

# EFFICIENCY BY DESIGN



**TMI**

**Chola Turbo Machinery  
International Pvt. Ltd.**

**STEAM TURBINES**

# FROM THE MD'S DESK

## Greetings

CTMI was started with a vision to be the first choice company for steam turbines using state of the art, efficient and environment friendly techniques.

Within a short span of time CTMI has emerged as a leading energy solution provider across the globe, breaking the shackles of a monopolistic market by offering reliable and efficient machines. We are dedicated in providing cutting edge power and energy solutions with a commitment to deliver tailored technology that is powerful, efficient, competitive and easier to maintain.

While recent trends have shown that steam turbine manufacturing is in line with any other mass produced items, we still believe in offering tailor made and customized solutions for your unique needs.

We request you to challenge us with your specific requirement and give us an opportunity to prove our credentials.

**Raman Roop Sawhney**  
Managing Director



**Chola Turbo Machinery  
International Pvt. Ltd.**





# WE ARE...

Set up in 2001, CTMI has, within a small period of time, become one of the largest steam turbine manufacturing facilities in India and a leading energy solution provider across the globe.

The CTMI group has more than 450 installations ranging from 5 kW to 20,000 kW operating successfully in various sectors including nuclear, steel, cement, pulp, paper, metals, chemical, fertilizers, sugar, distilleries, petrochemical, refineries etc., and has a global presence with 360° coverage from Fiji islands to Mexico.

CTMI is the only turbine manufacturer in India to have supplied an ORC turbine to a nuclear power plant.

Our dedicated use of state-of-the-art technology in design and manufacturing of our steam turbines, helps create value while providing a complete energy solution to the customer.



# WE DO...

CTMI offers a total range of solutions to its customers ranging from complete turnkey solutions for power plants to smaller STGs to harness power from waste heat recovery techniques.

Range:  
5 kW – 30,000 kW

Single Stage  
and Multi Stage  
turbines

Back Pressure  
Extraction  
Back Pressure  
Condensing  
Extraction  
Condensing

ORC  
Turbines

Geothermal  
Application

Turn Key  
Solutions

Turbines  
operating on  
Kalina cycle

API 611 & 612  
Compliant  
Pump Drives

EPC  
Projects



# OUR STRENGTHS

CTMI's biggest strength is its highly skilled and experienced manpower, backed by a state-of-the-art manufacturing facility, which enables us to create our robust and efficient designs.

This enviable combination has helped CTMI take giant leaps in the field of turbomachinery and emerge as a leading steam turbine manufacturer providing innovative solutions to its customers.

Some of the achievements, which highlight CTMI's capability, ingenuity and pioneering vision, are:

- Leading Indian turbine manufacturer to supply turbines as per API standards.
- The only Indian turbine manufacturer to supply a turbine to a nuclear powerplant.
- The only Indian steam turbine manufacturer to supply steam turbine components to the USA.
- The only Indian steam turbine manufacturer who has supplied turbines based on the Organic Rankine cycle.
- The only Indian steam turbine manufacturer who has supplied a single stage condensing turbine.





# FACILITIES

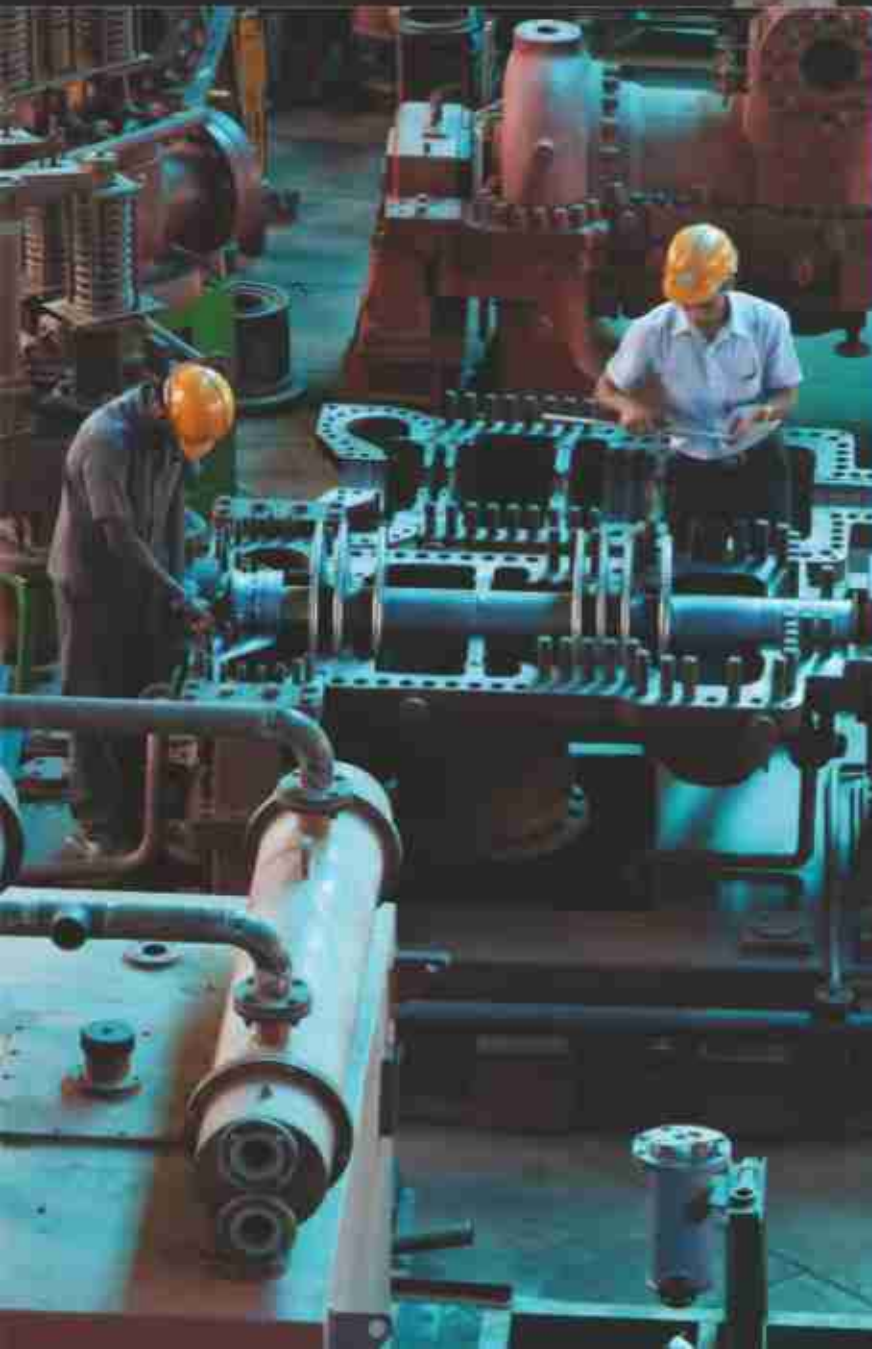
CTMI boasts of a state of the art steam turbine manufacturing facility located in Hoskote, 30 Kms from Bangalore. Our 12 acre campus comprises of 5 different bays to cater to Steam turbine assembly, heavy machining, precision machining, material preparation, fabrication and testing. We also have a separate quality control setup and an R&D test rig.





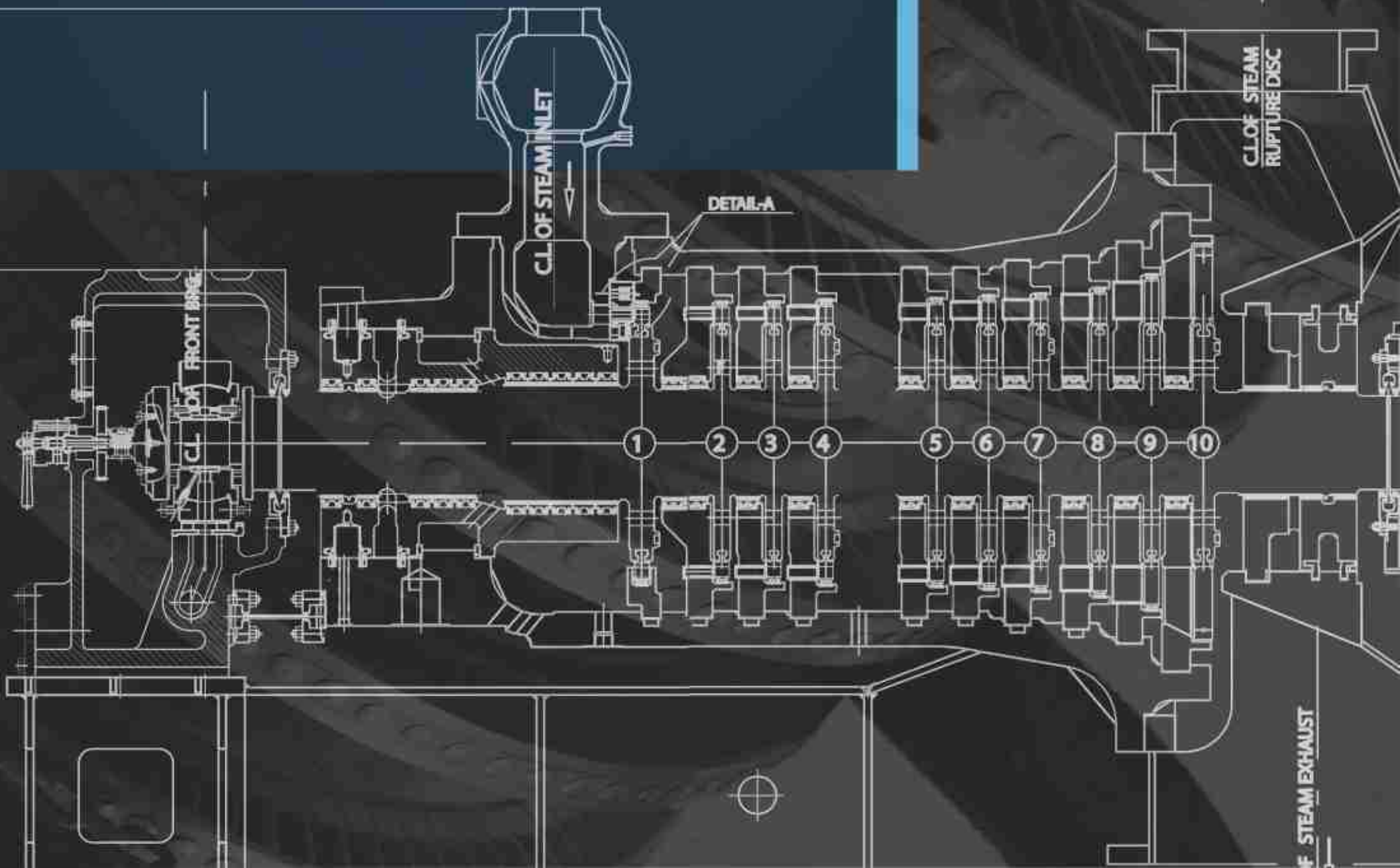
## FACILITIES

Our specially designed assembly area houses multiple steam turbines under various stages of manufacturing. While the heavy machine shop takes care of the machining needs of large casings and rotor shafts, our precision machine shop houses CNC machines to manufacture the "tapered and twisted" blades and nozzles which are a hallmark of our turbines. The vast space available offers huge potential for expansion and future endeavours.



# DESIGN STRENGTH

CTMI's R&D and engineering team is housed in Bangalore and New Delhi, boasting a cumulative experience of over 500 years in turbo-machinery design. In addition to the standard software currently available in the market, CTMI also uses customized software (3D modeling and Design) for its equipment design. Tie-ups with reputed R&D facilities in India and abroad enable us to continue our effort to improve the quality and efficiency of our equipment. CTMI offers conservatively designed, rugged and reliable machines that run at slower and safer operating speeds.



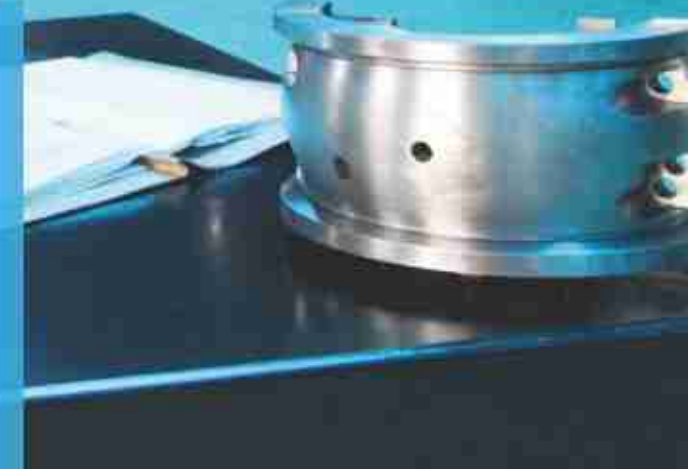


# QUALITY

To supervise and maintain our quality standards, various checks are carried out on all components of the turbines. The material used for the different components of the turbine have their chemical composition, strength and physical properties checked before being processed.

Continual checks during manufacturing ensures adherence to set standards of the turbine components with regard to geometry and finish.

Assembly checks are carried out to ensure that the clearances necessary for correct operation of the turbine are adhered to, and that all sub-assemblies and units function properly.





# QUALITY

CTMI also has an in-house boiler island which is used to conduct steam trial tests on all of our out-going turbines.

This in-house turbine testing facility enables us to perform a no-load "mechanical run" test at the rated turbine speed and also an "over-speed trip" test. This helps us in the final fine-tuning of our turbine, enabling us to ensure the high quality of our product.





# SINGLE STAGE TURBINES

## POWER CAPABILITIES

- 5 kW TO 3000 kW
- Speeds upto 5000 RPM
- Pressure up to 67 Kg/cm<sup>2</sup> / 925 Psig
- Temperatures up to 500 °C / 932 °F

## VARIANTS

- Back Pressure Turbines
- Condensing Turbines

Our single-stage steam turbines have been a fixture in most process industries for nearly 12 years, providing clients with economical and reliable mechanical drives for Pumps, Fans, Knives, Compressors and Generators. For many years our engineering staff have worked with various consultants to meet the strict standards of API 611 and 612. CTMI also offers one-of-its-kind single stage condensing turbines.

## INDUSTRIES SERVED

Oil & gas, Food processing, Chemical processing, Pharmaceutical, Steel, Paper, Sugar, Distilleries, Palm oil, Marine, Edible oil, Rice, Fertilizer etc.,

## APPLICATIONS

Pump drives, Fan drives, Mill drives, Generator drives, Compressor drives, Knives and Shredder drives.

## DESIGN CAPABILITIES

7 models, Horizontal (axial and radial split), Vertical, API 611 and 612 compliant, Overhung and "between the bearings" wheel designs, metallic or carbon seals, Electronic / Hydraulic Mechanical governors, Customized steam path components, Mechanical / Electronic safety trip system, Direct - drive or integral gear boxes with suitable lubrication systems.



# MULTI STAGE TURBINES

## POWER CAPABILITIES

- From 250 kW up to 30000 kW
- Inlet Pressures up to 105 bar
- Inlet temperatures up to 560 °C
- Exhaust pressures from vacuum to 12 bar
- Speed from 3000 to 12000 RPM

## INDUSTRIES SERVED

Oil and gas, Power, Sugar, Ethanol, Paper, Medical, Food and Beverage Processing, Petrochemical, Distilleries, Steel & Education (Universities)

## MECHANICAL DRIVE APPLICATIONS

Compressors, Boiler Feed Water and other pumps, Milling / Shredding equipment, Fans, Blowers.

## GENERATOR DRIVE APPLICATIONS

Synchronous generators  
Induction generators

## APPLICATIONS

Pump drives, Fan drives, Mill drives, Generator drives, Compressor drives, Knives and Shredder drives.

## DESIGN CAPABILITIES

- Single and multi-valve inlet
- Controlled Extraction, Uncontrolled Bleeds
- Extraction Condensing / Extraction Back Pressure
- Mixed Pressure Induction
- API 611 and 612 compliant
- Hydraulic, Mechanical and Electronic Governors
- Remote Monitoring / Controls
- Base load Operation.
- Parallel operation with Local / National Grid





## MULTI STAGE TURBINES

Proven reliability and high efficiency make CTMI multi-stage steam turbines vital partners to the power and process industries. High fuel and energy conversion costs demand steam turbine efficiency to be as much a consideration as reliability. CTMI's industrial multi-stage steam turbine line helps you meet a variety of energy requirements in industrial environments. These turbines operate at speeds up to 12000 RPM, with steam inlet conditions up to 105 bar at 560°C and exhaust conditions up to 12 bar.



# PRODUCT RANGE

## MULTI STAGE TURBINES

	Power KW	Inlet pressure MAX ATA	Inlet temp MAX °C	Exhaust pressure ATA	Speed (RPM)
MS 42	500-2000	67	500	12	~ 6700
MS 42 c	500-1750	67	500	vacc	~ 8750
MS 52	2000-6000	67	500	12	~ 6400
MS 52 C	1200-2500	67	500	vacc	~ 7500
MSK 52C	2500-6000	84	525	vacc	~ 6500
MS 102	6000-15000	105	540	15	~ 5500
MS 102 C	6000-13500	105	540	vacc	~ 5500
MS 102 EC	6000-13500	105	540	vacc	~ 5500
MS152	13500-30000	105	540	15	~ 5500
MS 152 C	13500-20000	105	540	vacc	~ 5500
MS 152 EC	13500-20000	105	540	vacc	~ 5500
MS 201	20000-30000	105	540	15	3000-5500
MS 201C	20000-30000	105	540	vacc	3000-5500

## SINGLE STAGE TURBINES

	Power KW	Inlet pressure ATA	Inlet temp MAX °C	Exhaust pressure ATA	Speed (RPM)
PS 10	~ 200	45	450	12	~ 5000
PS 20	200-750	67	500	12	~ 5000
PS 902	500-1500	67	500	12	~ 5000
PS 902C	200-750	67	500	0.2	~ 5000



## AFTER SALES

Corporate conscience and the business ethics observed by our management team support the basic principles on which the company was founded, and is integrated into our business model today. This practice of maintaining an ethical background to work and responsibility towards our society helps keep us ahead of the competition and to deliver an appropriate solution to the energy problems faced by our customers.

Our customers can always expect CTMI and all its personnel to go the extra mile to help, from the selection of steam turbines, down to their erection, commissioning, subsequent operation and maintenance.

Our strategically located service teams in India and tie ups with reputed local companies abroad ensure 24hr service for CTMI steam turbines, thus ensuring minimum down time.





Argentina

Bangladesh

Fiji

India

Italy

Iraq

Jamaica

Kenya

Mexico

Myanmar

Nepal

Oman

Peru

Pakistan

South Korea

Trinidad & Tobago

USA

UAE

Uganda

Vietnam

## OUR CLIENTS

CTMI is proud to be associated with some of the leading business houses in India whose patronage in the form of repeat orders have made CTMI become the success story it is today. Industrial bigwigs like Birla Group (sugar), JK group (cement), Kalyani and Hira Group (steel), Fogla (chemicals), Shreyans ( paper), Piccadilly (distilleries), have over the years trusted CTMI for their power generation needs. CTMI has supplied turbines to over 25 countries across 5 continents.

## Corporate Office

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ISO 9001,14001 & OHSAS 18001 certified company

