



AIR-CURTAIN® Technology



Cold-End Protection

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APEX Group developed the Air-Curtain® concept as an innovative technical solution for cold-end protection. The use of Air-Curtain® Technology in the cold-end section, which operates with a metal temperature close to acid dew point, has proven to be effective and results in safe and condensation-free operation.

Air-Curtain® Technology controls the temperature of the heat transfer plate, keeping it above the acid and water dew point. The Air-Curtain® concept can be applied to plate and to tubular heat transfer surfaces and consists of a static (Fig. 1 & 3) or kinetic (Fig. 4) layer of air between heat transfer surface and the main air stream.

The Air-Curtain® Cover separates these two streams, so that the static layer acts as a part-insulator of the cold corner, while the main air stream is performing the normal heat transfer function, but with a reduced heat-flux.

Air-Curtain® Technology is used at the coldest corner of the cold pass, as shown in Fig. 2.

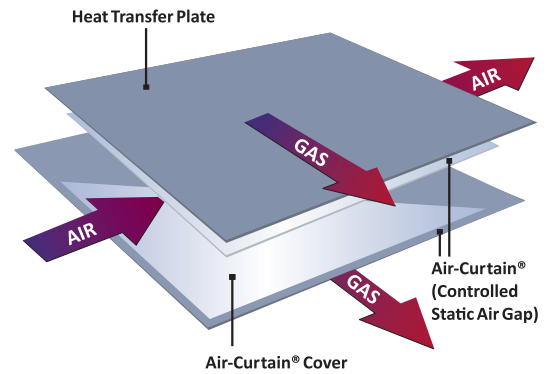
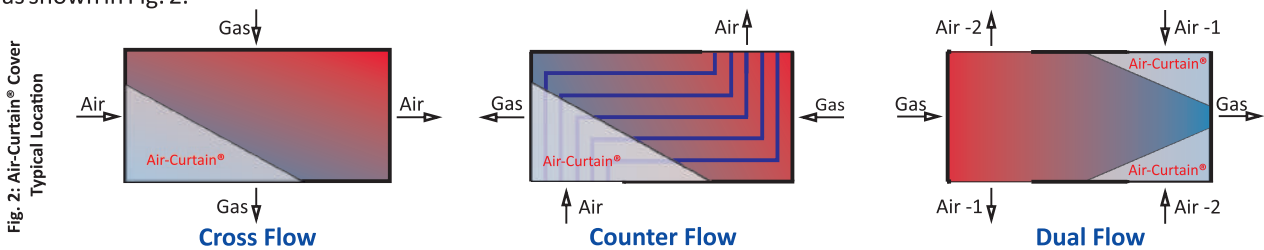


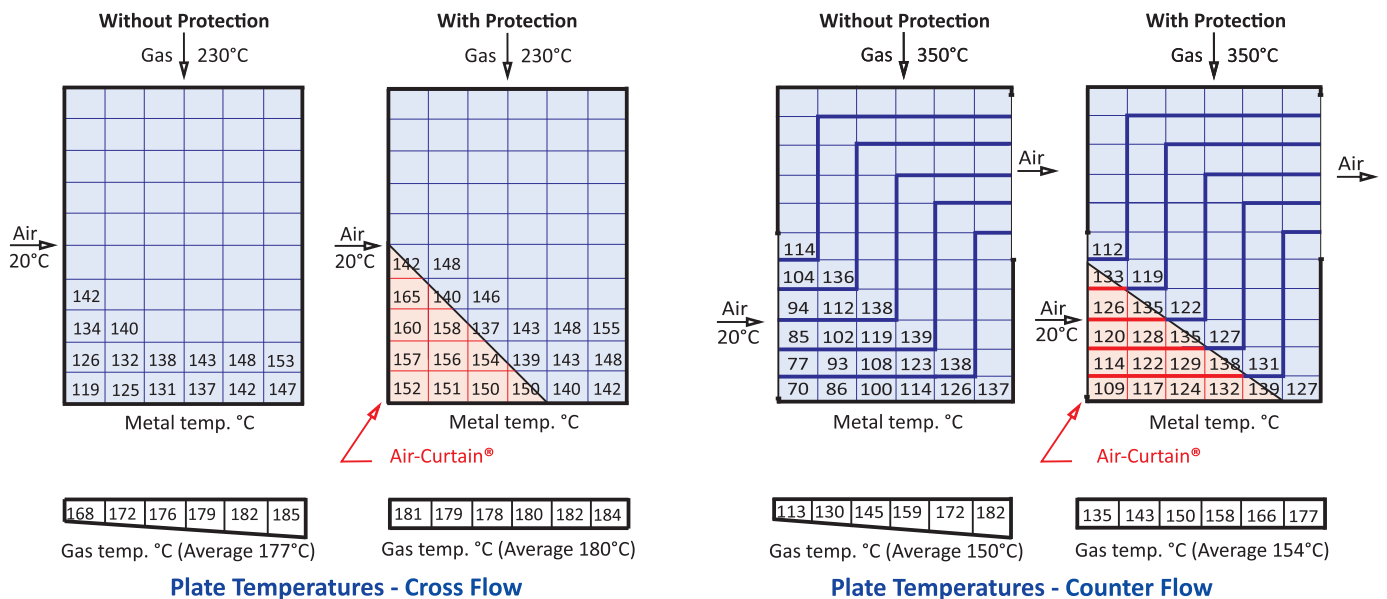
Fig. 1: Static Air-Curtain® Concept Applied to Plates



Advantages of Air-Curtain® Technology

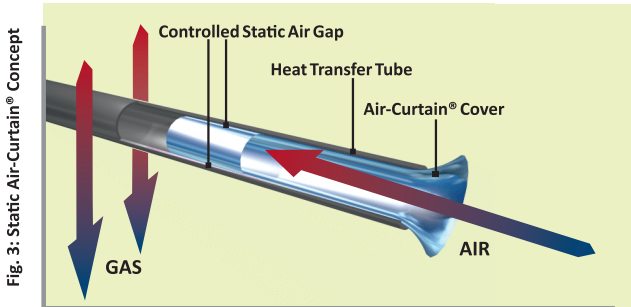
- Reduced corrosion of the air preheater and of the downstream equipment
- Reduced emission of acidic droplets in the atmosphere
- Reduced discharge of contaminated water to sewer
- Reduced acid rain by discharging the SOx components in vapour form

Typical Examples of Air-Curtain® Protection



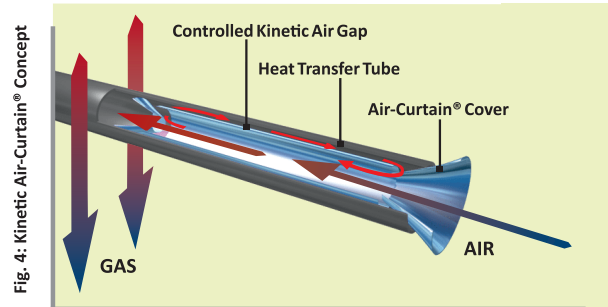
Static Air-Curtain® Concept Applied to Tubes

A stagnant layer of air between the heat transfer tube and the Air-Curtain® Cover reduces the heat-flux and increases the temperature of the tube at the cold end.



Kinetic Air-Curtain® Concept Applied to Tubes

The air inlet jet induces the recirculation of part of the preheated air for a more effective control of the tube metal temperature above the dew point.

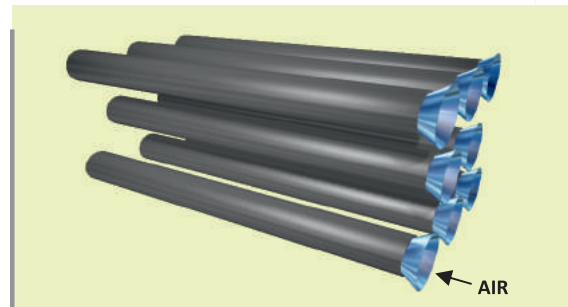
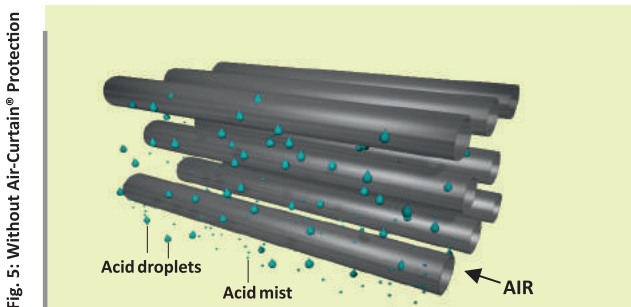


Air-Curtain® Technology Provides Equipment and Environmental Protection

Exchangers without Air-Curtain® protection condense part of the acid and of the humidity content in the exhaust gas, on the heat transfer surface, in the region of the cold air inlet (Fig. 5). This condensation is very corrosive and may damage the air preheater, the downstream equipment and the gas circulation system. Frequent cleaning is required resulting in discharge of contaminated water to sewer.

The Air-Curtain® Technology prevents condensation on the heat transfer surfaces and entrainment of acidic droplets with the exhaust gases (Fig. 6).

The net result is a prolonged life of the air preheater and of the downstream equipment. Moreover, the discharge into the atmosphere of gases free of acid droplets provides a superior protection of the environment.



Typical Examples of Air-Curtain® Protection

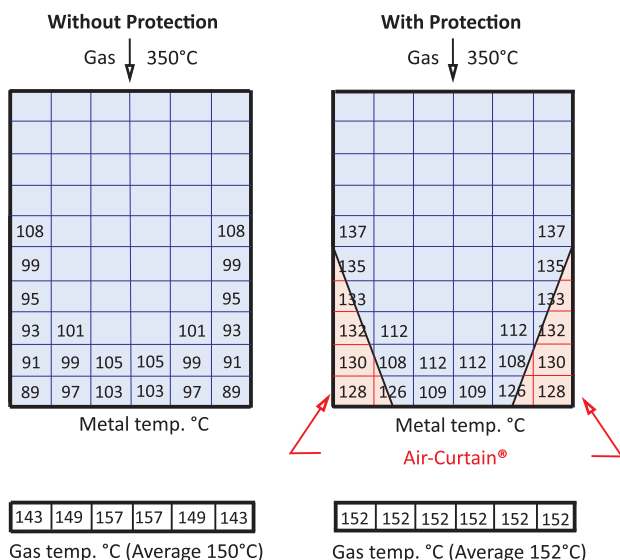
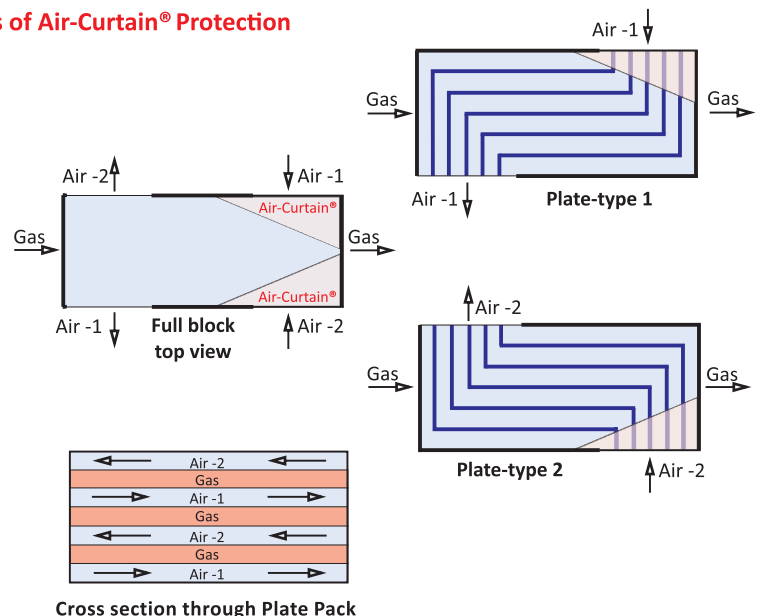


Plate Temperatures - Dual Flow



Mechanical Design of Plate-type Dual Flow



“APEX Group is dedicated to offering engineering solutions, not just a commodity.”

Mircea Dinulescu, Founder of APEX Group

Company Profile

APEX Group is specialized in designing and manufacturing high quality heat transfer equipment. CORPEX®, A-CORREX® & APEX-delfino® plate-type and tubular exchangers are designed to bear the most extreme requirements. We provide innovative engineering solutions for high performing heavy-duty gas/gas and gas/liquid equipment for heat recovery and environmental projects.

Experience and Vision

We encompass 45+ years of experience and expertise of our founder, Mr. Mircea Dinulescu, and share his vision - **to research, create and provide engineering solutions** for heat transfer industrial applications. To this day, our *Credo* remains unchanged, creating the strong foundation for APEX Group’s position in the international market:

Started in 1990 as a small independent business, APEX GROUP will grow into a reputable designer and manufacturer of high quality low-priced industrial heat transfer and combustion equipment for the international market operating according to the quality principles laid out by international standard ISO 9001.

M. Dinulescu, 1991

Quality and Innovation

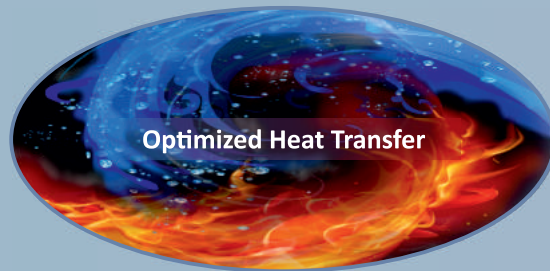
APEX Group’s strength consists of know-how, patented technology, professionalism and leading-edge engineering. Our Research and Development Department supports APEX Group’s activities by providing new solutions for continuously upgrading APEX Group’s products and guaranteeing optimal heat transfer, long lifetime, trouble-free and user friendly operation.

Customers Worldwide

We take pride in being a family-owned company, which allows us to build close connections with our customers and guarantees a personal approach to each project. We strive to support our customers by engaging in dialogue and developing long-term partnerships. Our company is renowned worldwide and naturally we deliver to every corner of the world.

Broadening Horizons

By encouraging feedback from customers, APEX Group develops solutions and products that anticipate market needs. To materialize our concepts we have expanded our Engineering, Research and Fabrication facilities. Apex engineers are continuously keeping up to date with the newest industrial developments in order to provide optimum design for our customers.



Optimized Heat Transfer



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