



RELIABLE | ROBUST | INTELLIGENT

TURTLE TURBINES PRIVATE LIMITED
STEAM TURBINE GENERATORS



We Are...

Transforming wasteful pressure energy to useful Green Energy, virtually free of cost with our **vaporpower MicroTurbine** technology.

Empowering industries to generate Green Electrical Energy along side meeting Heating requirements with our **TORUS Mini COGEN** technology.

Librating Industries from grid dependency and converting waste heat to Green Electrical Energy with our **TUSKER Compact CAPTIVE** technology.

We build Great Products.
Reliable | Robust | Intelligent.

Introduction

20 years ago an idea was born and a question was asked, how to generate Green Power that is commercially viable? We founded Biogreen Energy Systems to find an answer to this question. Since 1999 we have come a long way in finding an answer, taking time to hone it to the precision and to deliver working solutions on a consistent basis.

During 2005 we joined hands with Skinner Power Systems of USA in taking our dream forward of delivering reliable cogeneration solutions at sub-MW power levels. Skinner's Steam Turbine technology is time-tested and matured to perfection over the last 150 years since its inception.

In retrospection, during 2015 we realised our business revolves around providing reliable, robust and intelligent solutions. To symbolise these core qualities, we changed our company's name to Turtle Turbines.

Our pioneering work in integrating Steam Turbines into steam and electrical systems of the process plant has been well appreciated by our demanding customers. With the experience of working in more than 10 countries in different industry segments, Turtle Turbines today is considered as the front runner in the area of cogeneration for small and medium power ranges.

We work closely with all Boiler Manufacturers, Process Plant OEMs and Engineering Consultants to Deliver a seamless Cogeneration Solutions and to meet your critical engineering standards and plant safety norms. PLC based Automated Turbine Controls accommodate varying steam flows and power demands. This also ensures automatic synchronisation with electrical grid and Diesel Generators (DG). Unique Power Protect* schemes can retain your critical loads on turbine power even when the grid fails, avoiding black outs and associated production losses.

We craft great products to the highest technical standards. Every Steam Turbine is factory tested on live steam before dispatch to ensure 100% defect free product delivery. The Turbines are installed at site by trained and experienced technicians. After Sales Service support is provided by a network of in-house Expert Technicians, backed by a centralised ERP based information management system.

Our Journey

Finding our Dream

We were early adopters, partnered with research institutions for small **Biomethanation** and **Biomass Gasification**. Lessons learnt: Green Energy must be commercially viable. Our breakthrough came with MicroTurbines based on proven Steam Turbine technology.

1999



2006



2017



Our Breakthrough

Established association with Skinner, USA and our first customer, Thermax Ltd., to deliver our **vaporpower BP MicroTurbine**. Equipped with Automated Controls and Grid Sync capabilities, it revolutionised Micro Steam Turbines, setting us on the path of success.



Embracing the Challenge!

In this pivotal moment, our two decades of expertise and experience holds profound significance. We find ourselves at the crossroads of opportunity and responsibility. We wholeheartedly embrace the challenge and dedicate ourselves to mitigating the global warming.



SUSTAINABLE ENERGY

MicroTurbine
Up to 300 kW



GRID-FREE ONSITE POWER

Compact CAPTIVE
Up to 3000 kW



COMBINED HEAT & POWER

Mini COGEN
Up to 3000 kW

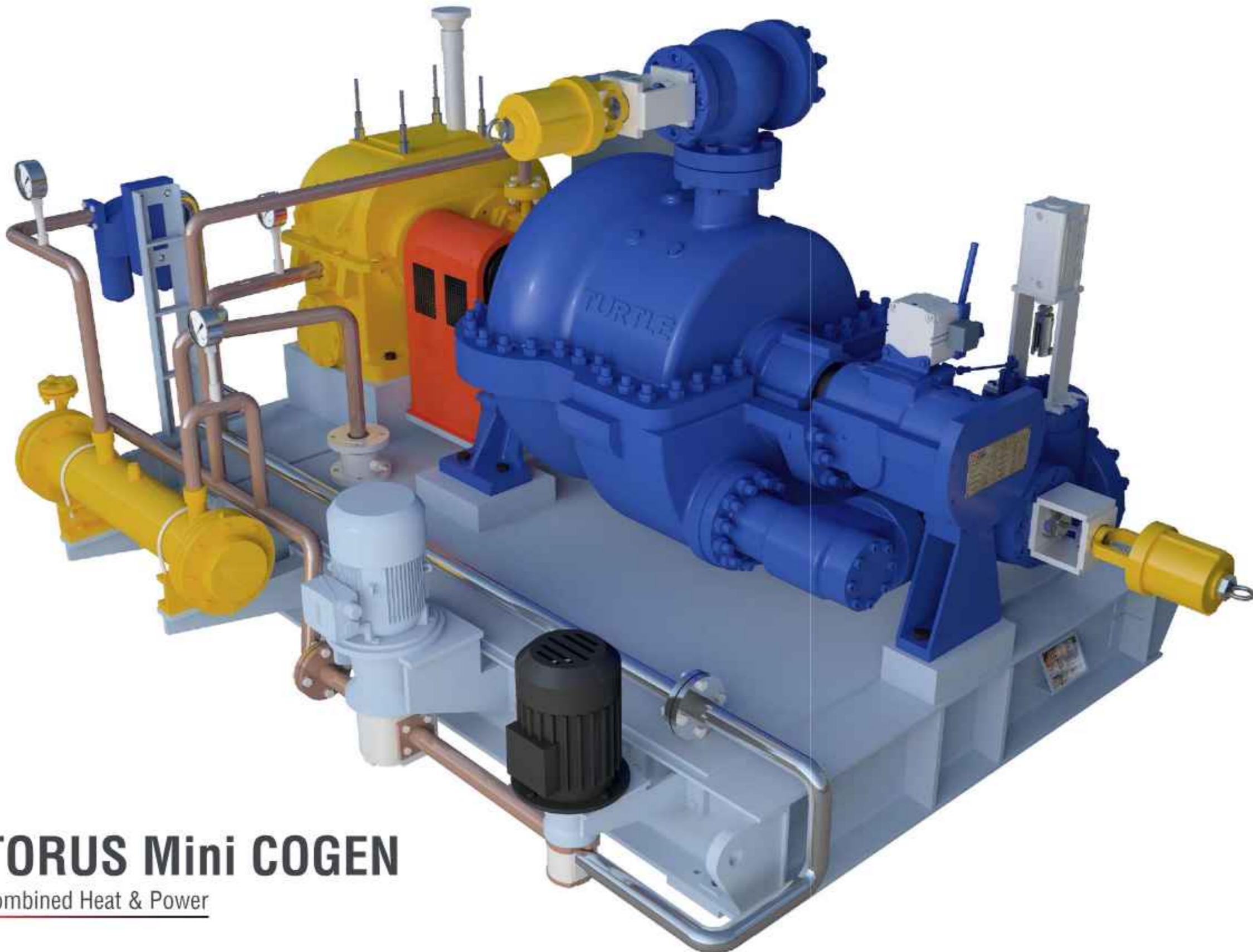




vaporpower

MicroTurbines for Sustainable Energy

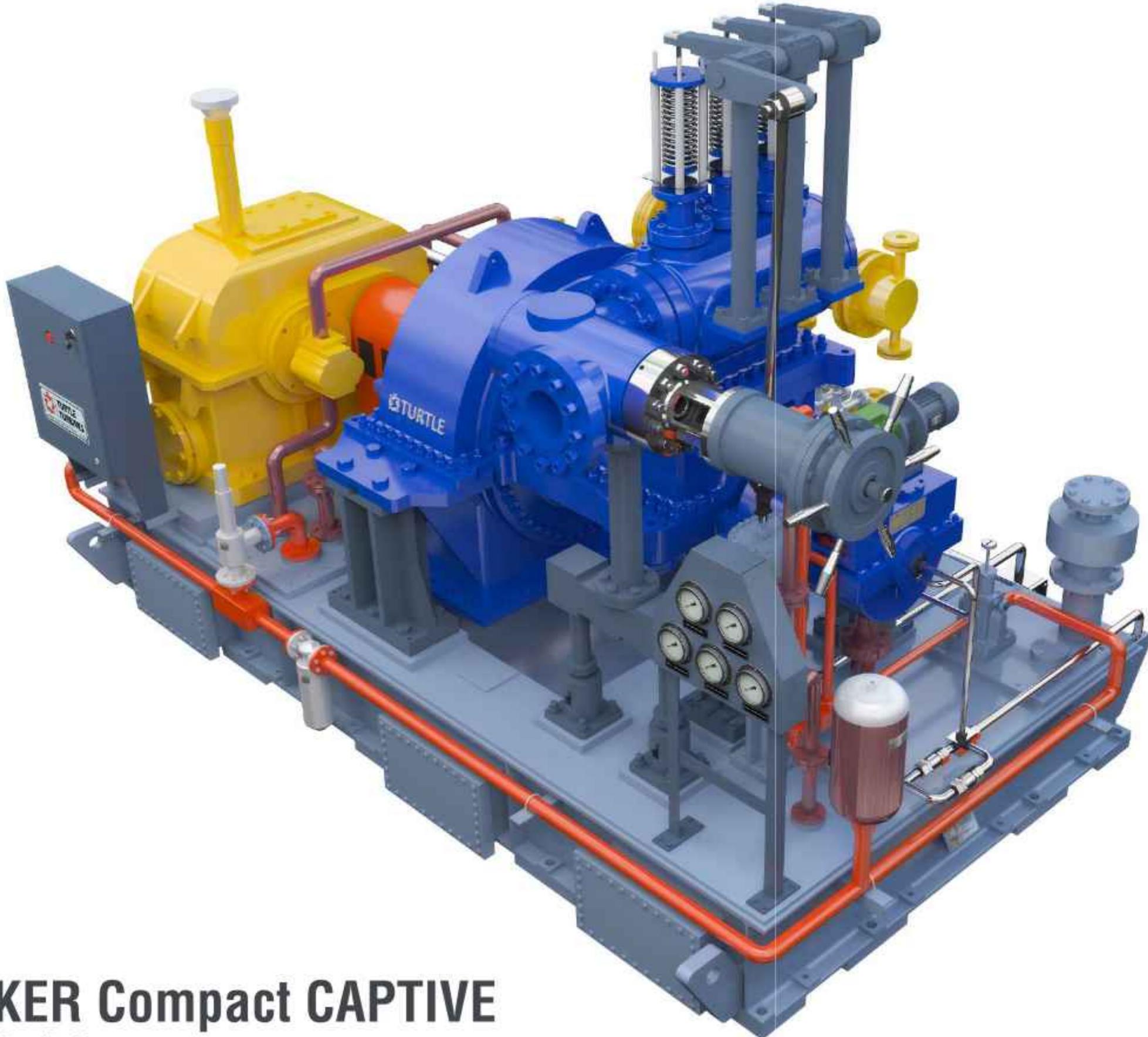
- ▶ **Energy Recovery Turbine**
Practical Energy Conservation Product with quick payback. Recovers PRV pressure drop into useful Electrical Energy.
- ▶ **Quantifiable Reduction in Carbon Emission**
Easily measure and report reduction in carbon emission. Potential to earn Carbon Credits, Energy Saving Certificates or mitigate Carbon Tax.
- ▶ **Designed for Saturated Steam**
Designed and Time Tested to work on challenging Dry Saturated Steam.
- ▶ **Weather and Sound Proof Compact Product**
Packaged in a Weather Proof and Sound Proof compact enclosure. Factory Assembled and ready to install. Live Steam Tested before dispatch.
- ▶ **Accurate Process Pressure Control**
Maintains more accurate Process Pressure than a PRV leading to improvement in product quality of the process plant.
- ▶ **Automated Operation & Auto Grid Sync**
No additional specialised manpower required, virtually unmanned operation. Auto Turbine Health Monitoring with Automatic Grid Synchronisation at push of a button.
- ▶ **Piping & Electrical Engineering Support**
Engineering support for Electrical, Piping and Room Layouts as part of scope to ensure seamless and successful installation.



TORUS Mini COGEN

Combined Heat & Power

- ▶ **High Efficiency**
Optimised Multistage Turbine designed for highest in its class efficiency delivering maximum power at given Steam Parameters.
- ▶ **Extraction - cum - Back pressure**
Modular design to meet wide industry requirements. Back Pressure Turbine with a built in option for Extraction.
- ▶ **Lowest Operating Cost and Long Life**
Based on time tested design principles, with Reliability as the basic design parameter, leading to lowest Operating Cost and Long Life.
- ▶ **Automated PLC based Controls and Grid Sync**
Automated Turbine Controls and Health Monitoring based on modern PLC based Controls. Seamless Grid Synchronisation at a push of button.
- ▶ **Industry Standard Controls and Grid Sync**
Turbine Controls are also available in Industry standard configuration with Woodward / Voith Governors, Annunciators etc and Industry Standard Grid Synchronisation.
- ▶ **Factory Assembled & Live Steam Tested**
Completely assembled in factory within controlled environment for best quality and tested on Live Steam before dispatch.
- ▶ **Quick Startup and Shutdown**
Turbine starts and shuts down within the shortest time from Cold Condition and virtually instantly from Hot Condition.



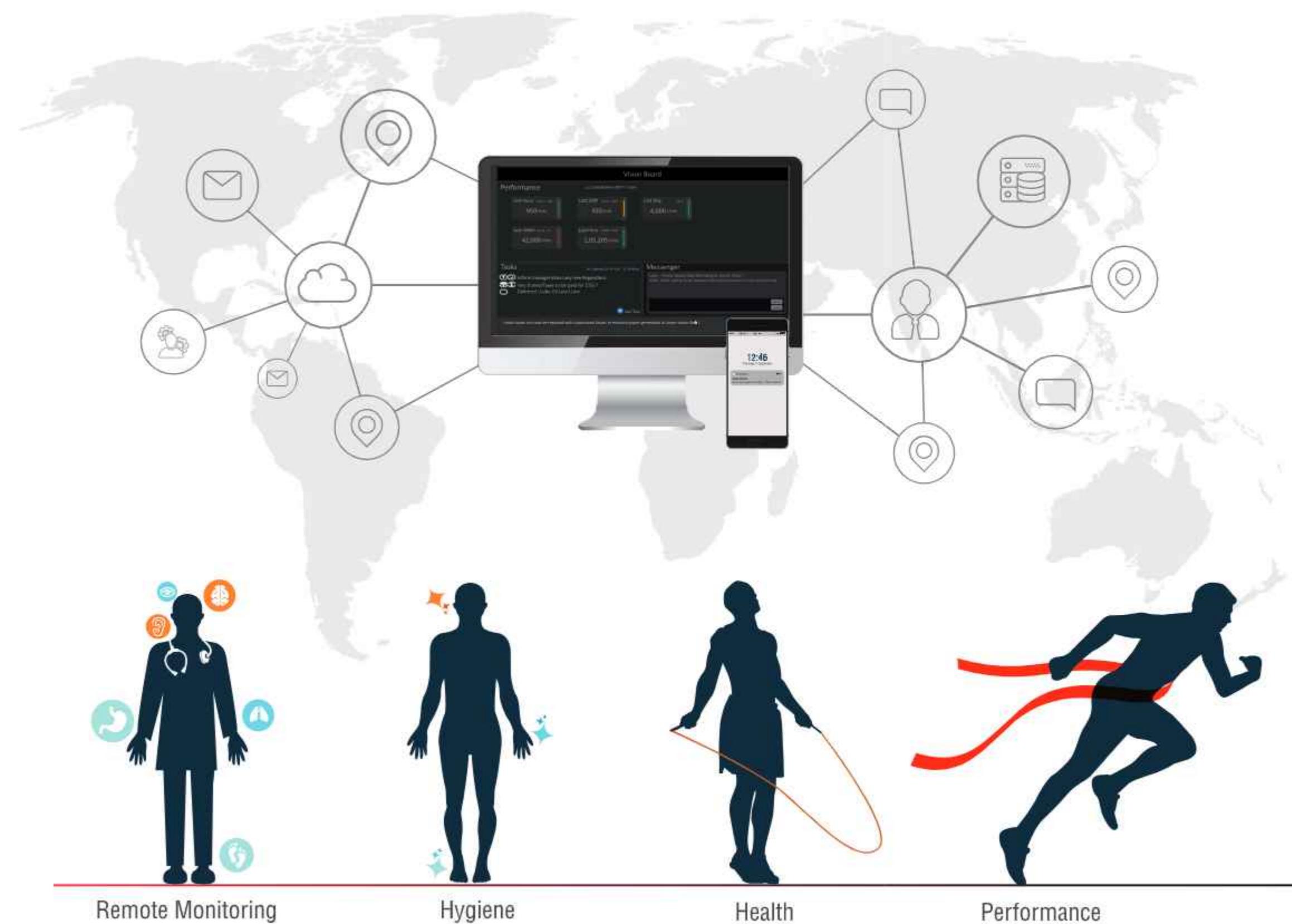
TUSKER Compact CAPTIVE

Grid Free On-site Power

- ▶ **100% Grid Free Power**
Onsite 100% Grid Free Power with the freedom to locate industry at optimum location - nearer to raw materials, or skilled labour.
- ▶ **Compact - Space Saving**
A onsite power that is designed to be Compact. Fits into your process plant with smallest possible footprint for its class, saving valuable space.
- ▶ **Simple - from Order to Operation**
Power Plant simplified for Process Industry application. From selection to installation, every step is simplified design also makes it easy to operate & maintain.
- ▶ **Enhance Factory Uptime**
Isolated from grid failures, leading to higher process plant uptime and stable power. Your own onsite reliable power at much lower operating cost than Diesel Generators.
- ▶ **Automated PLC based Operation**
Automatic Operation & Turbine Health Monitoring Supported on Remote Process Monitoring. Our customers focus on running their plant, than operating the power plant.
- ▶ **Extraction - cum - Condensing**
Generate your own onsite power and also meet your process heating requirements through extraction, can be simple bleed or controlled extraction.
- ▶ **Factory Assembled & Live Steam Tested**
Completely assembled in factory within controlled environment for best quality. Turbines can be tested on Live Steam before dispatch on demand basis.

TurboVision

REMOTE MONITORING - HYGIENE | HEALTH | PERFORMANCE



► **Advanced Remote Monitoring System**

Most advanced Remote Monitoring System, seamlessly integrated into Turbine Operation and Health Monitoring. Critical operating parameters are mapped and uploaded to Server.

► **24 X 7 Health and Performance Monitoring**

While the Turbine runs unmanned, all critical Hygiene, Health and Performance Parameters are monitored remotely

► **Unique Hygiene > Health > Performance Concept ***

Based on unique concept of Hygiene leads to Health and Health to Performance. Turbine's Health is continuously monitored to ensure Performance is delivered.

► **Critical Notifications via SMS to Operator and Manager**

Alarms and Trips are communicated by way of SMS to Operator and the Manager to ensure they are attended while Turbine runs unmanned.

► **Preventive Maintenance**

Maximum uptime since TurboVision enables Preventive Maintenance like never before. The data is logged online and analysed to mitigate breakdowns.

► **24 X 7 Service Support Backup**

TurboVision is backed by Customer centric service support with experienced and dedicated Service Technicians and availability of Critical Spares.

► **Multilevel Responsibilities & Escalation**

Intuitive Screens for Operator, Manager and Owner / Plant Head, presenting the exact data needed to take decisions. Unattended Notifications get automatically escalated to the next level.

► **OEM Screens for Turtle Turbines to monitor**

Critical issues can be understood and resolved by Turtle Turbines remotely to ensure uninterrupted operation of Turbines even in remote areas.

► **Online Instant Messaging for Support and Advise.**

Operators and Managers can directly chat with Turtle Turbines Service Experts via Online Instant Messaging.

Testimonials



Hugo Douglas-Dufresne
Technical Director
James Finlay, Kenya

We purchased 1000 kVA Back Pressure Steam Turbine Generator from Turtle Turbines during 2008. Complete system engineering was carried out by Turtle Turbines along with supply of equipment and supervision of commissioning.

The system did encounter certain unforeseen issues during the commissioning; however Turtle Turbines put its best efforts and finally sorted out the problems.

I appreciate the dedicated service of Turtle Turbines. The system has been running satisfactorily since then.

We have installed 1200 kW Steam Turbine Generators of Turtle Turbines make at our factory in Uganda, this Steam Turbine has been Installed and Commissioned successfully and has been running continuously since commissioning during year Jan 2019. During Covid restriction Turtle Team supported us well by online and by remote assistance. The Steam Turbine generated more than 12500 MWh power till date.

Kona Sreeramamurthy
General Manager
Premier Distillers Ltd.

We have 150 kW Steam Turbine Generator supplied by Turtle Turbines (p) Ltd. Pune, at our factory in Malanpur, Gwalior, MP.

We appreciate the technical abilities and prompt delivery as committed by Turtle Turbines. The Steam Turbine Generator is aesthetically simple and beautiful. The whole Installation looks neat and beautiful. We are pleased with the overall performance of the STG unit and Turtle Turbines team.

Sandesh Borwankar
DGM,
Godrej Consumer Products Limited

We have installed 350KW Steam Turbine Generator from Turtle Turbines (P) Ltd. Pune, at our factory in Tarapur, Maharashtra. It has been installed and commissioned successfully and has been running continuously since commissioning.

We appreciate the support received for Steam Piping & Electrical related details. The STG was delivered as per committed time frame & installed in our existing setup within limited space and running satisfactorily with local electricity grid. We are pleased with overall performance of STG unit. We wish Turtle Turbines all the best for bright future.

A.S.Dukane
Global Sr. Vice President
Camlin Fine Sciences

Spares and Services



- ▶ Turbine Installation & Commissioning
- ▶ Operator Training & Support
- ▶ Documentation Support for Statutory
- ▶ TurboVision Online Monitoring
- ▶ Periodic Health Checkups
- ▶ Emergency & Breakdown Services

References

Some of our reputed customers



Godrej



Roquette



New Bombay Paper Mill



Jacobi Carbons



Camlin Fine Sciences



James Finlays



UPL International



Shiv Edibles



Gadre Marine



Satyam Petrochemicals



Thermax



Victorias Milling



AP CoOp Oil Seed
Growers Federation Ltd



Privi Organics



Sudarshan Chemicals



Schreiber Dynamix



Premier



Lamsan



Utopian



Mirash
Industries

Industry Segments

- ▶ Distillery
- ▶ Organic Chemicals
- ▶ Paper Mills
- ▶ Edible Oil
- ▶ Dyes and Pigments
- ▶ Rice Mill
- ▶ Metals and Minerals
- ▶ Milk and Dairy Products
- ▶ Tea Factory
- ▶ Fragrances & Cosmetics
- ▶ Starch
- ▶ Food Processing
- ▶ Biomass Power
- ▶ Solar Thermal
- ▶ Sulphuric Acid
- ▶ Oil & Gas
- ▶ Soaps and Detergents
- ▶ Food Antioxidants

Spread Over 10 Countries



India



Indonesia



Kenya



Myanmar



Nepal



Philippines



South Korea



Thailand



Uganda



Vietnam

Cogeneration, Simplified!

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Represented By :

