

KESSELS
STEAM TURBINES

Warm welcome
to
All distinguished guests

KESSELS ENGINEERING WORKS (P) LTD

Company Corporate Presentation

PRESENTATION BY

HARMIT SINGH

Group Head – Business Development

+91-9878844466/ 9056161878

**E mail – harmit.singh@kessels.in,
info@kessels.in**

Business Overview



Leading Steam Turbine Manufacturing Company

35+ Years of Specialization in Steam Turbines for Captive, Co-gen & Ind. Power Plants

KESSELS
STEAM TURBINES

- **Kessels Engineering Works Pvt. Ltd. (“KESSELS STEAM TURBINE ”) is a leading steam turbine manufacturing (OEM) Supplier.** These systems are designed to deliver **Highly Efficient & cost-effective solution** and have applications in almost all industrial processes where steam is consumed.
- **With 35+ years of specialization the Company has developed core competency in the field of steam turbine engineering.** It's advanced steam path designs help in retaining its leading position as a manufacturer of Steam Turbines. **We covers a wide spectrum in the field of power generation solutions, starting from single stage steam turbines of 5 KW capacity to 30 MW Multi-stage Steam turbines.** Aspiring for global leadership, one of the most efficient Steam Turbines in India.
- **KESSELS believes in earning the trust of its customers through highly efficient and responsive after sales support.** Our regional offices and a large number of project sites spread over India and across the globe ensure quick response times.
- **KESSELS prides itself on its state-of-the-art manufacturing assets,** and a comprehensive product range suited to a wide range of applications in various industries. **Manufacturing Base - Faridabad Unit I & II , Bangalore & Hyderabad.**
- **KESSELS relies on it's strong base of satisfied customers spread over 6 continents, 25+ countries and multi domain clients** as a demonstration of confidence in its Manufacturing abilities and Quality standards



Leading position in mid-size market for Steam Turbine requirement of industry.



100+ Engineers and Managers; 200+ Technicians and Workers



Design, manufacturing, installation, and commissioning capabilities.



3.5 decades of excellence & core competence in design engineering

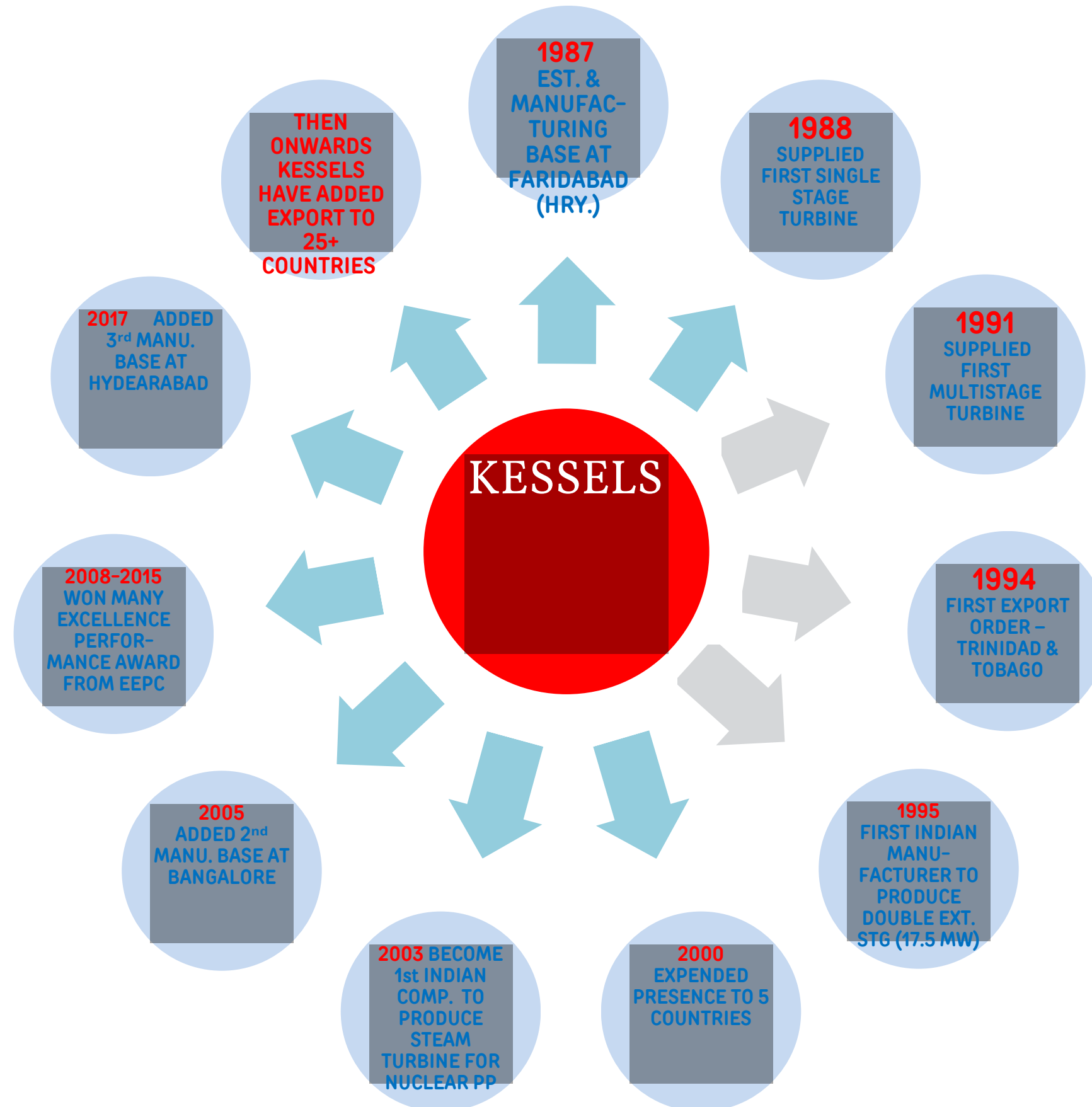


An Overall 1500+ years of combined experience



850+ working installations knowhow

Our Journey – Footstep Towards Progress



Other Key Achievements

- **KESSELS nurtures** a team of **highly experienced research and design engineers**, which cater to the requirements of its **clients by providing customized tailor made solutions** for their energy needs
- **First Indian Company in Steam Turbines** to introduce & capable of handling **high inlet steam pressures (65 Bar & above)** in the Indian market.
- Introduction of **Steam Turbines capable of handling high exhaust pressures (upto 20 Bar)** in the Indian market.
- Introduction of **Extraction Condensing & Double Extraction Condensing type of Steam Turbines in the Indian market.**
- Introduction of **Single Stage multiple valve operated Steam Turbines as PRV replacement for Industrial use, in the Indian market.**
- Introduction of the **use of Twisted and Tapered blades and its technology in Steam Turbines in the Indian market.**
- Supply of **special type of Steam Turbines to Nuclear Plants (Heavy water plants) with Titanium blades.**
- Design and Manufacturing of special type of Condensing **Steam Turbine suitable for Solar Thermal & Geo Thermal power generation.**



Leading position in mid-market Indian Steam Turbine industry



100+ Engineers and Managers; 200+ Technicians and Workers



Design, manufacturing, installation, and commissioning capabilities



3.5 decades of excellence & core competence in design engineering



An Overall 1500+ years of combined experience



850+ working installations knowhow

Pioneering Expertise – Capabilities



#	Parameters	Values	#	Parameters	Values
1	Pressure Handling	Upto 105 Bar (a)	7	Type of Turbines	<ul style="list-style-type: none"> • Multi Stage Turbines. • Single Stage Turbines.
2	Temperature Handling	Upto 540 °C			
3	Flow Rate Handling	Upto 180 T/Hr			
4	Back Pressure	Upto 20 Bar (a)	8	Application Domain	<ul style="list-style-type: none"> • Pulp & Paper • Textile & Dying • Sugar & Distilleries • Ethanol • Food – Rice & FMCG • Steel & Cement • Pharma & Chemicals • Solvent Extraction • Palm Oil • Renewables – Solar Thermal & Geo Thermal. • WHRB & HRSG • Other Waste & Heat Application – Biomass, Municiple Waste etc. • Institutional Requirements as Proto Type
5	Applications	<ul style="list-style-type: none"> • Captive Power Plant • Co-generation Power Plant • Independent Power Plant • Micro turbines as PRV replacement 			
6	Types of Turbine Solutions offered	<ul style="list-style-type: none"> • Straight Back Pressure • Bleed cum Back Pressure • Controlled Ext cum Back Pressure • Bleed cum Condensing. • Controlled Extraction cum Condensing • Double Controlled Extraction cum condensing • Micro Steam Turbines (PRT) 			

OFFERING FOR MULTI STAGE TURBINE

Range:

- 250 kW-30000 kW
- 3000 – 8500 RPM
- Inlet Pressure upto 105 bar
- Inlet Temperature upto 540° C
- Exhaust Pressure Vacuum to 20 bar

Variants:

- API 611 & 612 Compliant Pump Drives
- Single & multi Valve inlet
- Mixed Pressure Induction



OFFERING FOR SINGLE STAGE TURBINE

Range:

- 5 kW-3000 kW
- Upto 5000 RPM
- Pressure upto 65 bar (a)
- Temperature upto 500° C/ 932° F

Variants:

- API 611 & 612 Compliant Pump Drives
- Horizontal (Axial & Radial split)
- Vertical
- “between the bearings” wheel designs.



Skinner Engine Co.,
USA

Single Stage
Steam Turbines

KESSELS

WHEN ENERGY MATTERS

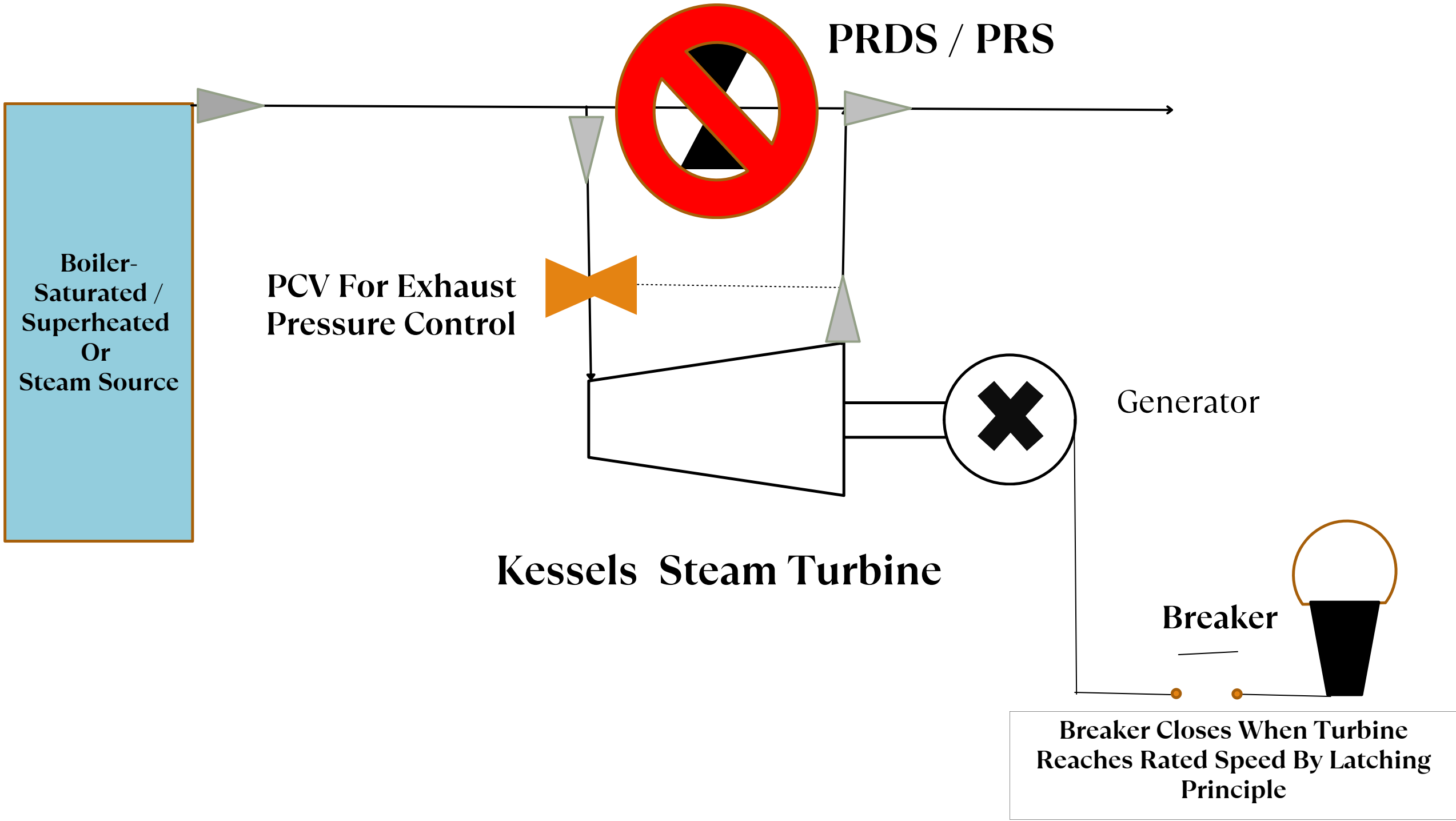
*Turbine Cogeneration
Technology for Energy
Efficiency in Industry*

“ MICRO STEAM TURBINES ”

SOLUTION FOCUSSED

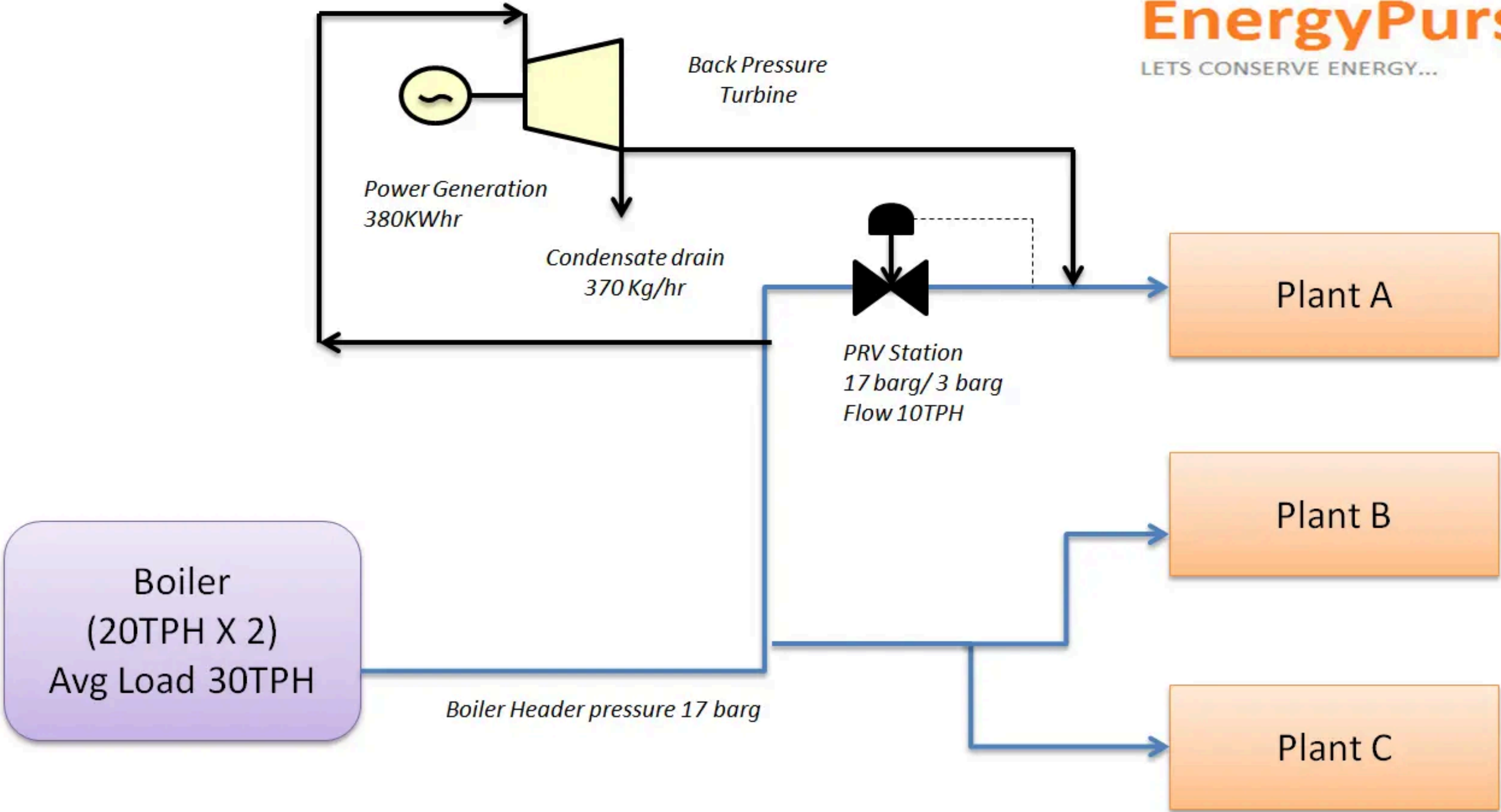
***MAKE THE PLANT AS
ENERGY EFFICIENT AS POSSIBLE,
PREFERABLY USING EXISTING
RESOURCES or BY SUGGESTING
RIGHT MEASURES FOR FUTURE
INVESTMENTS***

PRINCIPLE - MICRO STEAM TURBINE WORKING

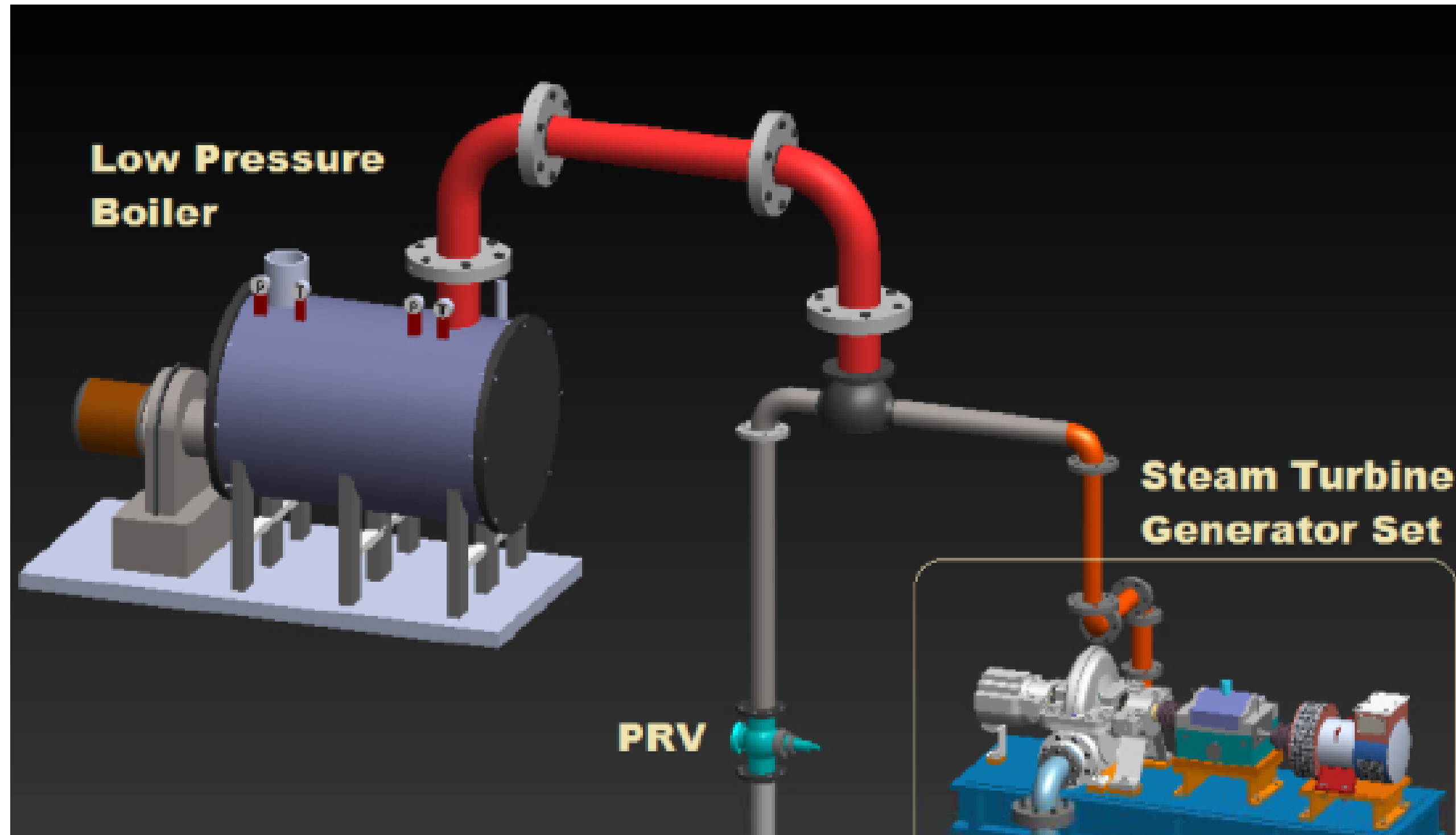


ENERGY SAVING POCKET

EnergyPurse
LET'S CONSERVE ENERGY...



3D REPRESENTATION OF IN LINE MICRO TURBINE



PAYBACK ANALYSIS

Before Kessels Turbine

- Power Cost = INR 7/kWh
- No. of hours /year = 7000
- Power generated= 475 kW
- Total cost = INR 2,32,75,000.00

After Kessels Turbine

- Investment cost 95,00,000/-
- Supervision of commissioning approx 8,00,000/-
- Miscellaneous 30,00,000/-

Pay back for the investment is about 8-9 months, values and power can be varied for different cases

UNIQUE SOLUTION – PLUG & PLAY



COMPLETELY SKID MOUNTED

IMPACT OF OUR PRODUCT ON YOUR INDUSTRY

We guarantee that our products will have a positive impact on the corporate sustainability of your industry



Environment-

Reduction in overall energy consumption thereby reduction in environmental impact

Economy

Increased savings and hence increase in profits
Increase in revenue through carbon credits and green tax

Equity

Reduction in occupational safety hazard by use of process waste for power generation

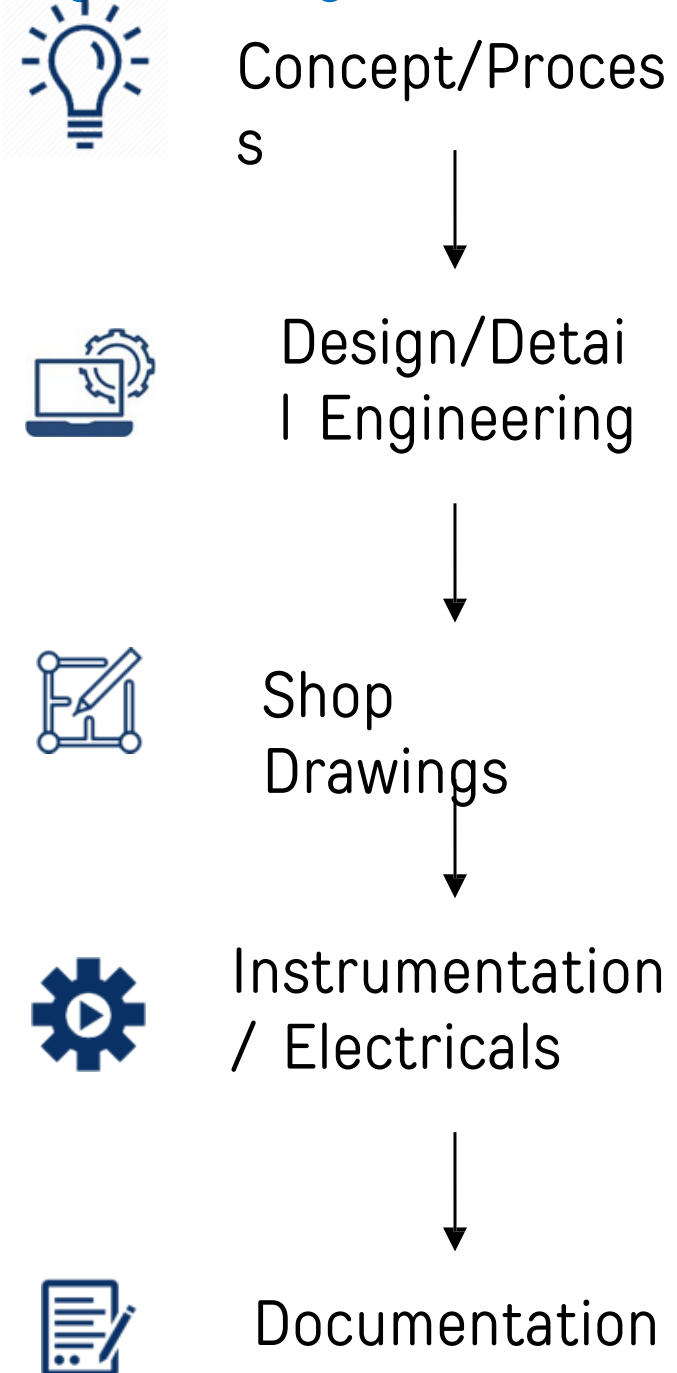
KESSELS – A solution for any industry...

KESSELS
STEAM TURBINES

Excellent Design and Engineering

Capabilities

Design & Field Engineering



3.5 decades of excellence & core competence in design engineering



1500 + years of combined experience



850+ working installations knowhow



Expertise on latest software



Knowledge management, data storage & retrieval

List of Analysis

- CFD ANALYSIS
- STRUCTURE ANALYSIS
- (Linear / Non-Linear)
- Rotor Dynamic Analysis
- In-house developed software's and excel sheets

Detail Engineering

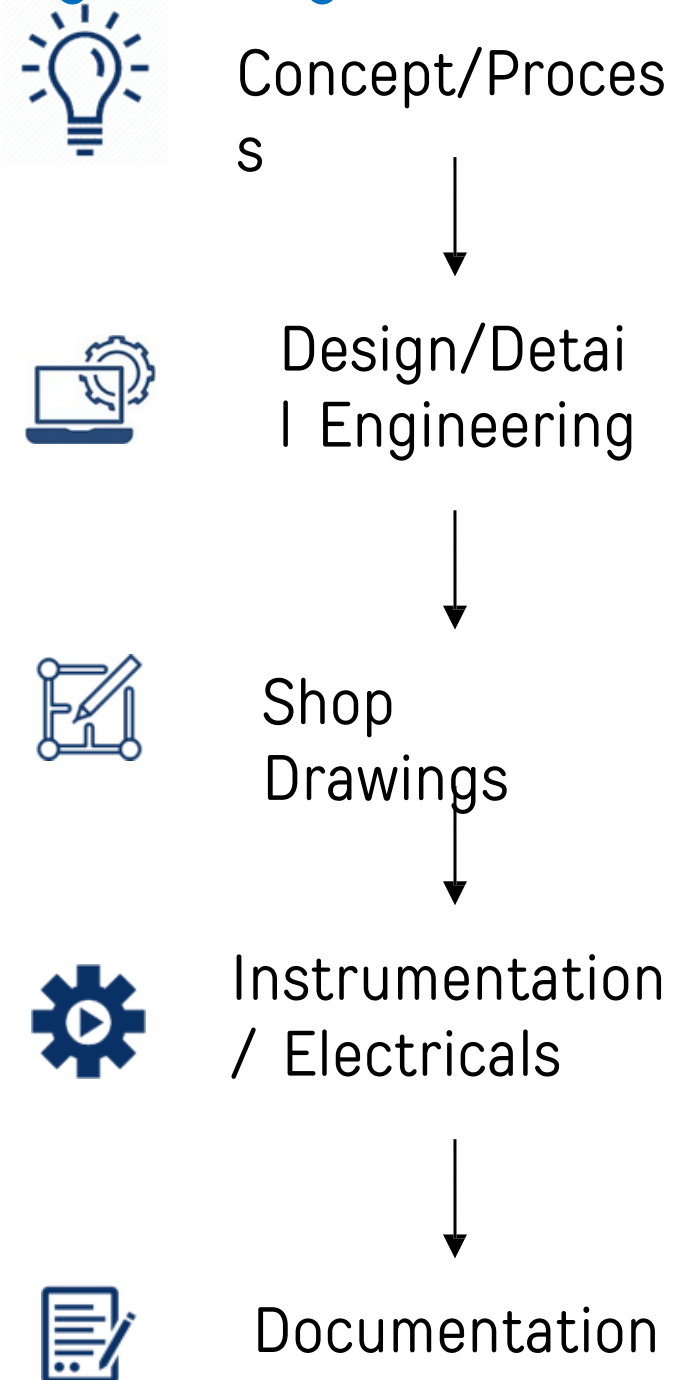
- Auto CAD
- Solid Works – 3 D
- ANSYS
- Caesar II – Piping

Electrical & Instrumentation

- Auto CAD
- E – Plan

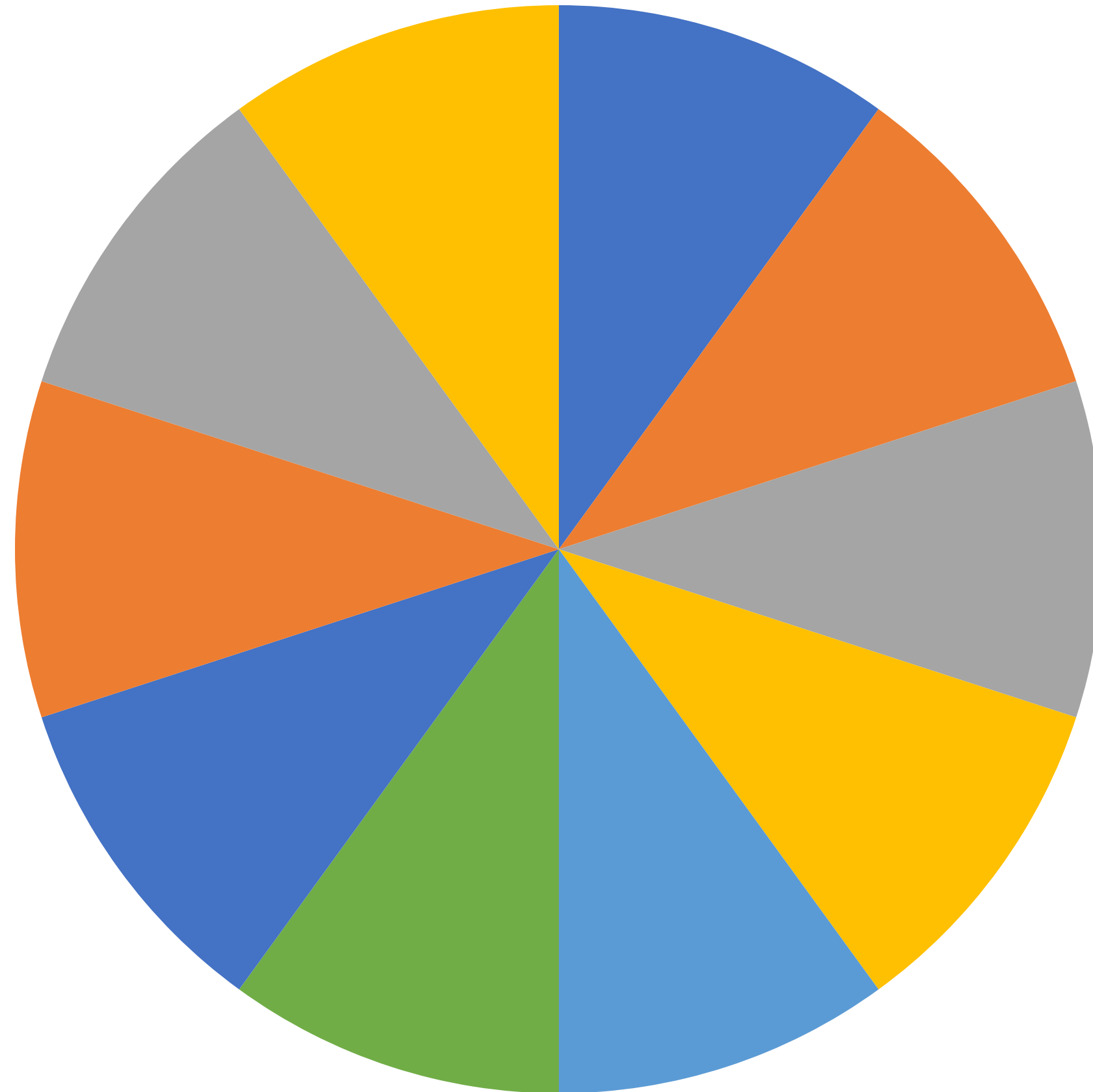
Design, Testing & Performance Std.

Design & Field Engineering



Turbine Design	API 612, IEC 45, NEMA SM23
Balancing	API 612, ISO 1940
Rotor Dynamics	API 612
Vibration Limits	API 612, IEC 45, NEMA SM23, ISO 7919,
Performance Test	IEC 953, DIN 1943, ASME PTC6

KESSELS – An advantageous solution



Infrastructur





Hyderabad Factory

Infrastructure

State-of-the-Art Manufacturing facility



Factory Hyderabad – Inside View



Manufacturing Facility – Hyderabad & Faridabad

- An overall 2,00,000 sq. ft. manufacturing facility, with 80,000 sq.ft. being added.
- Office premises at same location – Delhi, Pune, Hyderabad, Chandigarh, Bangalore, Ahmedabad, Faridabad, International offices – Dubai, Sharjah & Canada & further expandable to accommodate 200 Professionals.
- Proximity to ancillary units, subcontractors, and Indian Ports.
- Approved under all Regulatory.
- ISO 9001,14001, CE, Certified.
- **ALLOW US TO TAKE YOU TO KESSELS GROUP (15 Min Video) – [“ VIRTUAL TOUR“](#) OUR HYDERABAD WORKS – [“VIRTUAL TOUR-HYD”](#) & VISION [“VIDEO”](#) KESSELS [“ CORPORATE VALUES “](#)**



Infrastructure

State-of-the-Art Equipment



KESSELS
STEAM TURBINES



- Make: TITAN TMG (RUMANIA)
- Chuck Dia: 4000mm
- Job Size: 4200x4200mm
- Max Height: 3500mm
- Max Weight: 15tons
- Control: FANUC
- Accuracy:
 - Surface Finish: 1.6Ra
 - Coaxiality :0.025
- Programming Software: DELCAM

CNC LATHE



Milling attachment for Pressure equivalent holes drilling, Blade gate way milling, Coupling holes drilling and Fork root blade drilling

- Make: TAKANG
- Distance between center: 6150 mm
- Travel : 730X 6050 mm
- Swing Over Cross slide Full length: 1590 mm
- Swing Over bed: 2040 mm
- Maximum Turning Length: 6000 mm
- Max. Weight: 18tons
- Accuracy:
 - Test job Run out 0.008 at 300mm position
 - Roundness:0.01
 - Cylindrical roundness: 0.030

Infrastructure

State-of-the-Art Equipment



- Make: HASS SUPER SPEED (USA)
 - Traverse: X-1270, Y-660 & Z-635mm
 - Table Size: 584x1321mm
 - Spindle Taper: BT40
 - Speed: 7500rpm
 - 4-Axis Capability
 - Parallelism of table to x-Axis movement : 0.018, Y-Axis -0.01, X to Y - 0.008mm
 - Flatness of table: 0.01
 - Squariness - 0.001 to 0.0016mm between X & Y axis
 - Surface Roughness: 0.8Ra
- Programming Software:
DEL CAM

CNC VERTICAL MACHINING CENTRE



- Make: ABRO
- Max. Dia: 2500mm
- Max. Length: 6000mm
- Max. Speed: 1200rpm
- Accuracy: 0.5mmg/Kg
- Max. Weight: 11tons

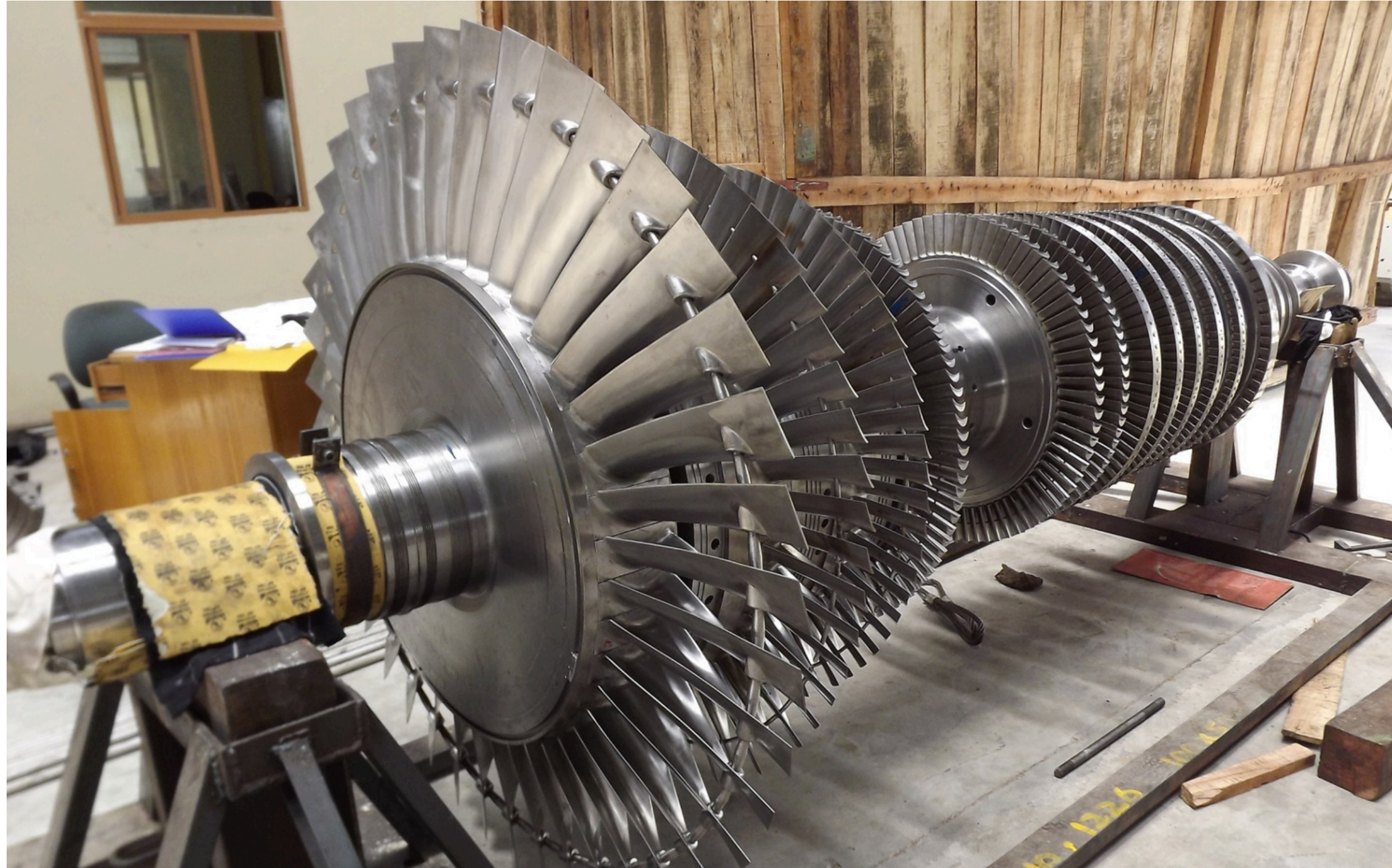
LOW SPEED BALANCING MACHINE

Infrastructure

State-of-the-Art Equipment



KESSELS
STEAM TURBINES



KESSELS – MULTISTAGE ROTOR



IN HOUSE FACILITY FOR
BLADE MANUFACTURING

Patrons In All Industries

OUR PARTNERS



Dhampur Sugar Mills Limited



Globus Spirit



Balrampur Chini Mills Ltd.
Thinking outside the cube



GOYAL GROUP

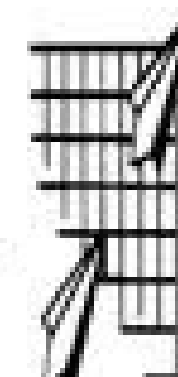


SERUM INSTITUTE
OF INDIA



Kiri Industries Limited
Future Full of Colours.....

HARDOU PAPER MILLS LTD.



Transp

reative C

*All Logos & TM belong to respective companies

*And many More

Patrons In All Industries

OUR PARTNERS

*All Logos & TM belong to respective companies

*And many More

International Foot Prints

OUR PARTNERS

The image displays a collection of logos for various international partners. The logos are arranged in a grid-like fashion. The first row includes GE Oil & Gas, PazdelRío, and a logo with a stylized arrow. The second row includes PETRONAS, Kinetics Technology (KT), and GREENFLO™. The third row includes amec foster wheeler, Enel, and Baxtei. The fourth row includes Termomeccanica Pompe.

*All Logos & TM belong to respective companies

*And many More

FINISHED PRODUCT

KESSELS – 3.5 MW EXTRACTION CUM CONDENSING STG

KESSELS
STEAM TURBINES



DOMAIN / APPLICATION

- SUGAR
- DISTILLERY
- ETHANOL
- PULP & PAPER
- RICE
- TEXTILE
- SOLVENT OIL EXTRACTION PLANTS
- EDIBLE OIL REFINERIES
- OTHER FOOD INDUSTRIES.
- & MANY MORE PROCESS BASED APPLICATIONS.

FINISHED PRODUCT

KESSELS – 12.0 MW EXTRACTION CUM CONDENSING STG

KESSELS
STEAM TURBINES



DOMAIN / APPLICATION

- SUGAR
- DISTILLERY
- ETHANOL
- PULP & PAPER
- RICE
- TEXTILE
- SOLVENT OIL EXTRACTION PLANTS
- EDIBLE OIL REFINERIES
- OTHER FOOD INDUSTRIES.
- & MANY MORE PROCESS BASED APPLICATIONS.

PROJECT INSTALLATIONS

KESSELS – 2.0 MW BACK PRESSURE STG

KESSELS
STEAM TURBINES



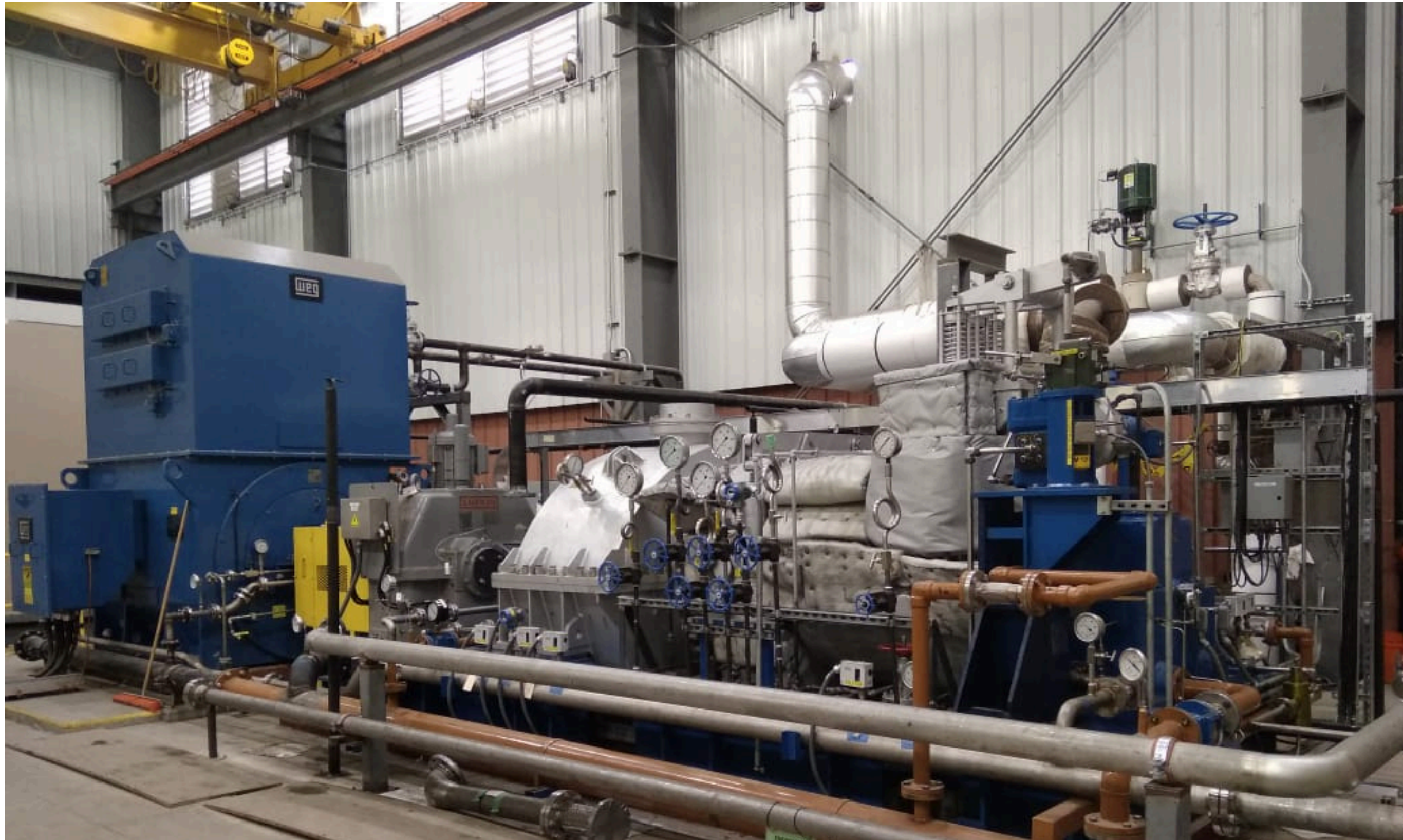
DOMAIN / APPLICATION

- SUGAR
- DISTILLERY
- ETHANOL
- PULP & PAPER
- RICE
- TEXTILE
- SOLVENT OIL EXTRACTION PLANTS
- EDIBLE OIL REFINERIES
- OTHER FOOD INDUSTRIES.
- & MANY MORE PROCESS BASED APPLICATIONS.

PROJECT INSTALLATIONS

KESSELS – 8.5 MW STRAIGHT / BLEED CUM CONDENSING STG (LOC. – US)

KESSELS
STEAM TURBINES



DOMAIN / APPLICATION

- STEEL
- SPONGE IRON FURNACE
- COKE OVEN FURNACE
- CEMENT
- TEXTILE
- TIMBER / WOOD
- CAPTIVE POWER GENERATION
- INDEPENDENT POWER PLANT
- & MANY MORE APPLICATIONS.

FINISHED PRODUCT

KESSELS – SINGLE STAGE REFERENCE FROM 5 KW TO 3000 KW

KESSELS
STEAM TURBINES



DOMAIN / APPLICATION

- SUGAR
- DISTILLERY
- ETHANOL
- PULP & PAPER
- RICE
- TEXTILE
- SOLVENT OIL EXTRACTION PLANTS
- EDIBLE OIL REFINERIES
- OTHER FOOD INDUSTRIES.
- & MANY MORE PROCESS BASED APPLICATIONS.

PROJECT INSTALLATION

KESSELS – SINGLE STAGE REFERENCE FROM 5 KW TO 3000 KW

KESSELS
STEAM TURBINES



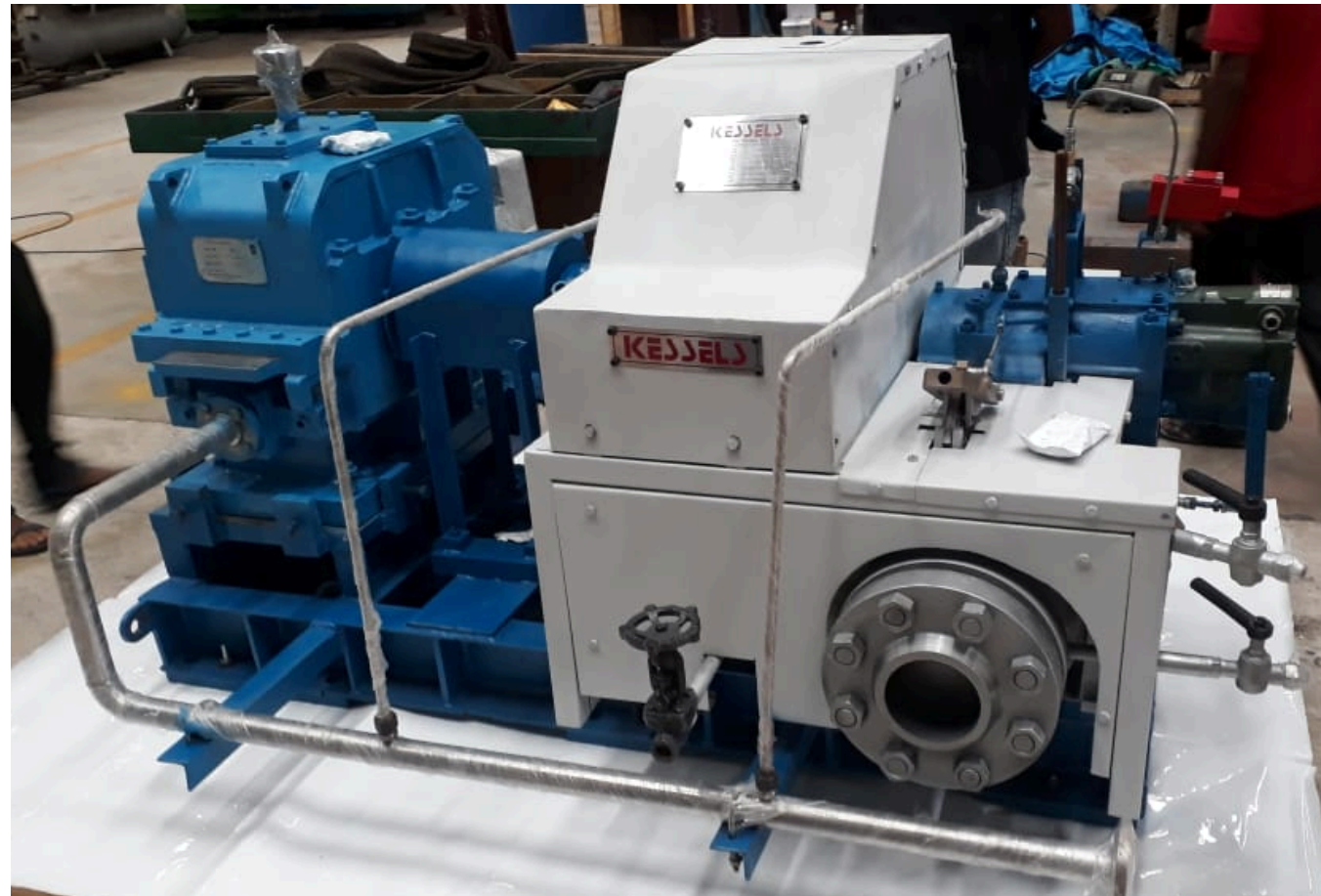
DOMAIN / APPLICATION

- SUGAR
- DISTILLERY
- ETHANOL
- PULP & PAPER
- RICE
- TEXTILE
- SOLVENT OIL EXTRACTION PLANTS
- EDIBLE OIL REFINERIES
- OTHER FOOD INDUSTRIES.
- & MANY MORE PROCESS BASED APPLICATIONS.

FINISHED PRODUCT

KESSELS-SINGLE STAGE REFERENCE FROM 5 KW TO 3000 KW (API 611/612 COMPLIANT)

KESSELS
STEAM TURBINES



DOMAIN / APPLICATION

- SUGAR
- DISTILLERY
- ETHANOL
- PULP & PAPER
- RICE
- TEXTILE
- SOLVENT OIL EXTRACTION PLANTS
- EDIBLE OIL REFINERIES
- OTHER FOOD INDUSTRIES.
- & MANY MORE PROCESS BASED APPLICATIONS.

OUR PRESENCE IN INDIAN & OVERSEAS MARKET



• REGISTERED OFFICE & CORP OFFICE
1008, PRAGATI TOWER, RAJENDRA PLACE
NEW DELHI – 110 008

• DESIGN, MARKETING CUM SERVICE SUPPORT OFFICE
1105, PRAGATI TOWER, RAJENDRA PLACE
NEW DELHI – 110 008

• MARKETING CUM SERVICE SUPPORT OFFICE
R H NO. 6 KONARK RIVIERA, 103 NAGAR ROAD, YARWADE
PUNE (MH.) – 411 006

• OTHER MARKETING OFFICE PRESENCE
MOHALI, BANGALORE, AHMEDABAD, HYDEARABAD

• INTERNATIONAL MARKETING & ASSOCIATE OFFICE PRESENCE
DUBAI , RAS AL KHAIMAH (UAE) , TURKEY, CANADA , MEXICO.

WHY KESSELS ???

- Some of key highlights of turbine engineered and manufactured by Kessels are



WHY KESSELS ??

- Provides Flexible and tailor made solutions for manifold applications.
- Ensures Cost effective investment and economic operation.
- Efficient project management, Reliable & on time execution and completion.
- Long term and modern up-to date concepts, future proof and open for new expansibilities.
- Service and maintenance backup.
- Undertakes AMC of the systems.

Thank You

