

Compressors

Improvements in Drive Turbines

Supporting system: By adapting new supporting system with the following features can enhance the reliability and availability of the plant.

- Higher support stiffness and hence less vibration
- Lower frictional forces on the pedestal
- Minimum disturbance of pedestal during operation

Electronic Governor in place of Hydraulic Governor

Steam Turbines equipped with Hydraulic Governor can be replaced with Electronic Governor to bring the following advantages:

- Microprocessor based controllers provide high flexibility to specific control system
- Local/ Remote operations
- Quick responses and control dynamics to suit the specific plant needs
- Can communicate with plant DCS

Diagnostic and Machine Management System

This system can be used to record and analyze machinery behaviour data (vibrations as well as process information). The Diagnostic data from the system is very valuable for suspected machinery problem diagnostics. Remote Diagnostics and Remote machinery management also possible.

RLA Studies for compressors and turbines

Active component of Compressor and Drive Turbines in the Hydraulic path do exhibit erosion, corrosion and crack in the grain boundaries due to severity of service and operating conditions.

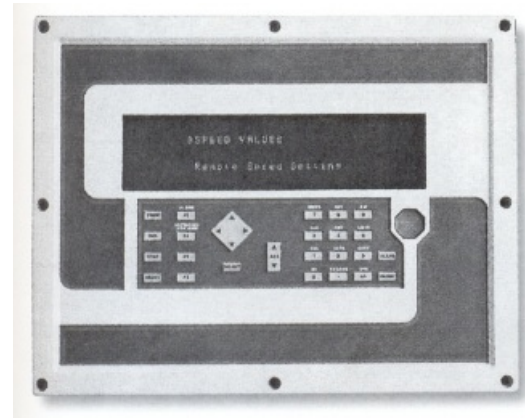
Condition assessment of these components after a reasonable period of operation would indicate the rate of deterioration and probable time for replacement which otherwise would lead to catastrophic failure.

RLA Studies are undertaken by **Powertherm** with a view to assess the conditions of the unit and make suitable recommendations.

Vast Experience and a strong commitment

The experience of **Powertherm** in renovation & modernization is underlined by the client who have already benefited by incorporating the new state-of-the-art technologies of **Powertherm**.

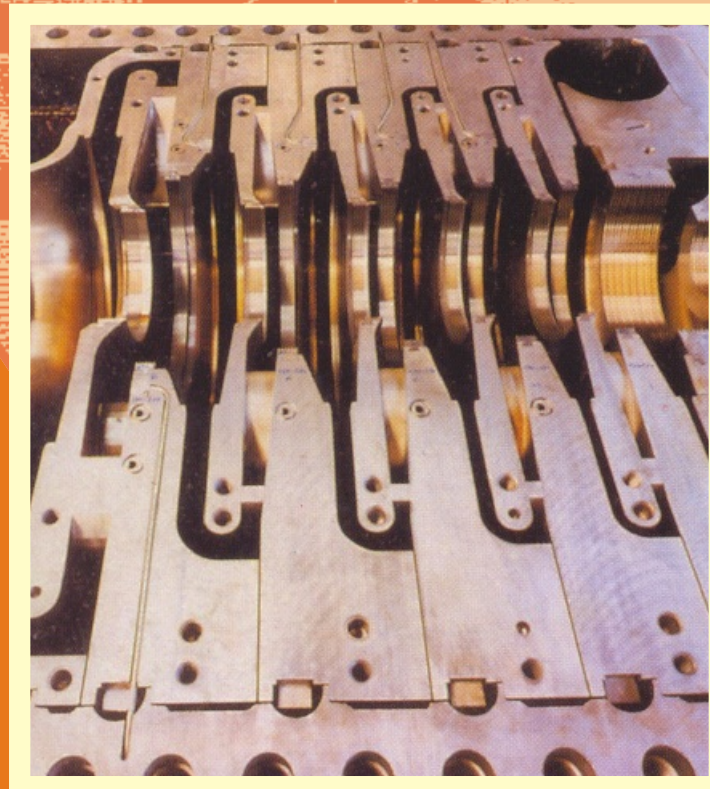
With an excellent commitment technical advancement and with well trained Manpower and offices all over India, **Powertherm** is geared to take up Renovation and Modernization of Compressors to the utmost satisfaction of the customer.



Renovation & Modernisation

Enhanced Performance of Centrifugal Compressors

A new thrust to Indian Industry
by **Powertherm**



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POWER THERM ENGG. PVT. LTD.

Compressors

Powertherm, in its efforts to extend the benefits of new technologies to its esteemed customers and industries using Compressors, has launched an innovative programme of Renovation and Modernisation of Centrifugal Compressors and their associated Drives. The programme is as follows:

- To incorporate state-of-the art technology
- To increase overall efficiency
- To augment capacities and increase pressure ratios
- To increase Steam Turbine power output
- To adapt modified operating parameters
- To conserve energy

Drawing strength from its 25 years of experience in manufacture of equipment for petro chemicals, fertilizer and refinery applications with continuous product development and customer interaction, **Powertherm** is ready to implement the state of the art technological advances in to the Compressors supplied in previous years.

Renovation

Renovation of a compressor involves

- Adaptation to modified operating parameters like suction pressure and Gas Composition.
- Efficiency enhancement
- Service life extension
- Modernisation of Control Equipment
- Improved monitoring of Machine
- Better Operation and Maintenance characteristics

New Technologies

Being in the forefront of Compression Technology, **Powertherm** incorporates state-of-the-art technologies. They include:

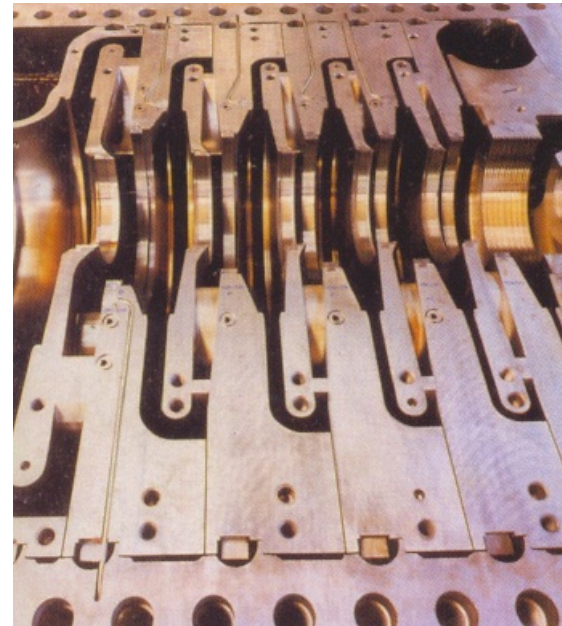
- 3D Impellers for increased output & better efficiency.
- Improved Rotor design for better operation
- Anti Surge Control System for safe operations
- Futuristic Micro Processor based Instrumentation for better monitoring and higher reliability.

Augmenting the Compressor Capacity:

The increased marked demand for fertilizers, petroleum and petrochemical products has necessitated augmentation of capacity of many existing plants with short gestation periods.

Increase demand in Fertilizers and Refineries necessitates an increase in the output of the products. In the existing plants the capacities can be improved through up-gradations to the existing equipment

Augmentation of capacity is achieved by employing high efficiency three dimensional Impellers on the Rotors. These Impellers with their twisted flow path accurately guide the flow with minimum loss. manufacturing these impellers requires a 5-Axis Milling machine which can be co-ordinated by **Powertherm**.



Compressors

Change of Driver

Over a period of time changed scenarios such as fuel availability, steam availability, reliable power supply etc., have made the Customer look for a more appropriate driver. Being expert in the areas of Steam Turbines, Gas Turbines and Motors Transtherm can easily revamp the driver to meet customers' specific needs.

Anti Surge Control System

Anti surge control systems have evolved over the years from simple pneumatic minimum flow controllers and analogue electronic controllers with special algorithms and computing techniques to microprocessor based surge controller with special algorithms. These development in Anti surge technology is effectively used to minimize process upsets, fast response surge protection, parallel operation, load sharing, operation of machines under low flow conditions with minimized recycling. Increased safety, reliability in the compressor have become a reality for the Centrifugal Compressor operations.

Dry Gas Seals Reduce Emission Levels

The need to protect the environment calls for an efficient Sealing System. The present day technology of the dry gas seals offers the advantage of very low emissions, no oil contamination of process, no reconditioning of the oil and low energy requirement.

The seal faces of Gas Seals are lubricated and cooled by the process gas. These seals are typically zero friction and non contacting designs. Shallow grooves incorporated into the seal faces develop seal face lift-off when pressure is applied to the seal.

Retrofitting Gear coupling with dry coupling

The usage of Dry Flexible Couplings has constantly increased over the years. Dry Flexible Couplings have the capacity to take high misalignments as well as minimum axial thrust as compared to Gear Coupling.

The Dry Flexible Couplings ensure safer and reliable operation of the Compressor.

Replacing the reciprocating compressors

A number of low capacity Reciprocating Compressors can be replaced by a single Centrifugal Compressor as they are more reliable and maintenance free.

With the advent of external welding technology of Impellers, Centrifugal Compressor as they are more reliable and maintenance free.

With the advent of external welding technology of Impellers, Centrifugal Compressors have become more viable for very low flow application to replace reciprocating compressors.

