

Plate Fin Heat Exchangers

Technology Enabling Process Optimization Today and in the Future

A Special Report from Chart Industries

“You may never use the products we make, but everyone uses the products we make possible.”

This slogan, developed at Chart to capture the essence of our business, is a perfect fit for our brazed aluminum plate fin heat exchangers (BAHX) that sit at the heart of the cryogenic gas separation processes, producing the raw components for industry and energy.

In the industrial gas industry, BAHX, also known as plate fin heat exchangers (PFHE), are key to the separation and purification processes for oxygen, nitrogen, and rare gases. Particularly given the global slow-down in industrial output, the recent and much-publicized focus on over-capacity in the steel industry being a prime example, cost and optimization are center stage and today’s industrial gas market demands the improved manufacturing techniques and processes, that Chart has invested in, to meet its requirements.

In 2014 Chart completed two major expansion projects and, by doing so, added an additional 40 percent to the footprint of its principal facility in La Crosse, Wisconsin, and opened a brand new manufacturing plant in Wuxi, China. Projects completed in 2015 have benefitted from the large brazing furnaces that were a feature of both. For our customers, larger units mean increased product flow through a single unit, versus having to purchase multiple units. This has obvious potential for reduced CAPEX, but also provides cost savings through reduced shipping and installation costs, and affords customers

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Clearly, size matters, but it isn’t just a case of “biggest is best.” Chart is able to extract more from each BAHX than ever before through the development of new and improved high performing fin geometries (secondary heat transfer surface). By continuing to increase the upper design pressure capability of BAHX, which today stands in excess of 2,300 psig (158 barg), we enable our industrial gas customers to optimize their process cycles and plant design for an overall total low cost solution.

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Despite a pedigree that dates back to the 1950s and many thousands of units in operation throughout the world, plate fin heat exchangers are still viewed in some quarters as a black

box technology. Chart has responded to this by launching a series of webinars with an overall theme of lifting the lid on the black box. Starting with the basics of explaining what a BAHX does and how it’s assembled, the ongoing webinar series covers applications and operational aspects aimed at optimizing performance and maximizing lifespan. Drawing on an audience of process and mechanical engineers, purchasers, and plant maintenance and operation personnel, the webinars are proving to be extremely popular. To date, every webinar has been fully subscribed, with many repeated due to high demand.

Finally, no article about Chart and our plate fin heat exchangers would be complete without looking at natural gas processing and, in particular, LNG. We celebrated the opening of Stabilis’ small-scale LNG plant in George West, Texas that features a Chart-designed and built liquefaction plant, complete with a brazed aluminum heat exchanger, providing natural gas as a fuel for high horsepower applications throughout the Eagle-Ford shale. Brazed aluminum heat exchangers are also a fundamental component for many of the modular mid-scale plants intended to deliver North American natural gas as a competitively priced export resource and in offshore liquefaction, or floating LNG (FLNG).

High thermal performance, multi-stream capability, low weight, and reliability are the principal reasons why BAHX are the preferred heat exchanger type for cryogenic gas processes. Through continued development and collaboration with long time users of the product, Chart is committed to ensuring that they continue to be a process enabler for the foreseeable future. ■

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