

# MOISTURE SEPARATOR REHEATER (MSR)



**TEi**  
a Babcock Power Inc. company

## OVERVIEW

**THERMAL ENGINEERING INTERNATIONAL (USA) INC. (TEi)**, a Babcock Power Inc.® company, is a leading supplier of heat transfer technology to the electric power generation and industrial markets across the globe. Utilizing innovative technology and a team of skilled professionals, TEi has a powerful history of designing and fabricating feedwater heaters, steam surface condensers, MSRs, waste heat boilers, fired heaters and other superior heat transfer equipment.

## A PREMIER MSR SUPPLIER AND A TECHNOLOGY LEADER

TEi's prominence in the MSR technology field is a result of continuous practices in developing, testing, designing, fabricating, installing, commissioning, troubleshooting and Users' training. All of which is conducted by a cohesive team of tenured engineering specialists, who have performed, directed and controlled the various MSR projects from start to finish. The versatility of these specialists, their problem solving capacity and thorough knowledge of the fabrication processes, as well as their familiarity with the operational behavior of the MSRs, account for the recognition and trust many owners and turbine suppliers worldwide grant to TEi.

TEi's engineering expertise and list of delivered MSR equipment are unmatched. The team has provided complete vessels for new and existing plants in addition to internal replacements and performance upgrades on many of its competitors' designs. Independent from any turbine supplier, TEi has references and designs for all orientation of MSR, be it vertical, horizontal, multi-stage or integral. In recent years, TEi is unrivaled in its ability to improve moisture separation efficiency and generate additional reliability and optimum heat rate from existing plants.



## FEATURES/BENEFITS

**More than 150 complete MSR vessels supplied, 350 re-heater bundles retrofitted and 250 moisture separator sections upgraded over the last 40+ years.**

**Better steam distribution designs with improved pressure drop and moisture separation have proven highly beneficial in the overall heat rate of the plant.**

**Unmatched experience in material selection and quality eliminate reliability issues associated with erosion associated with wet steam.**

**Intimate knowledge of the product, our customers and the application enable TEi to orchestrate a highly efficient outage based replacement, either as a turnkey or in partnership with the plant.**



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## MSR EXPERIENCE ACROSS THE GLOBE.

### TECHNICALLY SUPERIOR

An improved MSR system must complement the rest of the upgraded steam plant. Since the MSR interfaces with major plant components, and its optimal performance yields positive effects on the rest of the system, TEI has established the improvement goals differentiators with the following proven results.

- Lower Weight – Steam distribution system / dedicated inlet plenums eliminated
- Uninterrupted moisture separation & reduction in overall length of MSR vessel
- Lower Pressure Drop – More work through the LP turbine. This improvement in overall plant efficiency equates to greater MW output of the plant for same thermal (input) power.
- Lower TTD (Terminal Temperature Difference) – Higher outlet temperature at the outlet of the MSR which improves the overall plant efficiency producing more work through the LP turbine.
- Improved Moisture Separation – Reduced susceptibility to erosion/corrosion of the latter LP turbine stages, & improved reliability of the LP turbine.



Bundle replacements are just one of many retrofit solutions

## FEATURES/BENEFITS

### PERFORMANCE

- Lower TTD - higher superheat
- Lowest practical pressure drop
- Low excess steam rate - optimal
- Complete moisture separation
- Monitored performance parameters – trending and control

### RELIABILITY

- Corrosion/Erosion endurance – materials, flow path
- Resistance to thermally induced distortions
- Sound 4-pass mechanical partitioning – eliminates pressure spikes and erosion
- Vibration-free internals structure and tube banks

### OPERABILITY

- Steady operation
- Streamlined transients

### SAFETY<sup>3</sup> PEOPLE. POWER. PROJECTS.

We're giving safety the third degree.

Babcock Power Inc. and its subsidiaries place the safety, health and security of our people at the core of our company values. Our team is our most valuable resource, generating solutions everyday to deliver safe, clean, reliable energy globally. With a keen focus on safety, Babcock Power Inc. conducts business in a manner that protects our people, our customers and the environment. From innovation to generation, we are proud of our award-winning safety record and are committed to operating with integrity and excellence.

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