

# Efficiency **makes** **your difference!**

By-Cast is widely recognized as the global leader in the design and production of highest-quality cast-iron and glass air preheaters. Customers from all continents reach out to us for the design, construction, and maintenance of air preheaters for numerous applications. Our customer base enjoys an optimal level of heat recovery with the unparalleled life span of a DEKA air preheater.

# Global market leader in glass and cast-iron air preheaters

By-Cast specialises in the design, production, and maintenance of cast-iron (DEKA) and glass heat exchangers. These heat exchangers transfer heat from flue gases in combustion processes to the combustion air. In doing so they considerably increase the efficiency of the installation and recuperate energy that would otherwise be lost. Our air preheaters have gained a proven track record of quality and durability in many processes, including industrial boilers firing fuel such as coal, gas, and oil, but also with less conventional fuels such as wood chips and municipal waste.



## CAST IRON

We offer three types of cast-iron tubes:

- › HT (A/B): Finned surface inside and outside  
A maximal heat-exchanging surface
- › LT(B): Finned surface outside and ribbed inside  
Higher metal temperature
- › LLT(B): Finned surface outside and flat inside  
Higher metal temperature when one approaches the dew point

Each tube type is available in its 1<sup>st</sup>-, 2<sup>nd</sup>-, and 3<sup>rd</sup>- generation configuration. The 3<sup>rd</sup> generation is the most recent and efficient (HTB, LTB, and LLTB).

The DEKA cast-iron material has properties that make the DEKA air preheater the optimal choice for fuels with a high acid and dust content. We use gray cast iron where carbon is in the form of unbonded lamellae.



## GLASS

By-Cast supplies glass heat exchangers which can be used as a unit on their own. For this application, By-Cast uses borosilicate glass tubes supported by PTFE-lined tube sheets. These tubes have excellent resistance to acids. Furthermore, they have a high thermal capacity and high resistance to thermal shock.



## HYBRID

The metal temperature of the cast-iron tubes must always be kept higher than the dew point of the flue gas. For safety reasons we recommend keeping the metal temperature 10°C higher than the dew point. This restriction severely limits how much heat can be recovered when acid flue gases are involved. By first sending the air through a glass air preheater, it is possible to recover as much of the waste heat as possible without any risk of condensation or corrosion in the cast-iron air preheater.



### Construction method

As the inventor of the proven DEKA concept we make the heat-transfer surface of rectangular, finned, cast-iron tubes. These tubes are stacked vertically alongside each other to form rows, then the various horizontal rows on top of each other form a single module. A fiber-rope compound gasket between the tubes accommodates the differential expansion of the various materials of construction and ensures tightness. Modules are stacked on top of each other to create a multi-pass arrangement.



### Expected life span

Our DEKA air preheaters have an unparalleled operational life span. When used according to design specifications, our air preheaters last on average more than 20 years. Due to the modular construction of a DEKA air preheater it is also possible to replace tubes or modules on site. Our solutions thus assure an unbeatable total cost of ownership (TCO) over the whole life cycle.



## Services

You can count on our years of experience and expertise. We attach the greatest importance to quality, so we can guarantee the best service for the design, construction, and maintenance of your air preheater.

The engineers at our aftersales department guarantee fast follow-up with a direct contact person for any questions. We have spare parts for all models in stock, even for installations over thirty years old. We can also send an engineer on site when requested.

## Revamping (as part of the services we offer)

Air preheaters that have been in service for more than 10 years are usually operating under conditions different from what they were originally designed for. This is largely because of the change in the fuel used in the process. In other words, the heat exchanger currently in use may not be the optimal solution for

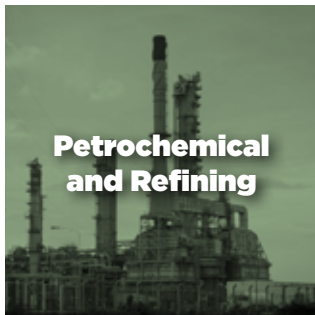


the current circumstances. In such cases, By-Cast will carry out a performance study free of charge or obligation. Depending on the outcome we can restore the current heat exchanger using original tubes, improve it within the current dimensions or maximise the efficiency within the physical restrictions.



# From heat loss to energy savings

Heat recovery proves its worth in the most diverse industries. Heat that would otherwise be lost is collected and transferred to another process. A By-Cast air preheater can be used to save energy in an effective, economic, and environmentally friendly manner. By-Cast installs air preheaters in both new projects and for revamping when installations switch from oil to natural gas.



**Petrochemical  
and Refining**



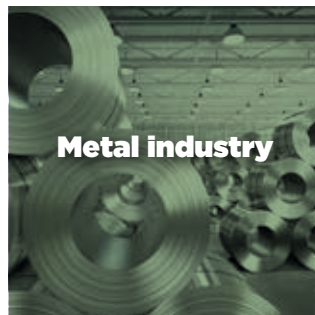
**Power stations**



**Waste treatment**



**Food & beverage**



**Metal industry**



**General industry**



## R&D

By-Cast teams up with its customers in search of the solution most suitable for them. With the support of Sirris & Vito, our research partners at the University of Leuven, we are constantly working on improving the efficiency of our products. We always use our own high-performance software, and have a testing department for experimental research.



## Our contribution to a better living environment

A DEKA air preheater reduces fuel consumption in an industrial boiler by 10 to 25 percent. Our annual production of air preheaters represents savings worldwide of 247,000 tons of fuel a year! These are figures we are extremely proud of. Within our own operations and manufacturing, we also strive to have as little negative environmental impact as possible, as reflected in our ISO14001 certification.



## Quality

Quality is at the heart of the company philosophy at By-Cast. Since 1994, we have maintained an ISO9001 certification for the design and production of our air preheaters. We also take the safety and health of our employees very seriously. In all of its activities, By-Cast complies with all applicable standards and laws for Belgium and Western Europe.



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