

Key Benefits

- Exceptional durability
- Compact
- Zero leakage design
- Scalable design for a wide range of applications
- Competitive life-cycle cost



**Ingersoll-Rand
Recuperator core**



**State-of-the-art manufacturing
Mocksville, NC**

Patented design combines the best attributes of existing technology for superior durability

By recovering exhaust heat, recuperators can greatly improve fuel efficiency in gas turbine engines. This has been recognized since the early years of engine development, but realized with only modest success due to the severity of a typical engine internal operating environment.

Seeking significant improvements in recuperator durability in a compact and economical design, Ingersoll-Rand Energy Systems has developed a new recuperator technology. This evolutionary heat exchanger design employs a highly effective counter-flow plate-fin heat exchange matrix in a construction that avoids damaging thermal stresses.

Compact design for enhanced efficiency and scalability

The Ingersoll-Rand Recuperator is designed with folded fins for a high heat exchange area and volume. This highly effective surface has the added benefit of being more compact than conventional technologies.

Key to the technology is a unit-cell construction applied to a brazed plate-fin heat exchanger design. By allowing cells to mechanically slip and deflect in response to the thermal gradients experienced by a heat exchanger, the thermal fatigue seen in more typical monolithic designs is effectively eliminated.

Inherent in the design is the ability to vary size to meet performance requirements. Combined with a variable stack height, the IR Recuperator can be easily adapted to different engines.

Ingersoll-Rand recuperators are produced in stainless steel and nickel alloys for applications ranging from microturbines to propulsion turbines for naval ships. All use the patented unit-cell technology to economically achieve both high performance and durability.

Competitive first cost and attractive life-cycle cost

The unique design of the recuperator core provides exceptionally long life even under the harshest thermal transients, overcoming the fatigue problems of conventional plate-fin designs. This high durability, combined with a low part count, results in a very attractive life-cycle cost.

A competitive first cost of the Recuperator is realized from the use of conventional alloys and state-of-the-art manufacturing.

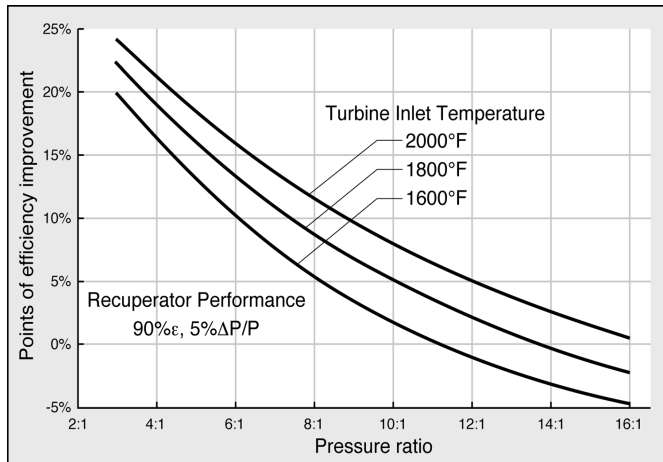
For engines 20kW to 20MW with pressure ratios from 3:1 to 20:1, Ingersoll-Rand Energy Systems can assist manufacturers in the cycle optimization and component selection for the recuperator.

With a 90% effectiveness and superior durability, the IR Recuperator provides an optimum package specifically engineered to the application without the cost or uncertainty of a custom design.

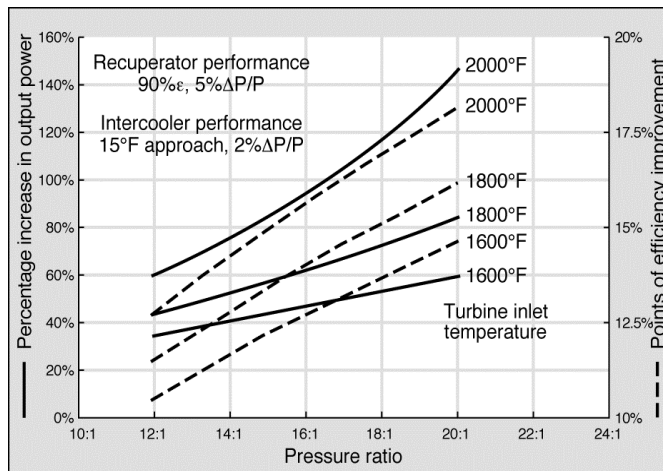
Specifications

- Up to 1200°F gas inlet temperature (higher depending on gas chemistry and life requirements)
- Up to 280 psig
- 347 stainless steel for most applications (IN625 available for higher temperature environments)

Impact of Recuperation



Impact of Intercooling/Recuperation



IR Worldwide Support

Built on a business history dating back to 1871, Ingersoll-Rand has developed an extensive global network to serve its customers through a one-stop resource for products, installation, and service. An international team of Ingersoll-Rand engineers, technicians, and sales professionals are fully equipped to sell and service microturbine systems. To locate Ingersoll-Rand support in your region, please contact Ingersoll-Rand toll free at 877-IRPOWER or visit the Energy Systems' website at www.irenergysystems.com.



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