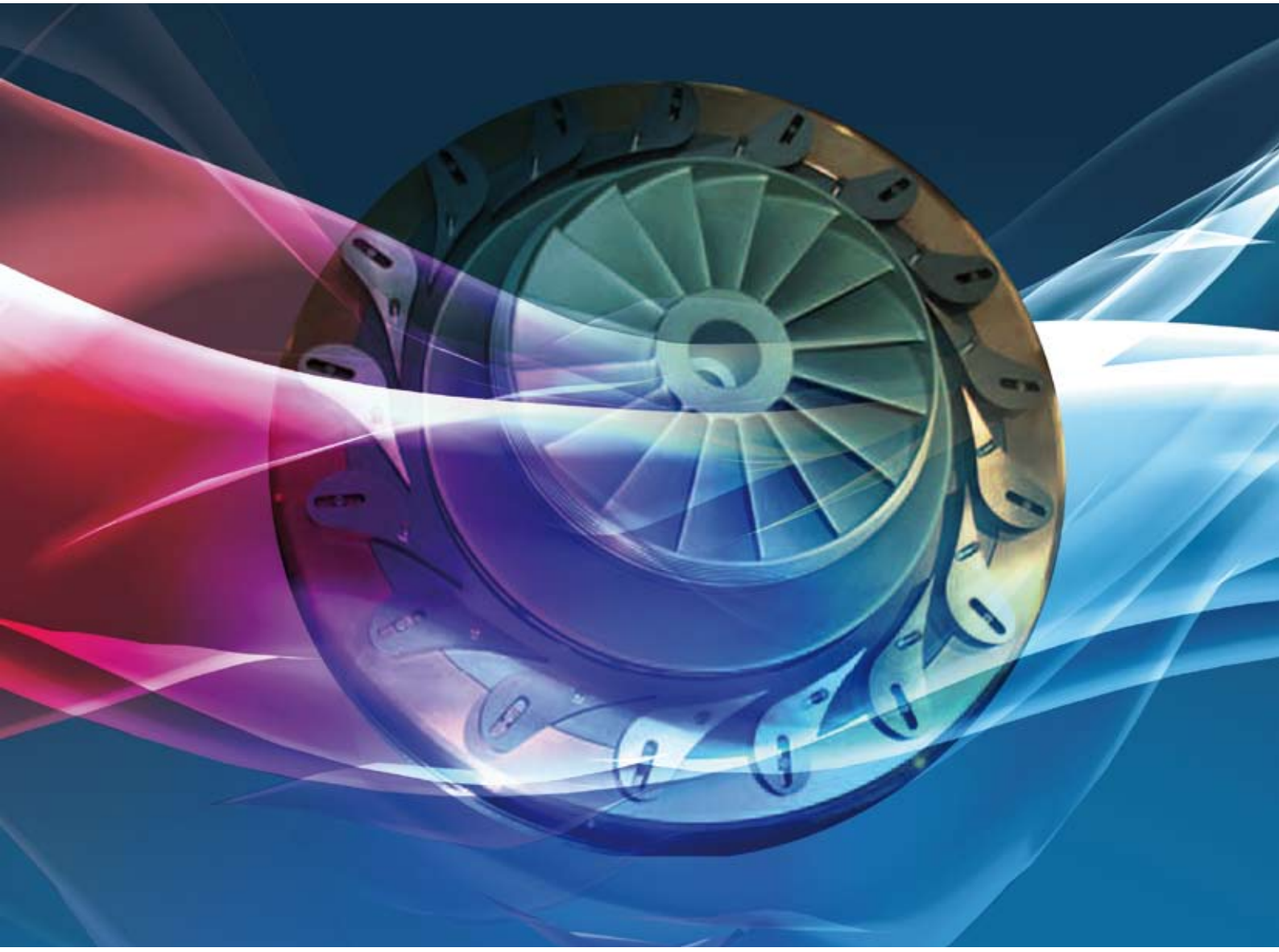
Atlas Copco Gas and Process Solutions

ETG SERIES: RECOVER LOST ENERGY, IMPROVE EFFICIENCY



Achieving full control

In order to compensate for the variable operating conditions found in many processes, turboexpanders must be capable of efficient off-design performance.

All of Atlas Copco's expanders – including our ETG Series for energy recovery – use adjustable inlet nozzles to produce optimum flow patterns. In addition, these inlet nozzles provide precise, continuous control between 10% and 150% of design flow.

The nozzles can be controlled manually or by using automatic actuators. Actuators can also receive control signals from process-related local or remote instruments. The nozzles are designed to open wide for full flow and close for emergency conditions. High-pressure units operate with no nozzle clamping or blow-by.

Precisely matching your application

The wheels used in Atlas Copco turboexpanders for energy recovery are milled to computer-generated profiles. All wheels are dynamically balanced and dye-penetrant inspected before and after overspeed testing. That verifies mechanical integrity.

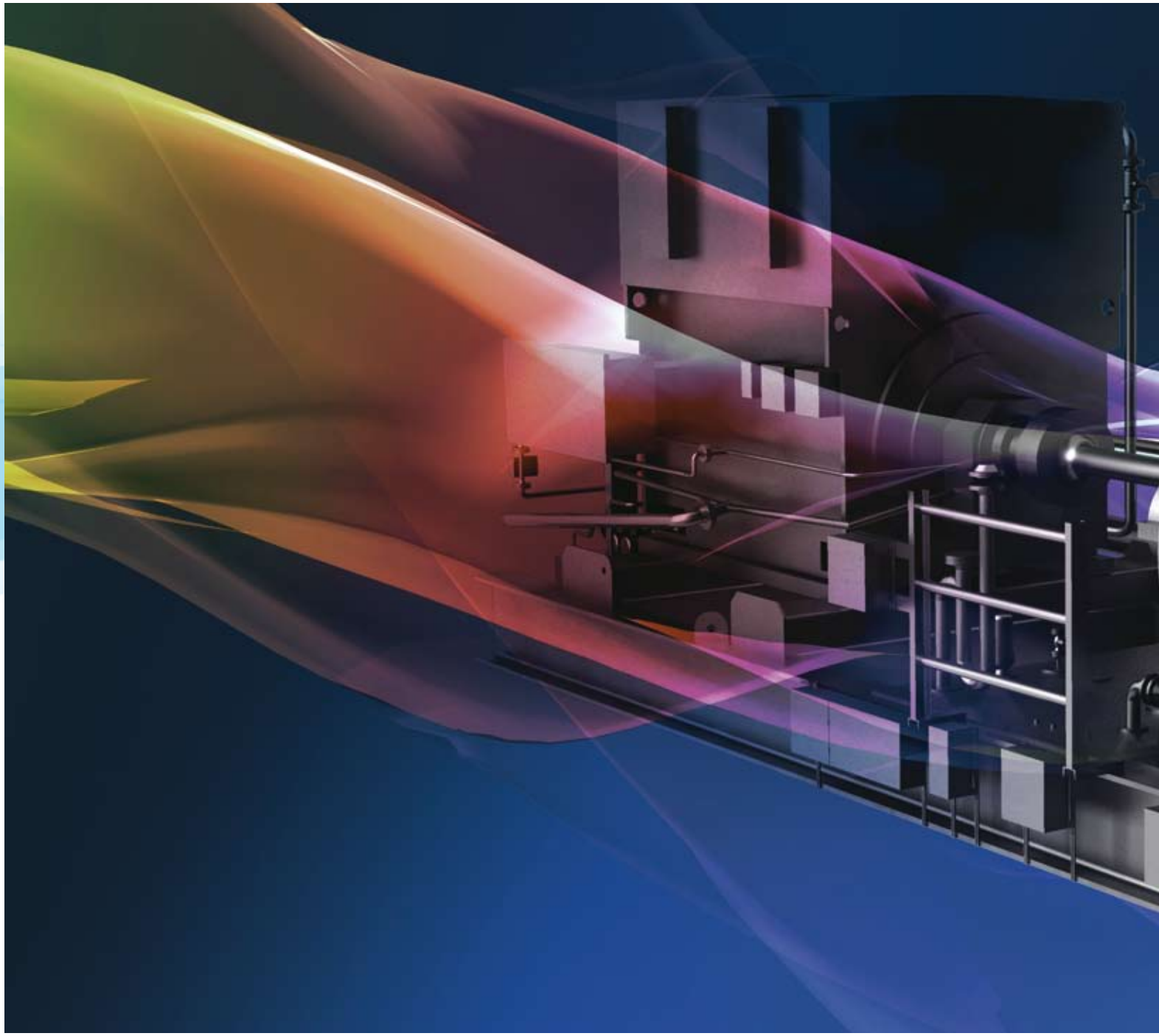
Open or closed wheel configurations can be specified to meet your specific application requirements in energy recovery. Wheels can be fabricated from a variety of materials to handle specific gases.

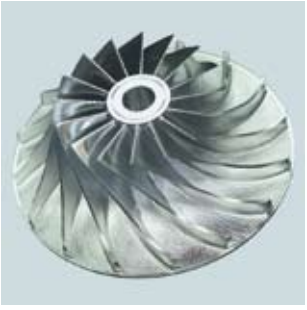
Being an experienced compressors manufacturer as well, Atlas Copco can choose from a wide range of different impellers to match your process needs.

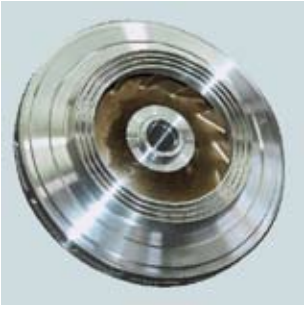
Configuration and range

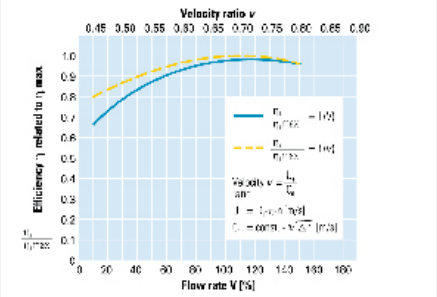
ETG Series expanders can be configured with 1 to 4 stages on a single gearbox to achieve the most efficient performance for your pressure let-down application.

The performance range in typical applications is as follows: inlet pressure up to 80 bar and recovered power in the range of 500 to 10,000 kW.

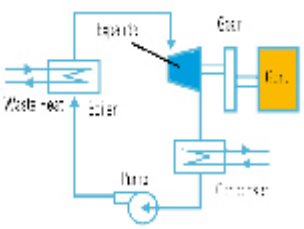




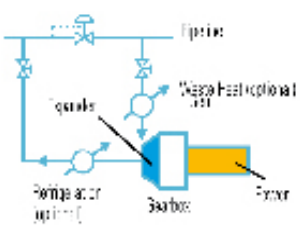




Waste heat recovery



Pressure letdown



ETG Series: Recover Lost Energy, Improve Efficiency

Virtually any process using high-temperature or high-pressure gas may be a resource for energy recovery. Atlas Copco Gas and Process ETG Series turboexpanders help you recover the waste energy to generate electrical power and increase the overall efficiency of your plant operation. Our engineers can help you estimate the energy recovery potential and return on investment for your pressure letdown applications.

Generator-loaded or compressor-loaded expanders can be custom-engineered. The objective: recovering the maximum amount of useful energy available in the process. Waste heat is another energy source that can be converted into useful energy by employing expanders in the Organic Rankine Cycle (ORC) system.

Potential sources for such heat include – among others – tail gas from industrial or combustion engines or waste vapour from chemical and petrochemical processes. Also, extraction of energy from geothermal resources offers a promising alternative to fossil fuels.

The Atlas Copco Gas and Process expanders have demonstrated excellent results in converting low-grade heat from geological brine steams into electricity. Isobutane vapour is expanded in a binary cycle process that produces significant electric power.

For gas pressure letdown in natural gas pipeline transmission, substantial energy can be recovered by using expanders to replace throttle valves.

In standard investment calculations of energy recovery potentials, the return on investment is often achieved within 18 to 24 months. Since the fuel cost for most turboexpander operations is zero, our expanders can make a significant contribution to the profitability of your operation.

The Atlas Copco team of specialists would be pleased to provide you with detailed application information specific to your process and help project your return on investment cycle.

Features and benefits

- Reliable, adjustable inlet nozzles; control flow automatically or manually
- Wheels are performance-matched to your application (= maximum efficiency)
- Numerous shaft seal options for optimum sealing in virtually any process application
- Combination of radial and axial thrust bearings helps maintain alignment and ensures reliable operation
- Rotor dynamics are accurately predicted by precise mathematical modelling and advanced computer analyses
- Automatic thrust compensation systems minimise power loss

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