Carbonite® Heat Exchangers
Anticorrosion since 1958
ABOUT CEPIC

CEPIC, specialist in graphite heat exchangers

EXPERIENCE

Specialist since 1958 in the manufacture of anticorrosion chemical engineering equipment, CEPIC offers its customers a wide range of products:

- Centrifugal pumps in graphite and plastics
- Systems and skids (dilution of H2SO4, treatment of HCl, ejectors, vacuum units)
- Made-to-specification machined parts in graphite
- Graphite rupture discs
- Heat exchangers in impregnated artificial graphite, Carbonite®

EXPERTISE

Through our close collaboration with our clients, we have developed an incomparable amount of know-how in the field of hydraulic, thermal and mechanical sizing. Our knowledge of the current regulations allows us to provide you with safe solutions for heating, cooling, condensing... your most corrosive fluids. Our engineers are always available to provide advice and suggestions for heat exchangers that are adapted to your applications and your sector of activity.
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SOLIDITY

Our exchangers are manufactured in Normandy, in St. Etienne du Rouvray, 120 km north-west of Paris. Our recently-built factory has the highest-level technology for impregnating and machining, and our teams have extensive experience. This combination of know-how and state-of-the-art technology allows us to produce robust heat exchangers with particularly low carrying costs.

REACTIVITY

Our Engineers are always available to help you in sizing the heat exchangers that will respond to your needs. As part of our full service offer, our new exchangers include high-level after-sales service (repairs carried out on our premises and genuine spare parts.) Our specific technical follow-up of the exchangers we install guarantees fast service when it comes to supplying spare parts, even several dozen years after the initial implementation.

APPLICATIONS

CEPIC’s Carbonite® heat exchangers are used on all 5 continents, in the most demanding applications:

- Waste management
- Chemicals
- Iron & Steel
- Surface treatments
- Fertilizers
- Pharmaceuticals
Due to its remarkable qualities, the impregnated artificial graphite, Carbonite®, is an ideal material for the manufacture of heat exchangers:

- Excellent resistance to corrosive fluids
- Thermal conductivity that is 3 to 10 times greater than metals
- Electrical conductivity that is secured for use in an ATEX area
- Low linear dilatation coefficient
- Resistant to temperatures up to 170°C

All parts of CEPIC heat exchangers that are in contact with corrosive fluids are made of Carbonite®, or in other corrosion-resistant materials (PTFE, PP, PDVF, coated steel)

Our know-how allows us to produce Carbonite® bloc exchangers of the following types:

- Cylindrical vertical (EV range)
- Cylindrical horizontal (EH range)
- Cubic Section (ESC range)
- Horizontal channel (EHC)

### Guide to Selection

<table>
<thead>
<tr>
<th>Type</th>
<th>EV Vertical Exchangers</th>
<th>EH Horizontal Exchangers</th>
<th>ESC Cubic Section Exchangers</th>
<th>EHC Horizontal Channel Exchangers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating unit (vapor service side)</td>
<td>+++</td>
<td>+++</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Heating unit (liquid service side)</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
</tr>
<tr>
<td>Cooling unit (liquid service side)</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
</tr>
<tr>
<td>Process pressure (max barg)</td>
<td>10</td>
<td>15</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Service pressure (max barg)</td>
<td>15</td>
<td>15</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Corrosive process fluid</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
</tr>
<tr>
<td>Corrosive service fluid</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+++</td>
</tr>
<tr>
<td>Type of process fluid</td>
<td>Liquid/vapor</td>
<td>Liquid/vapor</td>
<td>Liquid/vapor</td>
<td>Liquid</td>
</tr>
<tr>
<td>Type of service fluid</td>
<td>Liquid/vapor</td>
<td>Liquid/vapor</td>
<td>Liquid/vapor</td>
<td>Liquid</td>
</tr>
<tr>
<td>Process liquid flow (m3/h)</td>
<td>5-1000</td>
<td>5-250</td>
<td>1-1000</td>
<td>1-100</td>
</tr>
<tr>
<td>Service liquid flow (m3/h)</td>
<td>20-500</td>
<td>10-100</td>
<td>10-250</td>
<td>1-100</td>
</tr>
</tbody>
</table>

+++ perfectly adapted        ++ adapted        + adapted in function of options        - can be suitable or unsuitable
**Construction**

Cylindrical bloc Carbonite® heat exchangers
Vertical fitting
Steel or specific metals service envelope
Design and construction in conformity with PED 97/23/EC

**Advantages**

Robust Carbonite® blocs
Greater available floor space
Large surface area possible by bloc stacking
Possibility of multiple passes
Adapted to high flow rates

**Capabilities**

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<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Max service pressure</td>
<td>15 bars eff.</td>
</tr>
<tr>
<td>Max process pressure</td>
<td>10 bars eff.</td>
</tr>
<tr>
<td>Max temp service</td>
<td>170°C</td>
</tr>
<tr>
<td>Thermal exchange area</td>
<td>0.8 - 144 m²</td>
</tr>
<tr>
<td>Number of blocs</td>
<td>1 - 12</td>
</tr>
<tr>
<td>Product flow diameter</td>
<td>8 - 24 mm</td>
</tr>
</tbody>
</table>

*Other specifications available upon request*

**Uses**

Condensing
Cooling
Heating
Evaporation
Absorbing

**Main options**

Construction with cable glands or dilatation compensator
Internal anticorrosion coating of the service envelope
Thermal insulation of the outer envelope
Specific construction for use in ATEX zones

**Applications**

Sulfuric acid heating unit
Type EV 40 3 blocs

Cylindrical exchange bloc
**Applications**

- Max service pressure: 15 bars eff.
- Max process pressure: 10 bars eff.
- Max temp service: 170°C
- Thermal exchange area: De 1 à 21 m²
- Number of blocs: 1
- Product flow diameter: De 8 à 20 mm

**Usages**

- Cooling with liquid
- Heating with vapor
- Heating with liquid

**Advantages**

- Heavy-duty Carbonite® bloc
- Greater available vertical space
- Single bloc thus limited number of joints
- Multiple passes
- Natural condensate draining on the service side

**Construction**

Cylindrical bloc Carbonite® heat exchangers
Horizontal fitting
Steel service envelope
Design and construction in conformity with PED 97/23/EC

**Main options**

- Construction with cable glands or dilatation compensator
- Internal anticorrosion coating of the service envelope
- Thermal insulation of the outer envelope
- Specific construction for use in ATEX zones

**Other specifications available upon request**

Hydrochloric acid (HCl) heating unit, type EH 70-200
**CUBIC SECTION GRAPHITE HEAT EXCHANGER, TYPE ESC**

**Construction**
- Cubic bloc Carbonite® heat exchangers
- Horizontal or vertical fitting
- Steel or cast iron service plates
- Design and construction in conformity with PED 97/23/EC

**Uses**
- Condensing
- Cooling with liquid
- Heating with liquid

**Main options**
- Graphite collectors with vertical or horizontal taps. (phases separation).
- Stainless steel service plates
- Inclined supporting structure
- Specific construction for use in ATEX zones

**Advantages**
- Heavy-duty Carbonite® blocs
- Easy separation of two phases fluids at the exit of the heat exchanger
- Bloc length from 200 to 610 mm
- Modular, single or multi-bloc designs
- Multiple passes

** Capacities**

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Max service pressure</td>
<td>6 bars eff.</td>
</tr>
<tr>
<td>Max process pressure</td>
<td>6 bars eff.</td>
</tr>
<tr>
<td>Max temp service</td>
<td>170°C</td>
</tr>
<tr>
<td>Thermal exchange area</td>
<td>De 1 à 120 m²</td>
</tr>
<tr>
<td>Number of blocs</td>
<td>De 1 à 10</td>
</tr>
<tr>
<td>Product flow diameter</td>
<td>De 8 à 20 mm</td>
</tr>
</tbody>
</table>

*Other specifications available upon request.*

**Applications**

Acid vapor condensing unit, type ESC 50 48 horizontal
**Construction**

Cubic bloc Carbonite® heat exchangers
Vertical fitting
Graphite, steel, PP or PVDF service plates
Design and construction in conformity with PED 97/23/EC

**Features**

- **Cooling**
- **Heating**

**Advantages**

- Robust Carbonite® blocs
- High thermal efficiency even with small flows thanks to multipass design
- Bloc length from 200 to 600 mm
- Allows for thermal exchange between two corrosive fluids
- Multiple passes
- Adapted to large and small temperature variations

**Applications**

- Specific construction for use in ATEX zones

**Specifications**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
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<tbody>
<tr>
<td>Max service pressure</td>
<td>5 bars eff.</td>
</tr>
<tr>
<td>Max process pressure</td>
<td>5 bars eff.</td>
</tr>
<tr>
<td>Max temp service</td>
<td>170°C</td>
</tr>
<tr>
<td>Thermal exchange area</td>
<td>De 1 à 28 m²</td>
</tr>
<tr>
<td>Number of blocs</td>
<td>1</td>
</tr>
<tr>
<td>Product flow diameter</td>
<td>De 8 à 20 mm</td>
</tr>
</tbody>
</table>

Other specifications available upon request
Other CEPIC equipment available:
- Anticorrosion centrifugal pumps in Carbonite® or plastics,
- Systems and skids (dilution of H2SO4, treatment of HCl, ejectors, vacuums
- Standard or made-to-specifications stirrers and shakers
  - Machined to specification graphite parts
- Carbonite® rupture discs
Agent/Distributor: