



Heat exchangers
Design & Manufacturing
When innovation
Acts for savings
Our expertise, Your success

With ACTE “Growing with our clients” is much more than a position, it is a directive. Since 1998, we have put our unique knowledge about the recovery of waste heat to benefit our industrial partners. Similarly, if our heat recuperators are entirely designed and manufactured by us, this is because we are convinced that the continuity of dialogue from the first sketch to industrialisation of the recuperator is the best way to serve clients’ interests, both in terms of durability and profitability.

The COMPACT and GAP ranges of heat exchangers are both dedicated to recovery of heat from fumes and exhaust gases with particular attention paid to performance and the impact of the recuperator on the upstream system. This technology is a reference for those whose aim is to put emphasis on energy efficiency.

Fumes to **LIQUID**

COGENERATION INDUSTRY HEATING FURNACES



Fumes to **STEAM**

POWER ORC STEAM TURBINE STEAMER BOILER



Exhaust to **GAS to AIR**

ENGINE COMBUSTION PROCESS MICRO-GASTURBINE

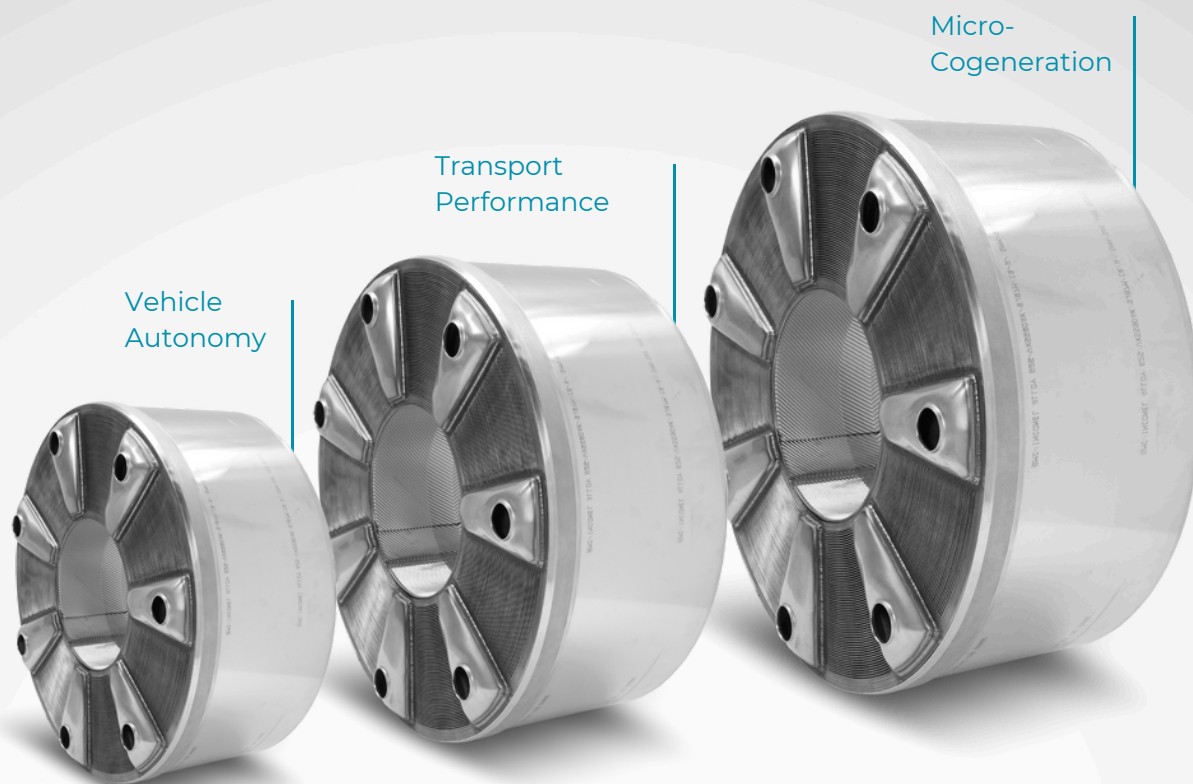


acte-sa.com
info@acte-sa.com



ACTE PY S.R.L. – VAT ID NO.: 80125024-2
COMPLEJO EMPRESARIAL GLOBAL, RUTA PY02 KM 331,5
CIUDAD DEL ESTE, ALTO PARANÁ, PARAGUAY
ZIP CODE 7000

When innovation Acts for savings



Heat recuperators

GAS-AIR
FOR MICRO
GAS TURBINES



acte-sa.com
info@acte-sa.com



ACTE PY S.R.L. – VAT ID NO.: 80125024-2
COMPLEJO EMPRESARIAL GLOBAL, RUTA PY02 KM 331,5
CIUDAD DEL ESTE, ALTO PARANÁ, PARAGUAY
ZIP CODE 7000



Heat exchangers

Design & Manufacturing

FOR MICRO GAS TURBINES

Improve performance and reduce fuel consumption

The ACTE recuperators capture the heat contained in the exhaust gas and the fumes. This energy source is significant to the energy performance in most systems and processes. In the case of gas turbine engines, it is estimated that on average 30% of energy consumed is in fact lost in the form of exhaust gas heat.

The **COMPACT** range: Specially designed for micro-turbines

The COMPACT heat exchangers are the result of many years of research and development. Their specific design has been thought up to improve micro and small gas turbine performance whilst ensuring their compatibility with system restrictions:



- » Limited fouling or clogging up
- » Resistance to **thermal shocks and fatigue**
- » Optimized **lifetime** | as much as 3x more
- » High efficiency | above 90%
- » **Compact** design | up to $900 \text{ m}^2/\text{m}^3$
- » High temperatures | up to 650°C
- » Up to 50% fuel economy

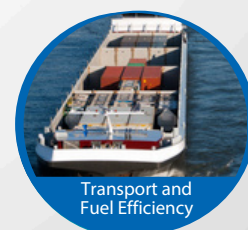
Thanks to this approach and technical developments carried out, the gas-to-air recuperators proposed by ACTE are compact, robust and very efficient. Their annular shape allows them to be integrated according to your technical and economic restrictions.

COMPACT HEAT RECUPERATORS - IMAGINED TO INCREASE THE EFFICIENCY OF YOUR FUTURE MICRO GAS TURBINE

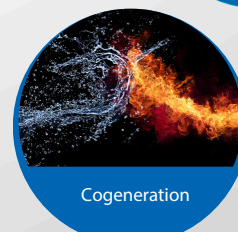
ACTE was founded in 1998 by a micro gas turbine engineer, who was looking for a specific heat recuperator suitable for the very demanding specifications of this sector. The market was unable to propose any solution capable of meeting the restrictions inherent to this high temperature thermodynamic cycle: high performance and resistance to thermal shocks and fatigue. Today, COMPACT recuperators are used just as much in stationary cogenerators as in transport methods.



Vehicle Performance



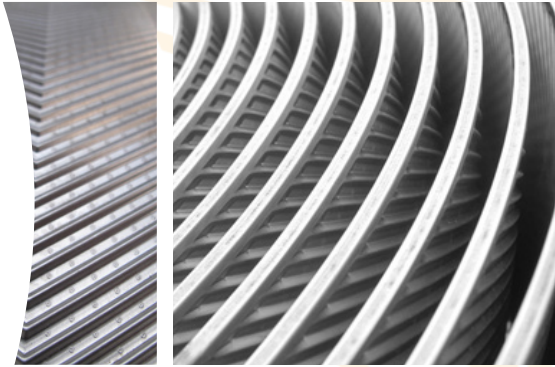
Transport and Fuel Efficiency



Cogeneration

When innovation Acts for savings

INNOVATIVE AND OPTIMIZED PRIMARY SURFACE



"Flat tube" design

Annular geometry

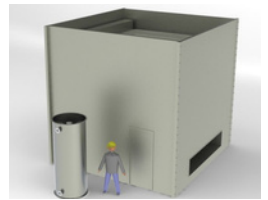
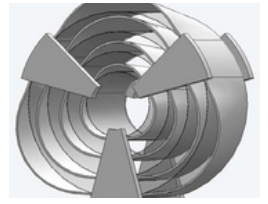
Fluid circulation management

Local pressure retention

Deformation management

Up to 25x more compact

Up to 4x lighter



GAS-GAS / GAS-AIR FROM A FEW KW TO SEVERAL MW



from 50 kWth to several MWth

FROM DESIGN TO PRODUCTION

ACTE expertise covers all the questions associated with heat exchangers

- » Thermal design optimises flow
- » Mechanical design
- » Materials analysis
- » Supply system analysis
- » Complete design of complex interfaces (in particular gas turbines)
- » Evaluation of the thermodynamic cycle

Each need is unique, ACTE responds in a targeted manner:

- » Supply of a standard solution
- » Adaptation of a standard solution
- » Bespoke development from prototype to series production



acte-sa.com
info@acte-sa.com



ACTE PY S.R.L. – VAT ID NO.: 80125024-2
COMPLEJO EMPRESARIAL GLOBAL, RUTA PY02 KM 331,5
CIUDAD DEL ESTE, ALTO PARANÁ, PARAGUAY
ZIP CODE 7000