Water is Life . . . .

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

KIRLOSKAR BROTHERS LIMITED
The Kirloskar Group, one of the India's leading engineering conglomerates has diverse business interest ranging from Centrifugal Pumps, Engines, Ferrous Metals & Screw & Reciprocating Compressors with over a century of experience and US $ 1340 M in revenues*.  

* Consolidated group revenues, FY 2009 – 10
### Summary financials (FY: 2009-10)

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues</td>
<td>US $ 597 Million</td>
</tr>
<tr>
<td>Net worth</td>
<td>US $ 176 Million</td>
</tr>
<tr>
<td>Pre tax profit</td>
<td>US $ 43 Million</td>
</tr>
<tr>
<td>Market Cap</td>
<td>US $ 511 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.
Kirloskar Oil Engines Limited

Business Summary

<table>
<thead>
<tr>
<th>Incorporated</th>
<th>1946</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main business</td>
<td>Diesel / gas engines, thin walled bearings</td>
</tr>
</tbody>
</table>

Summary Financials (FY: 2009-10)

<table>
<thead>
<tr>
<th>Revenues</th>
<th>US $ 493 Million</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net worth</td>
<td>US $ 151 Million</td>
</tr>
<tr>
<td>Pre tax profit</td>
<td>US $ 59 Million</td>
</tr>
</tbody>
</table>

Manufacturer of the widest range of diesel engines in India
### Business Summary

- **Incorporated**: 1994
- **Main business**: Grey iron castings, pig iron

### Summary Financials (FY: 2009-10)

- **Revenues**: US $ 180 Million
- **Net worth**: US $ 73 Million
- **Pre tax profit**: US $ 16 Million

The only foundry in Asia that is backward integrated to pig iron.
### Joint Ventures and Subsidiaries

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

20 December 2010
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
Range Of Pumps

- Over 60 types
- Flow up to 120,000 m³/hr
- Head up to 1200 m
- EPC capabilities
## Domestic Subsidiaries

### KIRLOSKAR BROTHERS LIMITED

**Kirloskar Construction and Engineers Limited (2006)**
- Cross country and submarine pipelines
- Tunneling and underground caverns
- Bridges and roads
- Civil construction

**Gondwana Engineers Private Limited (2007)**
- Turnkey sewage and effluent treatment plants

**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
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)
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

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

Kirloskar Ebara Pumps Limited
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
Recent Achievements

US Patent

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.
Research And Engineering Capabilities

COMPUTATIONAL FLUID DYNAMICS (CFD)

• Study and visualize flow pattern through complex geometries at design stage.

• Study of compressible and incompressible flows, multiple flows, free surface flows and flow through rotating machines.

• An alternative tool to verify the design.

CFD ANALYSIS

• Flow through pumps

• Flow through turbines

• Flow through sumps

• Flow through draft tubes

• Flow through piping systems

• Multiphase flow studies
The software is used to verify the design. The rotating impeller and casing are analyzed. The streamlines showing the flow pattern is brought out in rotating impeller and the stationary casing. The colours are indicative of the velocity magnitude.

The CFD results provide much more information than that can be measured. The numerical results are compared with test results from experimental measurements.
Research And Engineering Capabilities

Structural Analysis

• Study mechanical behavior of the structure.

• Capabilities include
  - Stress Analysis
  - Natural Frequency Estimation,
  - Vibration / Seismic Analysis
Natural Frequency Analysis Of Verticle Mixed Flow Pump

Pump : BHMa120
Client : DSD Germany
RPM : 395 (6.58 Hz)
First Mode : -8.75 Hz

The first mode of vibration is associated with rotating assembly. The colonMillion pipe is removed to show the vibration mode.
Seismic Qualification Of End Suction Pump

Pump KPD 65/43
Client NPCIL, Mumbai
Project TAPP 3 & 4
Frequency Associated with 9th Mode of Vibration 252.44 Hz

The estimation of natural frequency is the first step towards Seismic Qualification

The Seismic Qualification is carried out as per norms specified in ASME Section III.
Objective of this study is to predict air entrainment in the pump intake structure using CFD analysis. The problem has been solved using the concept of multiphase flow analysis. The flow domain has been divided into two separate regions namely air and water.

An artificial air domain has been created above the minimum water level of the sump structure to perform the analysis. This artificially generated air domain will act as a free atmospheric region.
CFD analysis for Sumps

CFD analysis of Meenakshi Coastal thermal power project (For Thermax) – Industry sector

The geometry was modified to get improved flow pattern and reduced swirl angle.
Research And Engineering Capabilities

CFD analysis of Suction piping Layout for Tata steel SCT 350/39 – A/c Industry Sector

Objective- Analysis has been done to check whether the removal of existing Eccentric reducer can help the improvement of flow quality.

Streamline plot of the piping layout (original)

Vector plot at pump entrance

The vorticity is very high at the pump entrance and the flow is non uniform. Therefore the present piping layout is not suitable for smooth operation of pump. Same in conveyed to the client.
Research And Engineering Capabilities

Surge Analysis

Pump delivery mains will have an adverse effect of surge pressure due to sudden closure of valve or sudden stoppage of pumps. KBL is capable to provide solution for surge phenomenon.

Steps Involved:

- Detail study of system
- Modeling the system
- Several iteration for suitable protection devices
- Optimized and Economic solution
- Report generation
Turbo Design -1

The inverse design approach is the latest in turbo machinery design. The software input is blade loading and the blade geometry is the outcome of the Software.

At KBL, the software is inducted and the new designs are providing improved performance as regards to efficiency, and cavitation performance.

**ORIGINAL IMPELLER**
PUMP EFF. – 83%

**MODIFIED IMPELLER**
PUMP EFF – 87%
Research And Engineering Capabilities

Resources

Software Facilities

Advanced computational and experimental facilities including

- Pro-E Wildfire (For Solid Modeling) : 10 seats
- Pro-Mechanica (For preliminary structural analysis) : 10 seats
- Ansys Mechanical/Pre-processor (For mechanical behavior) : 3 seats
- MSC Nastran/FEMAP (For mechanical behavior) : 2 seats
- Ansys CFX (For CFD studies) : 8 seats
- Surge Analysis Package : 2 seat
- Turbo Design¹ (For inverse design) : 4 seat
Research And Engineering Capabilities

Solid models for different Pump types

- **END SUCTION**: DB
- **MULTISTAGE**: RKB
- **SPLIT CASE**: SCT
- **END SUCTION**: SHL
Research And Engineering Capabilities

Process Pumps

Secondary Heat Transfer Pump
SSP 600/90

Canned Motor Pump
CM 40/260-15/2F
Research And Engineering Capabilities

Kirloskarvadi R&D Infrastructure

Stress Relieving Furnace

4mw Electric Motor For Testing Of Primary Sodium Pump
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 m$^3$/hr

• Closed circuit NPSH testing capabilities

• Computerized data acquisition system

• Physical Sump and Pump model study

• Conceptualized 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>
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<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>
Market Oriented Organization

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

- IRRIGATION
- Water
- POWER
- INDUSTRY
- BUILDING & CONSTRUCTION
- OIL & GAS and MARINE
- DISTRIBUTION
- CUSTOMER SUPPORT & SERVICE
Approved Vendors for Global Consultants and EPC Contractors

TATA POWER
Lighting up Lives!

BECHTEL

FOSTER WHEELER

ROLLS ROYCE

DANIELI

MAN FERROSTAAL

ESSAR

A positive attitude

ALSTOM

Technip

TEIL

SINDAL STEEL & POWER LIMITED

HYUNDAI

FLUOR

POSCO

Reliance Industries Limited

MITSUBISHI
HEAVY INDUSTRIES, LTD.

SUMITOMO

ABB

BLACK & VEATCH

SIEMENS

TOSHIBA

NTPC

Ansaldo Energia

Raytheon
Association with Governments

Angola

Cambodia

Egypt

Ghana

Jamaica

Laos

Lesotho

Senegal

Sudan

Suriname

Zimbabwe

Suriname

Zimbabwe

Senegal

Jamaica

Laos

Ghana

Angola

Egypt
Kirloskar Pumps & Systems

This is a proprietary document of Kirloskar Brothers Limited
Split Case Range

UPM (Vertical Execution)

• 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

UP

SCT
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
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
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

DB (Small)
Delivery size up to 150 mm
Capacity up to 550 m³/hr.
Head up to 100 metres

CE Energy Efficient
Delivery size 32 to 125mm
Capacity up to 660 m³/hr.
Head up to 100 metres

DB (Large)
Delivery size 150 to 300mm
Capacity up to 1900 m³/hr.
Head up to 35 meters
End Suction

**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
End Suction

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: (-) 10°C to 90°C
End Suction

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:

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

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

- 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

Innovative Chemical Process Pump – i CP

1450 rpm 50 Hz - with rate of flow up to 180 m$^3$/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 m$^3$/hr and head up to 92 m, available in 11 different models.

1750 rpm at 60Hz - with rate of flow up to 220 m$^3$/hr and head up to 80 m, available in 14 different models.
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
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)
Fire Pumps

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)
Over 500 International

- 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

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

Vertical Turbine Pump on Test.
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
Life-cycle Cost Analysis

WHOLE LIFE COST

CAPITAL COSTS
- Pumps
- Civil Works
- M & E

ENERGY COSTS
- Efficiency Process Optimisation

MAINTENANCE COSTS
- MTBF
- Replacement Parts
- Downtime

DISPOSAL COSTS
Low Life Cycle Cost Series

Keyed muff type couplings fitted as standard.
- Easily replaceable, unlike lower cost, serrated couplings ensuring increased component life.

Heavy duty thrust bearing assembly.
- Judd-effect or Ballnur type thrust bearings depending on load. Minimum L10 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.

Stainless steel as standard.
- Enhanced corrosion resistance and component life.

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

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

Hard Stainless steel shaft sleeves fitted as standard.
- Renewable hardfaced 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
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:**

- Head: up to 50 m
- Flow: up to 120,000 m³/hr
- Delivery Size: up to 6000 mm
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

<table>
<thead>
<tr>
<th><strong>Special Design</strong></th>
<th>: First Stage Impeller Double Suction</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Customer</strong></td>
<td>: NPCIL</td>
</tr>
<tr>
<td><strong>Project</strong></td>
<td>: Tarapur Atomic Power Project, India</td>
</tr>
<tr>
<td><strong>Pump Model</strong></td>
<td>: BHRC 7</td>
</tr>
<tr>
<td><strong>Qty</strong></td>
<td>: 6 Sets</td>
</tr>
</tbody>
</table>

**Duty parameters**

| **Discharge** | : 1210 m³ / hr |
| **Head**      | : 200 m        |
| **Efficiency**| : 82%          |
| **Speed**     | : 990 rpm      |
| **Motor**     | : 1150 kW      |
| **NPSHR**     | : 2 m          |
KBL In The Power Sector

Powering The Future
KBL In 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
Global Footprint in Power Sector

Prestigious Installations

- Sadow 5, Texas, USA
- Prairie State, USA
- Termodella, Mexico
- Enemalta, Malta
- Skopje, Macedonia
- Iberese, Spain
- Metka, Greece
- Fujairah, UAE
- Sohar, Oman
- Glow, Thailand
- Kwinana HEG, Australia
- Yarva, Russia

20 December 2010

This is a proprietary document of Kirloskar Brothers Limited
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

<table>
<thead>
<tr>
<th>Plant</th>
<th>Unit</th>
<th>Type</th>
<th>Capacity (MWe)</th>
<th>KBL's Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>TARAPUR ATOMIC POWER STATION (TAPS), Maharashtra</td>
<td>1</td>
<td>BWR</td>
<td>160</td>
<td>Primary Circuit, Circulating Water Pumps, Condensate Extraction Pump, Miscellaneous Pumps</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>BWR</td>
<td>160</td>
<td>Primary Circuit, Circulating Water Pumps, Condensate Extraction Pump, Miscellaneous Pumps</td>
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<tr>
<td></td>
<td>3</td>
<td>PHWR</td>
<td>540</td>
<td>Primary Circuit, Circulating Water Pumps, Miscellaneous Pumps</td>
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<tr>
<td></td>
<td>4</td>
<td>PHWR</td>
<td>540</td>
<td>Circulating Water Pumps, Miscellaneous Pumps</td>
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<tr>
<td></td>
<td>1</td>
<td>PHWR</td>
<td>100</td>
<td>Primary Circuit, Circulating Water Pumps, Condensate Extraction Pump, Miscellaneous Pumps</td>
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<tr>
<td>RAJASTHAN ATOMIC POWER STATION (RAPS), Rajasthan</td>
<td>2</td>
<td>PHWR</td>
<td>200</td>
<td>Primary Circuit, Circulating Water Pumps, Miscellaneous Pumps</td>
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<tr>
<td></td>
<td>3</td>
<td>PHWR</td>
<td>220</td>
<td>Primary Circuit, Circulating Water Pumps, Condensate Extraction Pump, Miscellaneous Pumps</td>
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<tr>
<td></td>
<td>4</td>
<td>PHWR</td>
<td>220</td>
<td>Primary Circuit, Circulating Water Pumps, Miscellaneous Pumps</td>
</tr>
<tr>
<td>MADRAS ATOMIC POWER STATION (MAPS), Tamil Nadu</td>
<td>1</td>
<td>PHWR</td>
<td>220</td>
<td>Primary Circuit, Circulating Water Pumps, Condensate Extraction Pump, Miscellaneous Pumps</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>PHWR</td>
<td>220</td>
<td>Primary Circuit, Circulating Water Pumps, Miscellaneous Pumps</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>PHWR</td>
<td>220</td>
<td>Primary Circuit, Circulating Water Pumps, Miscellaneous Pumps</td>
</tr>
<tr>
<td>KAIGA GENERATING STATION, Karnataka</td>
<td>2</td>
<td>PHWR</td>
<td>220</td>
<td>Primary Circuit, Circulating Water Pumps, Condensate Extraction Pump, Miscellaneous Pumps</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>PHWR</td>
<td>220</td>
<td>Primary Circuit, Circulating Water Pumps, Miscellaneous Pumps</td>
</tr>
<tr>
<td>NARORA ATOMIC POWER STATION (NAPS), Uttar Pradesh</td>
<td>1</td>
<td>PHWR</td>
<td>220</td>
<td>Primary Circuit, Circulating Water Pumps, Miscellaneous Pumps</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>PHWR</td>
<td>220</td>
<td>Primary Circuit, Circulating Water Pumps, Miscellaneous Pumps</td>
</tr>
<tr>
<td>KAKRAPAR ATOMIC POWER STATION (KAPS), Gujarat</td>
<td>1</td>
<td>PHWR</td>
<td>220</td>
<td>Circulating Water Pumps, Miscellaneous Pumps</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>PHWR</td>
<td>220</td>
<td>Circulating Water Pumps, Miscellaneous Pumps</td>
</tr>
</tbody>
</table>
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>
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
2100 mm Turbine Inlet (Butterfly) Valve, Massachusetts Water Resources Authority, 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 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>Project</th>
<th>1 x 500 MW - Bhavini (Bharatiya Nabhikiya Vidyut Nigam Limited) Prototype Fast Breeder Reactor (PFBR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer</td>
<td>Nuclear Power Corporation of India Limited</td>
</tr>
<tr>
<td>Liquid</td>
<td>Sea Water</td>
</tr>
<tr>
<td>Pump Type</td>
<td>Concrete Volute</td>
</tr>
<tr>
<td>Design Capacity</td>
<td>49,000 m³/hr</td>
</tr>
<tr>
<td>Total Head</td>
<td>20.0 m</td>
</tr>
<tr>
<td>Speed</td>
<td>271 rpm</td>
</tr>
<tr>
<td>Motor Rating</td>
<td>4370 kW</td>
</tr>
</tbody>
</table>

**CW system for world’s first 500 MW Prototype Fast Breeder Reactor- under construction**

20 December 2010
Kirloskar In Power Sector

CW Pump – Bechtel, USA

Project : 568 MW Sandow 5, Texas, USA
Customer : Bechtel Power Corporation, USA
Pump Model : BHM 130
Quantity : 2 Nos.

Duty Parameters

Discharge : 34,635 M³/hr
Head : 23.93 M
Speed : 358 RPM
Motor : 2975 KW @ 60Hz
## Kirloskar In Power Sector

### Project
(2 x 800 MW) Prairie State Energy Campus, USA

### Customer
Bechtel Power Corporation, USA

### Pump Model
BHM 130

### Quantity
6 Nos

### Duty Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discharge</td>
<td>31,075 M³/hr</td>
</tr>
<tr>
<td>Head</td>
<td>26.82 M</td>
</tr>
<tr>
<td>Speed</td>
<td>356 RPM</td>
</tr>
<tr>
<td>Motor</td>
<td>2825 KW @ 60Hz</td>
</tr>
</tbody>
</table>
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>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Liquid</th>
<th>Brackish water</th>
</tr>
</thead>
<tbody>
<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**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow</td>
<td>25,000 M³/Hr</td>
</tr>
<tr>
<td>Head</td>
<td>26 m</td>
</tr>
<tr>
<td>Motor rating</td>
<td>2400 KW</td>
</tr>
<tr>
<td>Speed</td>
<td>425 RPM</td>
</tr>
</tbody>
</table>

**KBL’s 2nd Installation for CW Pump in South America.**
Kirloskar In Power 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>
Kirloskar in Irrigation Sector

The world's 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.
Kirloskar in Irrigation Sector

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

Africa- Ethiopia

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

Africa – South Africa

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

Customer : Pelubang Water Supply Scheme
Consultant : Jurutera Konsultants Sdn Bhd, Malaysia
Location : Pelubang Water Supply, Malaysia
Year Of Supply : 1983

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

20 December 2010
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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

Textiles – Spin bath

TO WHOM IT MAY CONCERN

We, Thai Rayon Public Co. Ltd., producer of Viscose Rayon fiber in Thailand and part of AV Birla Group, have purchased centrifugal pumps for process application from Kirloskar Brothers Limited, India (KBL) for various applications in our plant. Two major lot of KPB 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 supplied pumps for one of the highly corrosive applications – Spin Bath in our process, wherein we use SS35 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

THAILAND PUBLIC COMPANY LIMITED (Manufacture & Logistics Division)
Office: Mahatra Pans 12th Fl., 999-117, Phra Pradao Road, Bangkok – 10330 Tel.: 02-287-7915-4 Fax.: 02-287-7915-4
Factory: 36, Xela 5, Ayutthaya-Ang-Khang Highway, T PHONE, A-Mark, Amphawa, 14220 Tel.: 03-35-5623-0 Fax.: 03-35-5623-0

20 December 2010
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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 Industry Sector

Installation in Europe

Client (end user): AS Baltic Chemical Terminal
Kirloskar in Oil & Gas Sector

Client (end user): Rosendaal Energy, the Netherlands
Kirloskar in Oil & Gas Sector

AKZO Nobel: Rotterdam, the Netherlands
Hydel Power Projects Under Execution / Commissioning

- SARJU I: 2 x 3000 KW
- SARJU II: 3 x 3500 KW
- SARJU III: 3 x 3000 KW
- SECHI: 2 x 2250 KW
- MELAN: 2 x 2250 KW
- PANWI: 2 x 2500 KW
- PENCH LBC: 2 x 2200 KW
- PENCH RBC: 2 x 700 KW
- D.KASARI: 1 x 2500 KW
- DHOM BALKAWADI: 1 x 3500 KW
- DARNA: 2 x 2450 KW
- Maniyar HEP: 2 x 2000 KW
- Periyar Vaigai I: 2 x 2000 KW
- Periyar Vaigai II: 2 x 1250 KW
- Periyar Vaigai III: 2 x 2000 KW
- Periyar Vaigai IV: 2 x 1250 KW
- Bhadra HEP: 1 x 1500 KW
- Balij KA NALA: 2 x 1750 KW

Total Capacity Under execution = 72.20MW
Kirloskar In Hydel Power Projects

- SOLANG: 2 x 500 KW
- BADRINATH: 2 x 625 KW
- NUGU: 4 x 750 KW
- MUKURTHY: 2 x 350 KW
- ALIYAR: 2 x 1250 KW
- PERUNCHANI: 2 x 650 KW
- KAMBANG: 3 x 2000 KW
- SIPPI: 2 x 2000 KW
- ANIYUR: 2 x 3000 KW
- KONAL: 2 x 5500 KW
- BRINDAVAN: 2 x 2250 KW

Total Installed Capacity = 40.221 MW

- Project commissioned and Handed Over.
- Project commissioned but not handed Over.
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

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity</td>
<td>2 x 1250 kW</td>
</tr>
<tr>
<td>Head</td>
<td>30.00 m</td>
</tr>
<tr>
<td>Discharge</td>
<td>5.000 m³/s</td>
</tr>
<tr>
<td>Runner Dia</td>
<td>950 mm</td>
</tr>
<tr>
<td>Rated Speed</td>
<td>500 rpm</td>
</tr>
</tbody>
</table>
The Kirloskar Group
Corporate social responsibility

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.
Fulfilling Corporate Social Responsibility

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

... Education and child welfare ...
THANK YOU