



**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 client’s interest, 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 all 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



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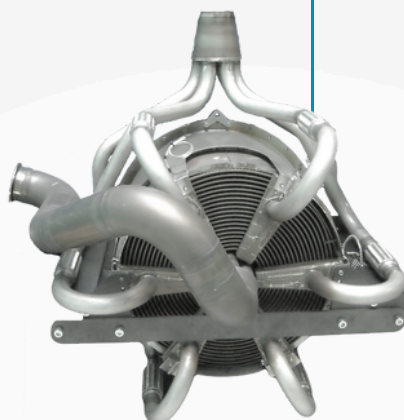
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When innovation Acts for savings

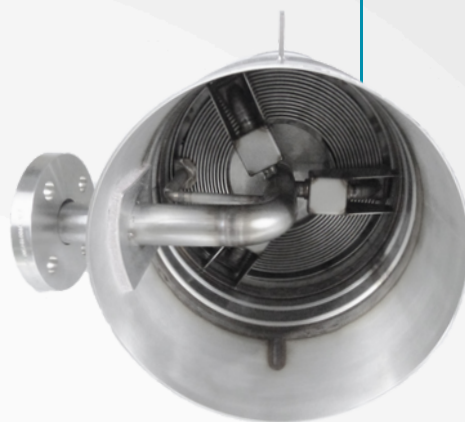
Supply to  
Steam Turbines



Optimization of  
Engine Cycles



Industrial  
Process  
Efficiency



## Heat recuperators

| GAS-LIQUID  
| GAS-AIR  
| STEAM  
FOR WASTE HEAT



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# Heat exchangers

## Design & Manufacturing

### WASTE HEAT RECOVERY

Recover the heat trapped in the process output fumes to turn it into a resource

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. Once recuperated, this heat may be used to reduce your overall energy consumption, being a substitute for your classic heat source.

#### The GAP range: facilitates the recovery of waste heat

If the potential to recuperate heat is present in numerous processes, it is often rendered inaccessible due to space limitations, weight and process stability (limited pressure loss on the gas side). In order to meet these problems the GAP technology benefits from a special geometry.



- » Respect the upstream **process**
- » Much **more compact** than a tubular exchanger
- » Particularly **light weight** | from 50 kg
- » Direct introduction into **the chimney stack**
- » High **thermal exchange** coefficient
- » Resistant to thermal shock
- » 100% stainless steel

This innovative geometry combines an annular shape and lightweight materials, rendering the GAP recuperators compatible with most fumes conduits. For its part, the adjustable space between the plates (from a few mm to several cm) allows the adaptation of the pressure drops induced by the heat exchanger to maintain an acceptable level for the process.

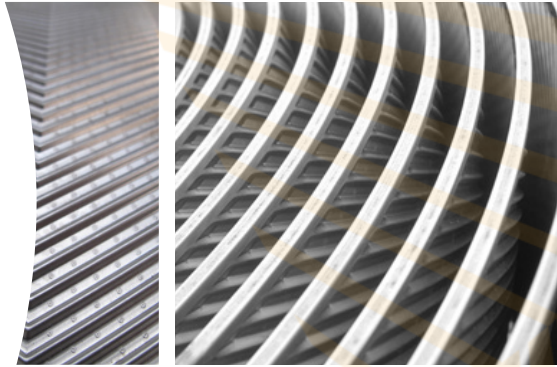
### GAP HEAT RECUPERATORS THOUGHT OUT TO OPTIMISE THE RECOVERY OF HEAT FROM YOUR PROCESS

Experts in heat recovery from gas turbines since 1998, the ACTE team has developed a new concept of heat exchanger with flat tubes which meet numerous applications. Thanks to the patented exchange surface, the GAP heat exchangers serve for all manner of recovery systems: gas-to-compressed air, gas-to-liquid, liquid-to-liquid (heating oil, water,...) or even generation of low pressure steam (up to 20 bars). These various needs are found in sectors as varied as the food or cooking industry, micro-cogenerators with combustion engines or steam turbines or even for de-centralised energy production.



## When innovation Acts for savings

### INNOVATIVE AND OPTIMIZED PRIMARY SURFACE



"Flat tube" design

Annular geometry

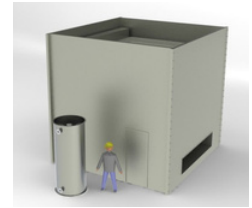
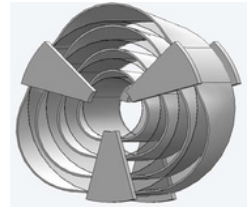
Fluid circulation management

Local pressure retention

Deformation management

Up to 25x more compact

Up to 4x lighter



GAS-GAS  
GAS-LIQUID  
PHASE CHANGE  
LIQUID-LIQUID

from 50 kwth to a couple 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



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