & Engineered Pumps: Kirloskarvadi, Western India
Agricultural & Domestic Pumps: Dewas, Central India
Stainless Steel Borewell Submersible Pumps: Shirval, Western India
Valves: Kondhapuri, Western India

Castings: Kolhapur, Western India
Domestic Pumps: Coimbatore, Southern India
Manufacturing Facilities – Outside India

- Atlanta, USA: Industrial Pumps
- Coleford, United Kingdom: Industrial & Engineered Pumps
- Jebel Ali, UAE: Industrial Pumps
- Johannesburg, South Africa: Industrial Pumps
- Johannesburg, South Africa: Industrial Pumps
- Velsen Noord, The Netherlands: Industrial Pumps
- Bangkok, Thailand: Industrial Pumps
Market Oriented Organisation

“one stop shop for most optimised pumping solutions from conceptualisation to commissioning across market segments.”

IRRIGATION

WATER

POWER

INDUSTRY

BUILDING & CONSTRUCTION

OIL & GAS and MARINE

DISTRIBUTION

CUSTOMER SUPPORT & SERVICE

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Approved Vendors for Global Consultants and EPC Contractors - Orders received from all companies represented

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Association with Governments

Angola

Camodia

Egypt

Ghana

Jamaica

Laos

Lesotho

Senegal

Sudan

Suriname

Zimbabwe

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Human Resources

Empowered, responsive, motivated and competent human capital are a key asset of KBL. Team KBL is committed to create a value based organisation with ethical practices, and lead the company to excel in pursuit of its mission and vision.

Our Team

Employee strength (Standalone Strength)

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Headcount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Employees</td>
<td>3510</td>
</tr>
<tr>
<td><strong>Which include</strong></td>
<td></td>
</tr>
<tr>
<td>Engineers</td>
<td>936</td>
</tr>
<tr>
<td>Application and Product engineers</td>
<td>125</td>
</tr>
</tbody>
</table>

Harmonious labour relationships maintained
Research and Engineering Capabilities

- High performance product design and development
- Sump model studies
- Intake studies analysis using computational fluid dynamic techniques
- Surge analysis
- Structural analysis
- Cavitation studies
- Seismic analysis
- Thermal analysis
- Vibration analysis
- Transient analysis
Research and Engineering Capabilities

Kirloskarvadi R&D Infrastructure

Stress Relieving Furnace

4mw Electric Motor For Testing Of Primary Sodium Pump

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A Patent titled “Arrangements for pumping fluids from sumps” is published in US on March 04, 2010. This patent is helpful in elimination of air entrainment and reduction of minimum submergence.

As a result of reduction of minimum submergence, overall excavation of the pump house reduces. This saves in the cost of excavation of the pit as well as in the concrete lining.
Hydraulic Research Centre

- One of Asia’s largest Hydraulic Research Centre (HRC) for testing pumps at duty conditions up to 5000 kW motor and discharge up to 50,000 m³/hr

- Closed circuit NPSH testing capabilities

- Computerized data acquisition system

- Physical Sump and Pump model study

- Conceptualised and built under the guidance and supervision of British Hydraulic Research Association

- Testing at 50 Hz & 60 Hz frequency covering all global supply voltages (3.3 to 13.2 kV)
<table>
<thead>
<tr>
<th>S No</th>
<th>Topic</th>
<th>Occasion</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Numerical Prediction of cavitation free zone operation for Francis Turbine</td>
<td>ASME 2009 Fluids Engineering division Colorado USA</td>
<td>Aug-09</td>
</tr>
<tr>
<td>2</td>
<td>Numerical simulation of drawdown in Pump Sumps</td>
<td>4th Int. Symp. on Fluid Mach. &amp; Fluid Engg., Beijing China</td>
<td>Nov-08</td>
</tr>
<tr>
<td>3</td>
<td>Numerical prediction of cavitation in model pump</td>
<td>ASME Int. Mech. Engg. Cong. &amp; Expo, Boston, Massachusetts</td>
<td>Nov-08</td>
</tr>
<tr>
<td>4</td>
<td>Numerical Simulation of tip clearance in Semi-open impeller pump</td>
<td>5th Joint ASME / JSME Fluid Engineering Conference, San Diego, USA</td>
<td>Jun-07</td>
</tr>
<tr>
<td>5</td>
<td>Numerical &amp; experimental investigation of pump in Turbine mode</td>
<td>23rd International Pump User Conference, USA</td>
<td>Sep-06</td>
</tr>
<tr>
<td>6</td>
<td>Numerical experiments with solid Handling pumps</td>
<td>ASME fluid summer meeting, Miami, USA</td>
<td>May-06</td>
</tr>
<tr>
<td>S No</td>
<td>Topic</td>
<td>Occasion</td>
<td>Date</td>
</tr>
<tr>
<td>------</td>
<td>----------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>7</td>
<td>Experimental and numerical simulation of cavitations in a pump</td>
<td>ASME FEDSM 2005, Houston</td>
<td>Jun-05</td>
</tr>
<tr>
<td>8</td>
<td>Investigation of Siphon action in a discharge duct for two phase flow modeling and experimentation</td>
<td>Pisa, Italy, 3rd International Symposium</td>
<td>Sep-04</td>
</tr>
<tr>
<td>9</td>
<td>Experimental and computational studies of the effect of ‘casing eye rib’ on the swirl flow at the exit of a pump as turbine</td>
<td>ASME, HT/FEDSC, 2004, Charlotte, North Carolina, USA</td>
<td>Jul-04</td>
</tr>
<tr>
<td>10</td>
<td>Investigation of air entrainment a numerical approach</td>
<td>4th ASME(JSME) Joint Fluids Engineering Conference Honolulu, Hawaii, USA</td>
<td>Jul-03</td>
</tr>
<tr>
<td>11</td>
<td>Cavitations studies on a model of primary sodium pump</td>
<td>ASME FEDSM 2002 Montreal</td>
<td>Jul-02</td>
</tr>
<tr>
<td>12</td>
<td>Numerical experiments on a centrifugal pump</td>
<td>ASME FEDSM 2002 Montreal</td>
<td>Jul-02</td>
</tr>
</tbody>
</table>
Across 6 Continents
Split Case Range

UPM (Vertical Execution)

UP

SCT

Range
- Delivery size 50 mm to 1200 mm
- Capacity up to 25,000 m³/hr
- Head up to 350 m
- Temp. - 10 degree C to +150 deg C
- Speed - 970, 1450, 2900
- Suitable for variable Speed Drive
- Suitable for 60 Hz Power Supply

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We closely watched, listened to your need and used CFD technology, our wide experience and expertise to innovate a **smart choice** for you - Enriching Lives

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Multistage Pumps

Side Channel Pumps CF
Delivery size up to 50 mm
Capacity up to 20 m³/hr.
Head up to 315 metres

Horizontal Multistage Pumps RKB
Delivery size up to 250 mm
Capacity up to 850 m³/hr.
Head up to 850 metres
Multistage Pumps

Vertical Multistage Monobloc Pumps
Delivery size up to 40 mm
Capacity up to 10 m³/hr.
Head up to 44 metres

Vertical Inline Multistage Pumps IL
Delivery size up to 100 mm
Capacity up to 75 m³/hr.
Head up to 220 metres

Vertical Multistage Pumps RKB
Delivery size up to 250 mm
Capacity up to 750 m³/hr.
Head up to 580 metres

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Vertical Turbine Range

Condensate Extraction Pumps
(With double suction Impeller at first stage)
Delivery size up to 500 mm
Capacity up to 2000 m³/hr
Head up to 350 meters

Vertical Turbine Pumps
Delivery size up to 2200 mm
Capacity up to 40,000 m³/hr
Head up to 400 meters
End Suction Range

DB (Small)
Delivery size up to 150 mm
Capacity up to 550 m$^3$/hr.
Head up to 100 metres

CE Energy Efficient
Delivery size 32 to 125mm
Capacity up to 660 m$^3$/hr.
Head up to 100 metres

DB (Large)
Delivery size 150 to 300mm
Capacity up to 1900 m$^3$/hr.
Head up to 35 meters
**End Suction Range**

**Mixed Flow Pumps (MF)**
- Delivery size up to 650 mm
- Capacity up to 7000 m³/hr.
- Head up to 30 metres

**CPHM**
- Delivery size 20 to 200mm
- Capacity up to 750 m³/hr.
- Head up to 150 metres

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End Suction Range

Range

Delivery size : up to 200 mm
3 Capacity : up to 800 m /hr
Head : up to 90 m
Maximum : up to 105 mm permissible depending on the solid size model consistency up to 5%
QP impellers for more than 6% consistency
Q impellers for more than 4% consistency

Range

Delivery size : 250 mm to 900 mm
3 Capacity : up to 13000 m /hr
Head : up to 82 m
Temp : (-) 10º C to 90º C
End Suction Range

Range

- Delivery size 20 mm to 200 mm
- Capacity up to 750 m³/hr
- Head up to 150 m
- Temp. -50 degree C to +350 deg C
- Speed - 970, 1450, 2900
End Suction Range

Range:

Delivery size: up to 200 mm  Capacity: up to 2400 m³/hr  Head: up to 90 m

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End Suction Range

End Suction Process Pumps
Type-KPD (Magnetic Drive)
Delivery size up to 200 mm
Capacity up to 350 m³/hr
Head up to 62 metres

End Suction Process Pumps
Type-KPD (Jacketed Pump)
Delivery size up to 200 mm
Capacity up to 350 m³/hr
Head up to 62 metres
End Suction Range

- Maintenance-free
- Zero leakage from Stuffing Box
- No soft Gland Packing or Mechanical Seal; no flushing
- Sealed Bearings; no lubrication to bearings
- Self venting design
- Completely protected shaft
- Energy Efficient Design
- Conforming to ISO 2858
- Back pull out design
- Less no. of components
- Sturdy yet light-weight

1450 rpm 50 Hz - with rate of flow up to 180 m³/hr and head up to 55 m, available in 14 different models to suit various applications.

2900 rpm at 50Hz - with rate of flow up to 150 m³/hr and head up to 92 m, available in 11 different models.

1750 rpm at 60Hz - with rate of flow up to 220 m³/hr and head up to 80 m, available in 14 different models.
End Suction Range – Process Applications

ANSI Pumps
Delivery sizes 25 mm to 200 mm
Capacity up to 1500 m$^3$/hr (max)
Head 225 meters

Canned Motor Pumps - Nuclear

Canned Motor Pumps - Process
Delivery sizes 250 mm
Capacity up to 1000 m$^3$/hr
Head 135 meters
Sewage and Dewatering Pumps

Submersible SEWAGE Pumps
Delivery size 40mm up to 300 mm
Capacity up to 1600 m³/hr.
Head up to 140 meters
Max Solid size 150mm

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Concrete Volute Pump

- World’s number 1 in concrete volute pump technology with orders for 166 pumps to date
- More than 100 CV Pumps in operation for major projects across the country

**Operating Range:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>up to 50 m</td>
</tr>
<tr>
<td>Flow</td>
<td>up to 120,000 m³/hr</td>
</tr>
<tr>
<td>Delivery Size</td>
<td>up to 6000 mm</td>
</tr>
</tbody>
</table>
Condensate Extraction Pump

Technical Data

Capacity : up to 2000 m³/h
Suction Nozzle Sizes : up to DN 600
Discharge Nozzle Sizes : up to DN 500
Head : up to 400 m
Operating Disc. Pr : up to 40 kg/cm²
Suction Pressure : up to 3 kg/cm²
Temperature : up to 100 °C
Operating Speed : 980 to 1780 rpm

Special Design Features:

• Double Entry First Stage Impeller for very low NPSH required
• Re-entry design for condensate polishing unit
Condensate Extraction Pump

Suction stage – Double Entry Impeller- Advantages

- Lower value of suction specific speed to meet the customer requirements; which is normally less than 11000 US unit

- Double suction impeller results in lower NPSHr

- Due to lower NPSHr Can (Barrel) length will be shorter which results in lower cost of handling, excavations, installation and reduction in crane height at turbine room

- Even though head achieved is higher there is no additional increase in hydraulic axial thrust
Condensate Extraction Pump

Special Design: First Stage Impeller Double Suction
Customer: NPCIL
Project: Tarapur Atomic Power Project, India
Pump Model: BHRC 7
Qty: 6 Sets

Duty parameters:
Discharge: 1210 m³/hr
Head: 200 m
Efficiency: 82%
Speed: 990 rpm
Motor: 1150 kW
NPSHR: 2 m
KIRLOSKAR BROTHERS LIMITED

DISTINCTIVE PROPOSITIONS : VALUE ADDED SYSTEMS
Variable Frequency Drive (VFD) Pumping Systems

- Standard Variable speed
  - One VFD per pump

- 1 working + 1 standby
  One working + 1 stand by pump with one VFD

- Cascade control
  Up to 5 pumps, one on VFD others fixed speed

- Cascade control VFD alternation
  Up to 4 pumps, one VFD, other fixed speed with VFD alternating between all the pumps

- Master Slave control
  Up to 5 pumps all on VFDs, operating at the best efficiency point
Micro Processor Controllers

Suitable for different applications
Low Life Cycle Cost Series

Life-cycle Cost Analysis

WHOLE LIFE COST

CAPITAL COSTS
Pumps Civil Works
M & E

ENERGY COSTS
Efficiency Process
Optimisation

MAINTENANCE
COST MTBF
Replacement Parts
Downtime

DISPOSAL COSTS

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Low Life Cycle Cost Series

- **Universal seal chamber.**
  - Accepts most commercially available single or double cartridge mechanical seals or traditional gland packing.

- **Hard metallic serrated casing wear rings.**
  - Long life and reduced energy consumption.

- **Throttle Bush.**
  - Reduces energy consumption and facilitates suction lift with single mechanical seals.

- **Customer specified mechanical seals.**
  - Site standards and customer specified options accommodated. Facilitates suction lift with single cartridge seal options.

- **Externally removable bearing housing.**
  - Ease of maintenance. Bearings and seals can be removed without removing top half casing.

- **Positively locked and key to pump shaft.**
  - Easily removable and positively driven.

- **Efficiency enhancing drinking water approved coating.**
  - Standard on water industry applications, optional for industrial.

- **Double volute casings, where radial loads dictate.**
  - Enhanced bearing life.

- **Corrosion resistant rigid stainless steel shaft as standard.**
  - Increased bearing and shaft life.

- **API type double row thrust bearing assembly.**
  - L10 life in excess of 50,000 hours under all design load conditions.

- **Precision casting in austenitic stainless steel as standard.**
  - Increased component life.
Low Life Cycle Cost Series

Keyed muff type couplings fitted as standard.
- Easily removable, makes liner cost, screwed couplings ensuring increased component life.

Heavy duty thrust bearing assembly.
- Juddicher or Barfoot type thrust bearings dependent on load. Minimum LTD life in excess of 50,000 hours under all design load conditions.

Customer specified mechanical seals.
- Site standards and customer specified options.

Drinking water approved coatings.
- Available for water industry applications.

Spacer Coupling as standard.
- Facilitates removal of cartridge type mechanical seals without disturbing thrust bearing assembly or drive and negates the need for expensive split mechanical seals.

Stiff shaft construction.
- Pumps designed to operate below their critical speed. Enhances belting life and facilitates variable speed operation.

Hard Stainless steel shaft sleeves fitted as standard.
- Renewable bonded sleeves enhance shaft life.

Diffuser type design promotes axial rather than radial loads.
- Enhanced bearing life.

Hard Metallic serrated wear rings.
- Long life and reduced energy consumption.

Precision casting in austenitic stainless steel as standard.
- Superior hydraulic performance and increased component life.
Low Life Cycle Cost Series

- Developed for the 21st Century commercially aware End User
- Utilities Applications (Power, Water Supply, Cooling Water)
- Highly Evolved. Not A New Product
- Benefits Generally Post Installation
- Highest wire to water efficiency
- Highest Quality & Longevity
- Greatly Reduced Energy Cost
- Very Reliable – Low on maintenance cost
- Provides the “Lowest Whole life Cost”
Low Life Cycle Cost Series

- Pump without Mechanical Seal (Avoid Seal Maintenance & Failure)
- Pump Without Gland Packing. (No need of external water)
- No Lantern Ring (No question of removal)
- Sealing water not required (Reduced Running cost)
- Enough space for Maintenance
- Pump with Pre Lubricated Sealed Bearings (No oil spoilage & Bearing removal for 3 years)
- Eliminated Lantern Bracket (More compact & breakage Problem)
- New hydraulic combination for Better efficiency

Patent Pending
Fire Pump Packages
(Protecting Life and Property)

- World’s largest Fire pump business
- FM approved & UL listed
- LPCB approved

- Multistage Multi-Outlet
- Vertical Turbine
- Special packages
FM / UL Fire Fighting Pump Sets

- World’s largest fire pump business
- FM approved & UL listed
- LPCB approved

- Multistage Multi-Outlet
- Vertical Turbine
- Special Packages

Horizontal Split Case:

- Flows up to 18940 l/m (5000 US gpm)
- Pressure up to 37 bar (537 psi)
FM / UL APPROVED & LISTED

FIRE PUMPS
FM / UL Approved and Listed Fire Pumps

End Suction Pumps: Flows up to 1500 USgpm
Pressures: up to 10.95 bar (159 psi)
Sizes: Up to 150 mm (6 inch)
## References

- Ford Motor
- Company, Poland
- General Motors, Portugal
- Caterpillar, Belgium
- Coca Cola, USA
- Kodak, Greece
- IBM, Italy
- Dunlop England
- Pirelli, England
- Michelin, Thailand
- Sheraton, Kuwait
- Hilton, Dubai
- Marriott, Turkey
- GlaxoSmithKline, Thailand
- 3M Group, England
- Motorola, Malaysia
- Texaco, Trinidad
- Mobil, Cyprus
- Shell, Uganda
- Dulux (ICI), Taiwan
- GEC Alstom, Spain
PRESTEGIOUS

FM/UL APPROVED & LISTED

FIRE PUMP PACKAGES

ORDERS FROM

INDUSTRIES
Oil & Gas Fire Protection

Project: Bohai
Oil & Gas Fire Protection

Project: Dung Quat
LPCB APPROVED & LISTED
MULTISTAGE MULTI-OUTLET
FIRE PUMP PACKAGES

“The Only Officially Approved &
Listed Multi Stage Multioutlet
Fire Pump In The World”
Multi Stage – Multi Outlet Pump
VERTICAL TURBINE

FIRE PUMP PACKAGES
Vertical Turbine Fire Pump

Vertical Turbine Pump on Test.

SPP vertical lineshaft pump
directly driven by a
1200kw electric motor

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SPECIAL APPLICATIONS

FIRE PUMP PACKAGES
Fire Containerised Pump set
Generator Packages

Emergency service and dedicated fire pump up to 3.0 Mw
Auto Prime
Auto Prime in Coal Mines
HYDRO PNEUMATIC SYSTEMS
Flexibility in Selecting Pumps

**Split case**
- Capacity: Upto 24,000 m³/hr (105672 Usgpm) Per pump
- Head: Upto 330m (1056Ft)

**Borewell Pumps**
- Capacity: Upto 144 m³/hr (634 Usgpm) Per pump
- Head: Upto 447m (1431 Ft)

**Wet Pit Pumps**
- Capacity: Upto 560 m³/hr (2465USgpm) Per pump
- Head: Upto 150m (480Ft)
- Pit Depth: Upto 6.5 m (21Ft)

**Vertical Inline Pumps**
- Capacity: Upto 450 m³/hr (1982USgpm)
- Head: Upto 220m (704Ft)

**End Suction Pumps**
- Capacity: Upto 750 m³/hr (3303USgpm) Per pump
- Head: Upto 150m (480Ft)
Patented Solar Pump Controller

KBL, for the first time introduced a solar electric technology which harnesses solar energy through photovoltaic (PV) panels and directly conditions this to drive a three phase AC induction motor driven centrifugal pump, eliminating the batteries in between.

Solar Pumping System Components:

Pump
Motor
Electronic Solar Drive

Solar Photovoltaic Panels:

- Amorphous or Crystalline solar cells
- Various module ratings such as 37, 50, 75 100 Wp etc. can be configured
- Manufacturer’s guarantee for 20 years
Patented Solar Pump Controller

Configurations in which Kirloskar Solar Pumping System can be used

• to drive specially designed Kirloskar Solar AC pumps
• to provide 1 phase 50Hz AC output to run light domestic electrical loads such as fans, lamps, TV up to 1000 watt
• to convert 1 phase 50Hz AC to 3 phase AC to run Kirloskar Solar AC pump, when sunlight is not available, but 1 phase supply is available (optional)
• domestic water purification unit based on ultra filtration technology can be run to get pure safe drinking water (optional)
• 12/24 V, 40 Ahr lead acid battery charging unit (optional)

Features
• Automatic start and shut off as per solar intensity
• soft start controlling in rush current
• dry run protection (automatic switch off)
• phase imbalance protection
• output short circuit protection
• dust proof
• works satisfactorily up to 55 °C ambient
• single phase 50 Hz AC input operating voltage range of 100 – 270 volts
• visual indication of faults through flickering LED displays
• cannot restart for faults like dry run, phase imbalance, output short circuit, unless attended
<table>
<thead>
<tr>
<th>VALVE TYPE</th>
<th>SIZE RANGE (mm)</th>
<th>MANUFACTURING STANDARDS</th>
<th>PRESSURE RATINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butterfly Valve</td>
<td>80 to 4500</td>
<td>IS 13095/ En 593 (BS 5155)/ AWWA C-504</td>
<td>PN 6/10/16, Class 25/75/150/250</td>
</tr>
<tr>
<td>Sluice Valve</td>
<td>50 to 1500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non Return Valve</td>
<td>50 to 1500</td>
<td>IS 5312 Part 1 &amp; 2 / BS 5153 (EN 12334)</td>
<td>PN 6/10/16</td>
</tr>
<tr>
<td>Tri-Eccentric Type Non Return Valves</td>
<td>800, 1000, &amp; 1200</td>
<td>BS 5155 / IS 13095</td>
<td></td>
</tr>
<tr>
<td>Kinetic Air Valves</td>
<td>50 to 250</td>
<td>IS 14845</td>
<td>PN 6/10/16</td>
</tr>
<tr>
<td>Swing Type Foot Valves</td>
<td>50 to 600</td>
<td>IS 4038</td>
<td>PN 2</td>
</tr>
<tr>
<td>Cast Steel Gate Valves</td>
<td>50 to 350</td>
<td>BS 1873</td>
<td>Class 150/300/600</td>
</tr>
<tr>
<td>Cast Steel Globe Valves</td>
<td>50 to 350</td>
<td>BS 1868</td>
<td>Class 150</td>
</tr>
<tr>
<td>Cast Steel Check Valves</td>
<td>50 to 350</td>
<td>BS 1868</td>
<td></td>
</tr>
<tr>
<td>Steam Trapping Device</td>
<td>15, 20, 25</td>
<td></td>
<td>PN 62</td>
</tr>
</tbody>
</table>
PRE FABRICATED
SEWAGE PUMPING STATION

India’s only Pre-fabricated sewage pump stations
Pre Fabricated Sewage Pumping Station
Pre Fabricated Sewage Pumping Station
KIRLOSKAR BROTHERS LIMITED

Engineered Pumps and Project Management Capabilities
Project Patents

Latest US patent

A US patent has been awarded for siphon creation and breaking arrangement designed by KBL for concrete volute and vertical turbine pumps for Sardar Sarovar project.

This energy efficient siphon arrangement will provide:

- Reduction in installed power by 8.5 MW
- Energy conservation of 34.96 million units per annum
- Saving in electricity cost by Euro 2.1 million per annum
Select Experience

- Manufactured India’s largest metallic vertical mixed flow pumps for circulation of cooling water at 500 MW Talcher, Rihand, Sipat Power Projects of National Thermal Power Corporation, world’s 8th largest power producer.

- Devadula irrigation project, the first project in India with high head, high flow, metallic volute pumps with synchronous motors; total power rating of 52 MW, the highest so far in India will be commissioned soon.

- Executing the Bhima Lift irrigation scheme having single largest pump power rating of 12 MW, and introducing guide vane mechanism technology in vertical mixed flow pumps for the first time in India.
Select Experience

• Developed prototype heat transfer pumps for liquid sodium for the first time in India for nuclear power generation with fast breeder reactor technology and received an order for primary and secondary heat transfer pumps from Nuclear Power Corporation of India Ltd.

• Alstom Power Turbo Systems, Switzerland, has entrusted us with another order for Staythorpe project in UK for main and closed cooling water pumps.

• Received a prestigious contract from Bechtel Power Corporation, USA for supply of Vertical Circulating Water Pump sets for 568 MW Sandow Steam Electric Station, Unit 5 of Texas Utilities, USA.
Kirloskar in the Power Sector

Powering The Future
Kirloskar in the Power Sector

- Global Brand – Global Sales and Service Network
- Market leader in pumps, valves and pumping system in India
- World’s number 1 for concrete volute pumps
- Comprehensive pump manufacturing facilities under one roof
- Unique pump testing facility for 50 / 60 Hz and up to 5,000 kW
- Highest pump market share in power plant business in India
- Specialty pumps for nuclear application – Canned Motor, Moderator pumps, Primary and Secondary Heat Transfer pump for PFBR
- Successful execution of turnkey Hydro power projects – Total hydel power generation from the installed turbines is 40 MW
Kirloskar in Nuclear Power Projects

- Associated with Nuclear Power Projects programme since inception

- Working closely with organizations viz. NPCIL, BARC, HWB, IGCAR, BHAVINI etc.

- All Nuclear Power Plants in India are working with Kirloskar Pumps

- Possesses expertise and requisite infrastructure to meet stringent quality and safety requirements

- Has developed indigenous technology for critical application such as Canned Motor pump for moderator duty & primary & secondary heat transfer pumps for fast breeder reactors

- Approved by major Global Players : AREVA, ALSTOM, Bechtel, EDF, GE, Westinghouse
Kirloskar in Nuclear Power Projects

Primary Moderator Circulation Canned Motor Pumps (220 kW) installed at the Nuclear Power Corporation of India Limited, Tarapur, for 2x500 MW nuclear power plants.
Kirloskar in Hydel Power Projects

KBL is committed to become a leader in micro, small and medium hydro turbine business offering “Concept to Commissioning” turbine solutions framework.

<table>
<thead>
<tr>
<th>Turbine Type</th>
<th>Max. Runner Dia. (mm)</th>
<th>Specific Speed (m-kW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semi &amp; Full Kaplan Type Tubular Turbine</td>
<td>3000</td>
<td>397 ~ 513</td>
</tr>
<tr>
<td>Vertical Semi &amp; Full Kaplan Turbine</td>
<td>3800</td>
<td>234 ~ 427</td>
</tr>
<tr>
<td>Vertical Shaft Francis Turbine</td>
<td>3000</td>
<td>234 ~ 427</td>
</tr>
<tr>
<td>Horizontal Shaft Francis Turbine</td>
<td>1200</td>
<td></td>
</tr>
</tbody>
</table>
GLOBAL REFERENCES
Kirloskar in Power Sector

KBL will supply 3 pumps for Bharatiya Vidyut Nigam (BHAVINI)

– Nuclear Power Corporation of India Limited.

Liquid : Sodium
Flow : 14,868 M³/hr
Head : 75 m (246 Ft.)
Speed : 590 rpm
Temp : 670 °C (1238 F)
Motor : 3600 kW (4825 HP)
**Kirloskar in Power Sector**

<table>
<thead>
<tr>
<th><strong>Project</strong></th>
<th>: 1 x 500 MW -Bhavini (Bharatiya Nabhikiya Vidyut Nigam Limited) Prototype Fast Breeder Reactor (PFBR)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Customer</strong></td>
<td>: Nuclear Power Corporation of India Limited</td>
</tr>
<tr>
<td><strong>Liquid</strong></td>
<td>: Sea Water</td>
</tr>
<tr>
<td><strong>Pump Type</strong></td>
<td>: Concrete Volute</td>
</tr>
<tr>
<td><strong>Design Capacity</strong></td>
<td>: 49,000 m³/hr</td>
</tr>
<tr>
<td><strong>Total Head</strong></td>
<td>: 20.0 m</td>
</tr>
<tr>
<td><strong>Speed</strong></td>
<td>: 271 rpm</td>
</tr>
<tr>
<td><strong>Motor Rating</strong></td>
<td>: 4370 kW</td>
</tr>
</tbody>
</table>

CW system for world’s first 500 MW Prototype Fast Breeder Reactor- under construction
# Kirloskar in Power Sector

## CW Pump – Bechtel, USA

<table>
<thead>
<tr>
<th><strong>Project</strong></th>
<th>568 MW Sandow 5, Texas, USA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Customer</strong></td>
<td>Bechtel Power Corporation, USA</td>
</tr>
<tr>
<td><strong>Pump Model</strong></td>
<td>BHM 130</td>
</tr>
<tr>
<td><strong>Quantity</strong></td>
<td>2 Nos.</td>
</tr>
</tbody>
</table>

### Duty Parameters

<table>
<thead>
<tr>
<th><strong>Discharge</strong></th>
<th>34,635 M³/hr</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Head</strong></td>
<td>23.93 M</td>
</tr>
<tr>
<td><strong>Speed</strong></td>
<td>358 RPM</td>
</tr>
<tr>
<td><strong>Motor</strong></td>
<td>2975 KW @ 60Hz</td>
</tr>
</tbody>
</table>
**Kirloskar in Power Sector**

<table>
<thead>
<tr>
<th>Project</th>
<th>(2 x 800 MW) Prairie State Energy Campus, USA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer</td>
<td>Bechtel Power Corporation, USA</td>
</tr>
<tr>
<td>Pump Model</td>
<td>BHM 130</td>
</tr>
<tr>
<td>Quantity</td>
<td>6 Nos</td>
</tr>
</tbody>
</table>

**Duty Parameters**

- **Discharge**: 31,075 M³/hr
- **Head**: 26.82 M
- **Speed**: 356 RPM
- **Motor**: 2825 KW @ 60Hz
Kirloskar in Power Sector

KBL successfully completed the contract for 2 sets of Circulating Water Pump sets

<table>
<thead>
<tr>
<th>Project</th>
<th>480 MW Termozulia CCPP, Venezuela</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner</td>
<td>ENELVEN C.A. Energia Electrica de Venezuela</td>
</tr>
<tr>
<td>EPC Contractor</td>
<td>MAN Ferrostaal AG (Formerly DSD Industrieanlagen); Germany</td>
</tr>
<tr>
<td>Liquid</td>
<td>Brackish water</td>
</tr>
<tr>
<td>Pump Type</td>
<td>Vertical mixed flow</td>
</tr>
<tr>
<td>Design Capacity</td>
<td>27,750 m³/hr</td>
</tr>
<tr>
<td>Total Head</td>
<td>14.5 m</td>
</tr>
<tr>
<td>Speed</td>
<td>400 rpm</td>
</tr>
<tr>
<td>Motor Rating</td>
<td>1700 kW</td>
</tr>
</tbody>
</table>
Kirloskar in Power Sector

Project: 350 MW Puerto Coronel Coal Fired Power Plant, Chile

Customer: Maire Engineering, Italy

Pump Model: BHQ95D, Bowl Pull out

Liquid: Sea Water

Material: Duplex Stainless Steel

Duty Parameters:

Flow: 25,000 M³/Hr

Head: 26 m

Motor rating: 2400 KW

Speed: 425 RPM

KBL’s 2nd Installation for CW Pump in South America.

15 June 2012
Kirloskar in Power Sector

2600 mm Butterfly Valve supplied to National Thermal Power Corporation, Sipat, India
Kirloskar in Power Sector

1800 mm Turbine Inlet Valve supplied to Massachusetts Water Resources Authority, Boston (MWRA), Boston, USA

**Application:** By-pass to Turbine Inlet

**Project:** Oakdale Power Station, Boston, USA

**Year of Supply:** 2005
Large size Butterfly valves (2600 & 2200mm) Internally Ebonite lined and external surface with Polyurethane coating.

Customer : Lanco Infrastructure Ltd
Project : Udupi Thermal Power Project(2x507MW)
Year of supply : 2009

15 June 2012
Kirloskar in Power Sector

2100 mm Turbine Inlet (Butterfly) Valve, Massachusetts Water Resources Authority, Boston, Boston, USA

- Complete range of Butterfly, Sluice Gate, Globe and Check Valves
- CW pump control valve – Electrically & hydraulically operated Butterfly Valves up to 4000 mm dia
- Proof-of-design approved by NTPC for 2600 mm BFV
- Suitable Materials for Sea, Brackish and River water
- Innovative design of see through camera
Kirloskar in Hydel Power Projects

Aniyur Hydel Power House

Capacity : 2 x 3000 kW

Head : 48.00 m

Discharge : 7.21 m³/s

Runner Dia : 1010 mm

Rated Speed : 600 rpm
Kirloskar in Hydel Power Projects

Konal Hydro Electric Project

Capacity : 2 x 5500 kW

Head : 28 to 60 m

Discharge : 12.7 m³/sec

Rated Speed : 600 rpm
Kirloskar in Hydel Power Projects

Top View Of TG Set Assembly – Aliyar Power House

- **Capacity**: 2 x 1250 kW
- **Head**: 30.00 m
- **Discharge**: 5.000 m³/s
- **Runner Dia**: 950 mm
- **Rated Speed**: 500 rpm
Kirloskar in Irrigation Sector

The worlds largest pumping scheme - Sardar Sarovar Narmada Nigam Project in partnership with the State Government of Gujarat

- 26 CV Pumps
- 22 VT Pumps
- 5 Pump Stations
- 410,000 litres/sec
- 132 towns & villages to benefit
- Drinking water to over 30 million people
- 1.8 Million hectares under irrigation

Power Saving: Reduction in Installed power by 8.5MW saving 34.96 Million Units/ annum
Kirloskar in Irrigation Sector

Takari Lift Irrigation Scheme, India

32 Vertical Turbine pump-sets with associated electromechanical equipment are irrigating over 27,000 hectares of farmland in Maharashtra, India.
Irrigation Scheme With World’s Second Largest Lift, Godavari Lift Irrigation Scheme, Andhra Pradesh, India

- 36000 M³/hr of Godavari water transported across 135 kms at a height of 400 m
- 2500 mm dia steel pipes
- 120,000 tonnes of steel used.
- 8500 kW / 12000 Hp motors
- Metallic Volute pumps.
Kirloskar in Irrigation Sector

Africa- Egypt

• In Egypt a pump is called “Kirloskar” !!

• More than 100,000 Kirloskar Pump sets greening 200,000 ha of desert land along the NILE.

• More than 50 large pumping stations are operating with Kirloskar Pump sets for the last 30 years.
Kirloskar in Irrigation Sector

Africa - Sudan

1800 HP Large split case pump sets at Guneid Sugar Factory, Sudan.
Kirloskar in Irrigation Sector

Asia- Lao PDR

- Over 7000 Kirloskar Pump sets are working across the country along the river Mekong.

- In 1996, Laos was importing rice extensively, but with the help of Kirloskar pump sets & irrigation systems rice production went up 25 times to about 2.2 Million tonnes in 2004. Now Laos is a rice exporting nation.

- Rice production in the dry season increased from 25,000 tonnes to 700,000 tonnes, due to Affordable, Adaptable and Appropriate Kirloskar Irrigation Systems.
Kirloskar in Irrigation Sector

Vertical Turbine pumps for Engigas, PORTUGAL
Kirloskar in Water Sector

Latin America- Suriname

Ministry of Public works, Republic of Suriname

23 Vertical Turbine Pump Sets Across 9 Pumping Stations For Irrigation & Dewatering

15 June 2012
15 numbers of 1.5 / 2.7 MW Kirloskar Split Case pump sets in operation at RAND WATER BOARD, Johannesburg, SOUTH AFRICA for providing drinking water.
Kirloskar in Water Sector

Hunter Water Corporation, South Wales, Australia

Scope of Supply

- 2 Vertical Turbine Pumps (BHQ70), Motor 650 KW
Kirloskar in Water Sector

Public Utility Board, Singapore

Changi Water Reclamation Plant (CWRP)

Scope of Supply

- 3 - 20UPH3M1DV-V Split Case Pumpsets, Motor Rating 900 KW
Kirloskar in Water Sector

CUSTOMER : IPCO ASAL JOINT VENTURE, MALAYSIA
LOCATION : LANGKAWI WATER SUPPLY, MALAYSIA

KBL Scope

Design, Manufacture, Supply, supervision of Installation and Commissioning of 4 Nos Vertical Turbine Pumpsets-BHR42/4 ST with, 1450rpm 750kW/11kV HT Motors & 4 Nos Horizontal Split Case Pumps Model 12UPH8 with 1000kW/1450rpm, 11kV HT Motor

Each Set

Flow: 1137.6 m³/hr
Head 176m
Commissioned 1997
## Kirloskar in Water Sector

<table>
<thead>
<tr>
<th>Customer</th>
<th>Pelubang Water Supply Scheme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultant</td>
<td>Jurutera Konsultants Sdn Bhd, Malaysia</td>
</tr>
<tr>
<td>Location</td>
<td>Pelubang Water Supply, Malaysia</td>
</tr>
<tr>
<td>Year Of Supply</td>
<td>1983</td>
</tr>
</tbody>
</table>

**KBL Scope**
- Design, Manufacture, Supply, supervision of Installation and Commissioning
- 8 Nos Horizontal Split Case Pumps Model 14UPH4M (BOTTOM SUCTION, SIDE DELIVERY) with 737 kW/ 993 rpm, 11kV HT Motor
- Each Set
- Flow: 570.6 m³/hr  Head 98m

**Pumps Working For The Last 27 Years**

15 June 2012
Kirloskar in Water Sector

Warsova Sewerage Treatment Plant
Kirloskar in Industry Sector

Canned Motor Pumps- Refrigeration, (Ammonia), India

VARIOUS OEM’s and customers in
1. Cold Storages
2. Dairy’s
Kirloskar in Industry Sector

Client (end user) : Odfjell Terminals, Netherlands, ATEX
Model (type & no. of pumps) : 1 x SCT 300/48
Motor rating : 500 kW
Capacity : 2000 M³ @ 80 m
Application : Light product vessel loading (Jet Fuel) and Crude oil

Installed and working at site in Holland.
<table>
<thead>
<tr>
<th><strong>Client (end user)</strong></th>
<th>AS Baltic Chemical Terminal, ESTONIA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model (type &amp; no. of pumps)</strong></td>
<td>4 x KPD 150/52</td>
</tr>
<tr>
<td><strong>Motor rating</strong></td>
<td>160 kW</td>
</tr>
<tr>
<td><strong>Capacity</strong></td>
<td>470 M³ @ 70 m</td>
</tr>
<tr>
<td><strong>Application:</strong></td>
<td>Ammonia Nitrate product pumps-Tank Farm</td>
</tr>
</tbody>
</table>
### Kirloskar in Industry Sector

<table>
<thead>
<tr>
<th><strong>Client (end user)</strong></th>
<th>Sargeant Terminal, Botlek- Netherlands</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model (type &amp; no. of pumps)</strong></td>
<td>1 x SCT 250/51</td>
</tr>
<tr>
<td><strong>Motor rating</strong></td>
<td>315 kW</td>
</tr>
<tr>
<td><strong>Capacity</strong></td>
<td>1000 M³ @ 75 m</td>
</tr>
<tr>
<td><strong>Application</strong></td>
<td>Crude Oil, Vessel loading</td>
</tr>
</tbody>
</table>
Kirloskar in Industry Sector

AFRICA- ETHIOPIA

Kirloskar split case pump sets in operation at FINCHAA Sugar factory, Ethiopia.
**Kirloskar in Industry Sector**

<table>
<thead>
<tr>
<th>Project</th>
<th>EPC For Sea Water Pumping System Of CCWS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer</td>
<td>Sohar, Oman</td>
</tr>
<tr>
<td>Liquid</td>
<td>Sea Water</td>
</tr>
<tr>
<td>Pump Type</td>
<td>Vertical mixed flow</td>
</tr>
<tr>
<td>Qty</td>
<td>3 Sets</td>
</tr>
<tr>
<td>Design Capacity</td>
<td>15,000 m³/hr</td>
</tr>
<tr>
<td>Total Head</td>
<td>35 m</td>
</tr>
<tr>
<td>Speed</td>
<td>490 rpm</td>
</tr>
<tr>
<td>Motor Rating</td>
<td>1900 kW</td>
</tr>
</tbody>
</table>

15 June 2012
## Kirloskar in Industry Sector

<table>
<thead>
<tr>
<th>Project</th>
<th>Various</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer</td>
<td>CCL, BCCL, JSW Steel</td>
</tr>
<tr>
<td>Pump Model</td>
<td>RKB250/46 DK</td>
</tr>
<tr>
<td>Liquid</td>
<td>mine water, condensate extraction</td>
</tr>
<tr>
<td>Material</td>
<td>Stainless steel</td>
</tr>
</tbody>
</table>

### Duty Parameters

<table>
<thead>
<tr>
<th>Flow</th>
<th>upto 800 M³/Hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>upto 600 m</td>
</tr>
</tbody>
</table>
Kirloskar in Industry Sector

INSTALLATIONS - EUROPE - SOLVENT

AKZO Nobel: Rotterdam, The Netherlands
Kirloskar in Industry Sector

Textiles – Spin bath

TO WHOM IT MAY CONCERN

We, Thai Rayon Public Co. Ltd., producer of Viscose Rayon fiber in Thailand and part of AY Bible Group, have purchased centrifugal pumps for process application from Kirloskar Brothers Limited, India (KBL) for various applications in our plant. Two major lots of KPL model pumps have been purchased from KBL for our Line # 5 and Line # 6 expansion projects.

Line # 5 Expansion : Total 75 Pumps
Line # 6 Expansion : Total 90 pump sets.

The pumps were supplied in 2007 and 2008 and all the pumps are working satisfactorily till now for all the application.

KBL has also supplied pumps for one of the highly extensive applications – Spin Bath in our process, wherein we use AISI Stainless Steel material of construction pumps.

All the pumps supplied by KBL are working satisfactorily and operating to the satisfaction of our technical team and plant operating requirements.

For and on behalf of Thai Rayon Public Co. Limited

[Signature]
Head - Procurement

THAI RAYON PUBLIC COMPANY LIMITED
(Machinery & Logistic Section)
Office : Makasan Plaza 12th Fl. 85/1-37, Petchaburi Road, Bangkok 10330, Tel : 02-2307861-54 Fax : 02-2326694
Factory : K. Pl., Angthong-Nakhon Highway, T. Poa, A. Muang, Anything 16000, Tel : 03-8561275-80 Fax : 03-8561698
Kirloskar in Industry Sector

Textiles – Spin bath

TO WHOMSOEVER IT MAY CONCERN

TESTIMONIAL CERTIFICATE FOR PROCESS PUMPS SUPPLIED BY KIRLOSKAR BROTHERS LIMITED

We, South Pacific Viscose Co. Ltd, are pleased to certify, that we are using Kirloskar Brothers Limited, India (KBL) process pumps for various applications in our plant. We are operating KPD series process pumps manufactured by KBL for several years. All the pumps are working adequately, in line with the design parameters and to our satisfaction.

M.C. BHURAT
Vice President Technical Services

March 8, 2010
Kirloskar in Oil & Gas Sector

Client (end user): Rosendaal Energy, the Netherlands
Kisloskar in Commercial Building Services Sector

EON Commercial Complex, Pune (India)
Kisloskar in Commercial Building Services Sector

300 Acres Township Project: India
Kisloskar in Commercial Building Services Sector

Hotel Taj, Mumbai

The Lloyds Building, London

Euro Tunnel

Wheel Lock palace, Singapore

15 June 2012

This is a proprietary document of Kirloskar Brothers Limited
Kisloskar in Commercial Building Services Sector

HCC 247 PARK

BOMBAY DYEING

PREMIER INN

ORCHID TOWER MUMBAI

IIT CHENNAI
Kisloskar in Commercial Building Services Sector

Almost 100% Population in DMRC Underground Stations.

15 June 2012  This is a proprietary document of Kirloskar Brothers Limited
Europe

The Kirloskar European head quarters are located in the Netherlands which is chosen for its

- Good infrastructure

- Gateway to the rest of the European continent (by road / air and water)

- One of the largest and most efficient ports in the world

Main Service Centre  Located in Velsen-Noord the Netherlands
Europe

Kirloskar Europe B.V. has skilled and well trained personnel for

- Engineering
- Manufacturing
- Service and after service

Many of the engineers used by Kirloskar have years of experience with the majority of the European and American leading pump brands.

Up to 12 MW testing

With European selected partners Kirloskar has the capability to service pumps on the European continent in all sizes.
Europe

Large Pump assembly
Machining

With European selected partners Kirloskar has the capability to machine parts of large sizes (single piece)

- Up to 5000 mm in diameter
- Up to 20,000 kg single piece
- Up to 8000 mm length
Kirloskar has the capabilities to do all kinds of measurements pump related.

- Laser alignment
- Vibration analysing
- Flow measuring (portable)
Thailand

**Front Line Engineering - Bangkok:**

- Our dealer having a workshop with Over head Crane, basic tools and tackles
- 4 member service team based in Bangkok.
- Installation, Commissioning and Repair pump-sets activities are carried out.

**Asia Motor Company (AMC) - Bangkok:**

- We have agreement with this company one on case to case basis.
- They have one of the largest workshop in Bangkok for repairing of Pumps, Motors and Generators. AMC’s workshop is ISO 9002 certified. All kind of equipments to carryout service activity for pumps and motors including Dynamic balancing machine up to 5 tons.
- Large work shop have more than 100 employees
- Installation, Commissioning and Repair pump-sets activities are carried out.
Vietnam

**KBTL-Hanoi :**
- Our own office in Hanoi having an Service Engineer.
- Installation, Commissioning and Repair pump-sets activities are carried out.

**SAWATECH:**
- Our Dealer based in Hochiminh city.
- Have 6 member service team
- Workshop in Hochiminh city have tools and tackles and basic instruments to carry out the service activity.
- Installation, Commissioning and Repair pump-sets activities are carried out.
Vietnam

HPMC:

- A pump manufacturing company located in Hai Doung Province in Vietnam.
- Have complete pump manufacturing and testing facility.
- They have agreed to utilize their test facility to us. We will soon enter into agreement for after sales and service for Kirloskar Large Pumps.
- Performance Testing can be carried out.
Laos

Kirloskar Company:

- Our own office in Vientiane having an Expat Pump Expert to carry out the Service activities.
- Have three service centers in Vientiane, Savanaket, Pakse
- All three service centers have machineries like Lathes, Drilling Machines, Compressors and Overhead Cranes and necessary tools and tackles.
- Installation, Commissioning and Repair pump-sets activities are carried out.
**Indonesia, Malaysia**

**INDONESIA**

KBTL - Jakarta:
- Our own pump technical expert based in Jakarta office.
- Installation, Commissioning and Repair pump-sets activities are carried out.

**MALAYSIA**

Salcon Centrimax Engineering Sdn Bhd:
- Our Dealer have workshop with – Crane, lathe, grinding machines, tools and tackles
- Have an Service Engineer and a technician
- Installation, Commissioning and Repair pump-sets activities are carried out.
Singapore, Cambodia

**SINGAPORE**

• KBL -Singapore: Our own pump technical expert based in Singapore office.
• Installation, Commissioning and Repair pump-sets activities are carried out.

**CAMBODIA**

• Have our own office based in Phnompenh
iNNOVATION

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KIRLOSKAR BROTHERS LIMITED
Mission

Forming Teams to innovate new ideas and apply them for products.

- *i*-mission is a KBL internal forum where young and enthusiastic engineers work together for innovative ideas

- Team priorities needs and desires and brain storm among the group for new ideas, innovations.

- The innovative featured product is given to the user to validate its performance.

- KBL filed for 5 patents from this innovations.

- *i*-mission initiative at KBL is integral part of KBL’s day to day working.
KBL has been awarded a US patent for siphon creation and breaking arrangement for Sardar Sarovar Saurashtra Branch Canal at Dhanki, District Surendranagar, Gujarat. The use of energy efficient siphon arrangement will provide the following benefits:

- Reduction in motor rating: 8.5 MW
- Annual Energy conservation: 34.96 million units per annum
i Mission

Innovation - Split Casing Pump in Multistage for high pressure application

**Pump type:** SCT 200/82-2  
(Two stage split case pump)  
**Application:** Sea water  
For 20MLD Desalination plant

**Duties:**

**Head:** 388 m  
**Discharge:** 680 m^3/Hr.  
**Material of construction:**  
super duplex(ASTM A890 Gr. 1-B)

The compact split case design facilitates providing higher head with less power consumption.
**i Mission - iHT series- Horizontal Split Case Pump**

We closely watched, listened to your need and used CFD technology, our wide experience and expertise to innovate a **smart choice** for you - **Enriching Lives**
iHT series- Horizontal Split Case Pump

Pump Details

- Delivery Sizes Upto → 300 mm
- Discharge → 30-1300 m³/hr
- Head → 30 to 250 Mtr.
- Speed → 2900 rpm
- St. Box → M. Seal for Single stage.
  → M. Seal / Pack for double stage.
- Flanges → As per BS 4504 PN16,25 & 40
- Liquid temp → 8.0 - 90 deg C
The Group is committed to fulfilling its social responsibility and actively promotes developmental projects in and around the locations where it operates.
Fulfilling Corporate Social Responsibility

Some of the projects which the group has undertaken include:

- Support to social welfare organizations for drinking water schemes and medical facilities in rural areas
- Promotion of cultural activities such as literature and arts
- Contributions to relief funds for natural calamities
- Sponsorships and aid for socially under-privileged and the physically handicapped
- Support / sponsorship for utility projects for Indian Armed Forces such as water purification plants at Army Camps

The Group believes that education is integral to a nation’s development.

In line with this belief, the Group conducts a number of developmental programs for education and child welfare.
Some of the projects which the group has undertaken in this direction include the following,

- School children eye check up with free distribution of glasses
- School teachers health check up and lifestyle management
- Community health camps for underprivileged sections of society
THANK YOU