

CRYOCORE® PROCESS EQUIPMENT

Superior heat-transfer performance – to the core.



**CRYOCORE**

YOUR SOLUTION COLD.



## Master the process.

Whether you process via brazed aluminum heat exchangers (BAHX), platefin and kettle (PFK), or cold boxes, CryoCore has your solution handled. Our systems allow you to process a variety of flows: gas-to-gas, gas-to-liquid, two-phase or any combination. With CryoCore each stream is optimally balanced both thermally and hydraulically, so you can run up to 15 streams in parallel or series with complete confidence. In the end you get lower capital and operating costs, and higher process performance.

## Cost efficiency without compromise.

Exceptional heat exchanger performance starts with advanced engineering and manufacturing. Our systems are designed and built to rigorously high standards to ensure unwavering quality. Plus we have the production capacity to deliver on time. You get the solution you need right now and performance that lasts long term – a potent combination that delivers real cost-efficiency.

# CryoCore

Superior Systems  
Extensive Expertise  
Engineered Solutions  
Assured Delivery  
Custom Applications  
Strong Relationships

# CRYOCORE®

## Brazed Aluminum Heat Exchangers

Every processing application is different, but one thing remains constant – CryoCore has the solution. Our BAHX systems give you performance and flexibility that shell-and-tube exchangers can't match. CryoCore engineers draw from a variety of fin patterns to design the optimal system to meet your process requirements. We can accommodate an unlimited range of flow options, including counter, cross, parallel, multi-pass and multi-stream. With CryoCore you get a compact, highly efficient package that gets the job done right.

### CRYOCORE BAHX Advantages

- Low-temperature approach ranges as close as 2°F (1°C)
- Less compressor horsepower than conventional tubular heat exchangers
- Lower capital and operating costs than shell-and-tube equipment
- 6 to 10 times greater heat transfer surface area density per volume
- Up to 20 times more UA (per volume)

### Apps

Air Separation, Natural Gas Processes, LNG, Ethylene, POH, Helium

### Services

Evaporators, Sub-Coolers, Condensers, Gas/Gas, Reboilers

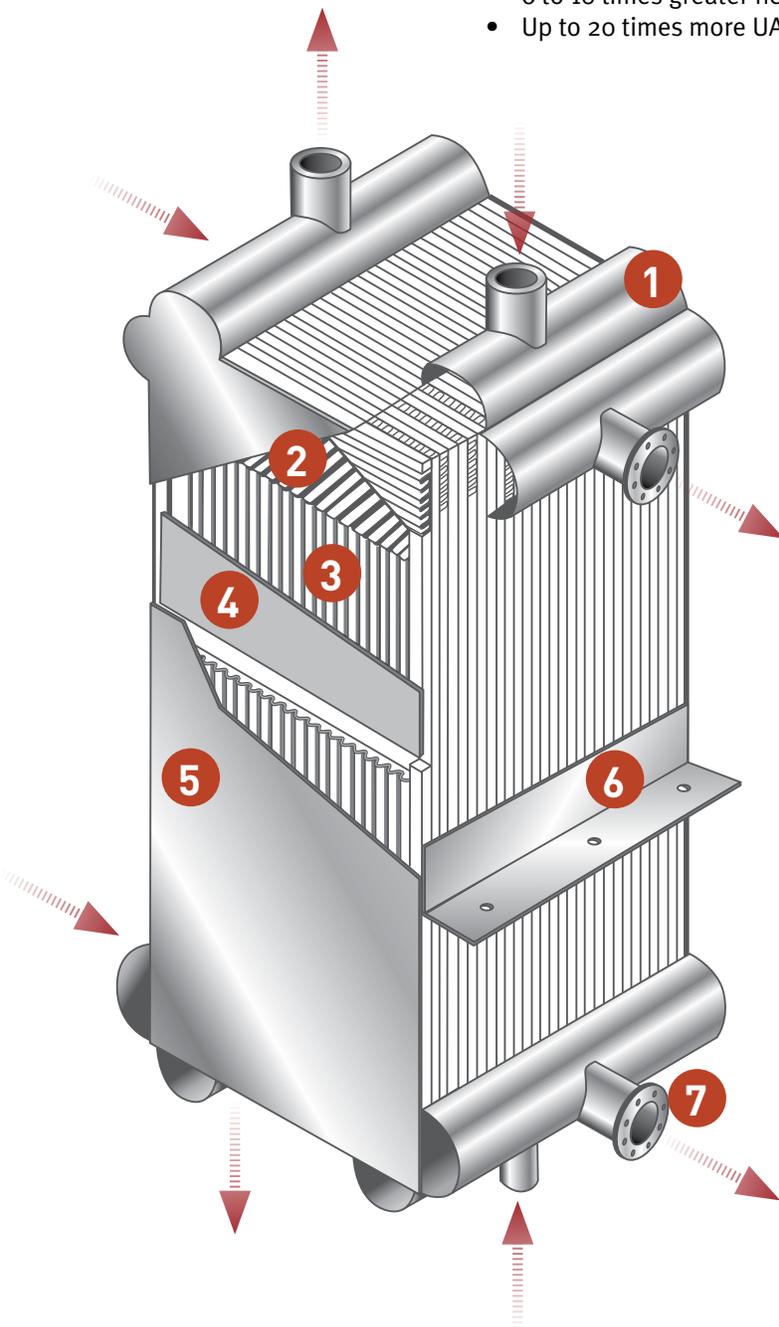
### Temp Range

-454°F to 400°F

### Codes

Full vacuum to 1800 psig

ASME, TUV, SQL, PED

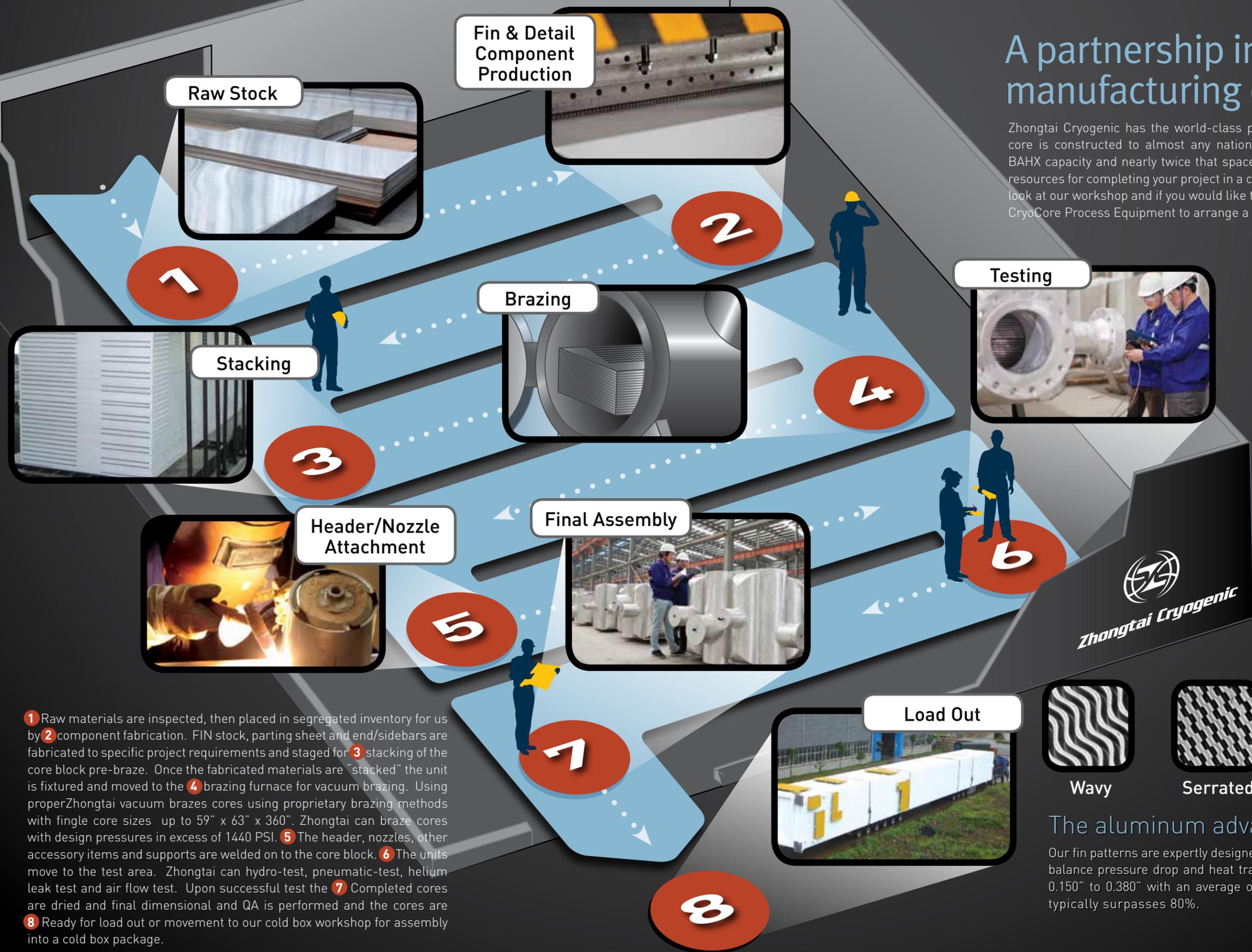


### CRYOCORE BAHX

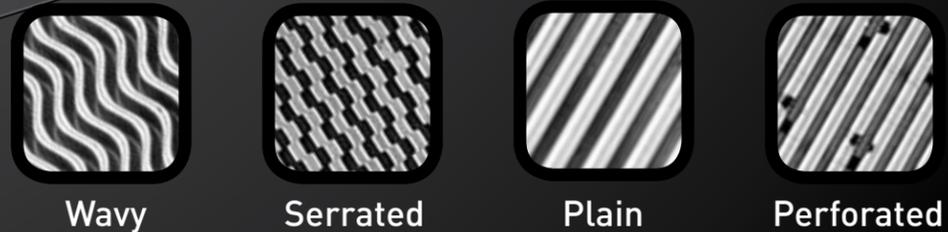
1. Header
2. Distributor Fin
3. Heat Transfer Fin
4. Parting Sheet
5. Cap Sheet
6. Support Angle
7. Flanged Nozzle

# A partnership in manufacturing excellence.

Zhongtai Cryogenic has the world-class plant and personnel to ensure your BAHX core is constructed to almost any national code. Zhongtai has 300,000 sq. ft. of BAHX capacity and nearly twice that space for cold box and vessel assembly—ample resources for completing your project in a cost-effective, timely manner. Take a virtual look at our workshop and if you would like to see our factory in person, please contact CryoCore Process Equipment to arrange a visit.



**1** Raw materials are inspected, then placed in segregated inventory for us by **2** component fabrication. FIN stock, parting sheet and end/sidebars are fabricated to specific project requirements and staged for **3** stacking of the core block pre-braze. Once the fabricated materials are “stacked” the unit is fixtured and moved to the **4** brazing furnace for vacuum brazing. Using proper Zhongtai vacuum brazes cores using proprietary brazing methods with fingle core sizes up to 59” x 63” x 360”. Zhongtai can braze cores with design pressures in excess of 1440 PSI. **5** The header, nozzles, other accessory items and supports are welded on to the core block. **6** The units move to the test area. Zhongtai can hydro-test, pneumatic-test, helium leak test and air flow test. Upon successful test the **7** Completed cores are dried and final dimensional and QA is performed and the cores are **8** Ready for load out or movement to our cold box workshop for assembly into a cold box package.



**The aluminum advantage:**  
 Our fin patterns are expertly designed to enhance flow characteristics and optimally balance pressure drop and heat transfer on each stream. Fin heights range from 0.150” to 0.380” with an average of 18 fins per inch. Heat-transfer efficiency typically surpasses 80%.



# CRYOCORE®

## Platefin-and-Kettle Heat Exchangers

With CryoCore you can go with a PFK solution and still get all the benefits of brazed aluminum's superior thermal performance. Our PFK design uses a specially configured brazed aluminum exchanger core in a vaporizing fluid bath to achieve a very high heat transfer coefficient, which far outperforms shell-and-tube and thermosiphon brazed aluminum exchangers with head drums. Kettles can be made of carbon steel, low-temperature CS, stainless or aluminum. The aluminum option allows PFK applications to be smaller and more cost effective than ever. In fact, refrigeration units can be as small as 300 hp.

- Close temperature approaches increase throughput and save power and operating costs
- Smaller vessel size reduces liquid inventory, insulation, plot-plans and support structure, thus minimizing installation costs
- Multi-stream capabilities enable several duties per shell, thereby eliminating leaky mechanical joints
- Shell-and-tube may be converted to PFK in the field with minimal effort

### Apps

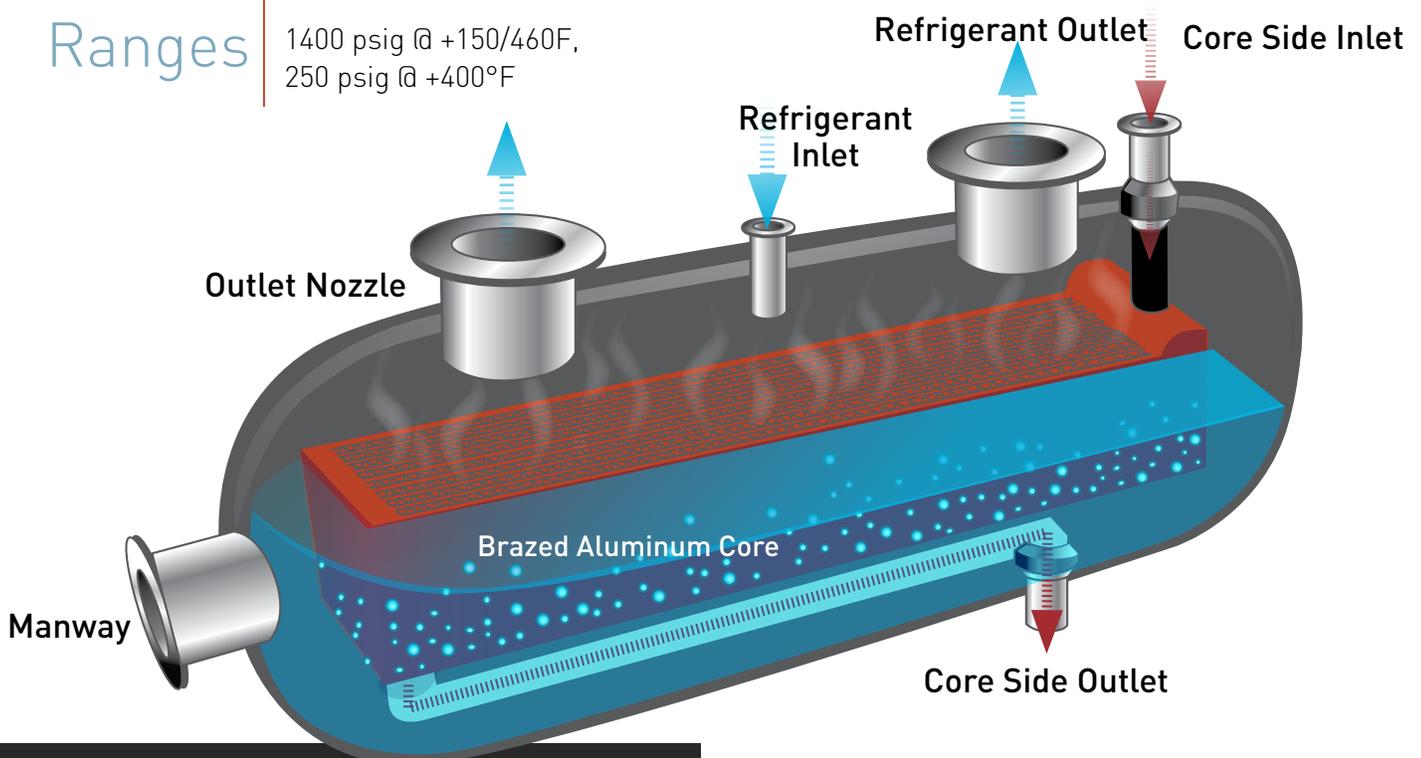
Gas Processing, Ethylene, Fractionation, LNG Refrigeration

### Services

Evaporators, Condensers, Reboilers

### Ranges

1400 psig @ +150/460F,  
250 psig @ +400°F



### Plate-Fin in Kettle (PFK)

The Brazed Aluminum Heat Exchanger (Plate-Fin) is partially submerged in a refrigerant bath. The vessel is sized to control liquid entrainment and carryover. For the most demanding applications, mist eliminators can be utilized to limit entrainment even further.



## Smart from start to finish.

We manufacture the highest-quality BAHX systems, but that's just the beginning of what we offer you. Our goal is to provide you with a solution that delivers exceptional efficiency and savings, and it starts long before a single fin is manufactured.

Our engineers work with you to build cost and operating benefits into the project up front. For example, our lightweight, compact designs save valuable plant real estate and support structure costs. And our system's multiple-stream capacity reduces the need for complex components. Plus our advanced engineering assures that your process will work with our core designs.

Everything we do is geared toward boosting process efficiency, maximizing operating parameters, reducing lifecycle costs – and ultimately helping you achieve CAPEX and OPEX savings.

## The relationship rules.

Our technology is unmatched. But it's CryoCore people who make our technology truly valuable to you. We work closely with you through every step of your project to ensure your goals are met. We look for ways to trim days, if not weeks, from the delivery schedule, so you can get into production faster. We pre-validate solutions to assure smooth installation and startup with minimal or no callbacks.

To us, a strong relationship and satisfied customer is what success looks like. And we will stop at nothing short of your success.

## Your Solution. Cold.

No matter what heat-exchanging application you're pursuing, we're likely already there. Our BAHX technological expertise covers everything from tried-and-true to cutting-edge.

Call us in on your next project. We'll work with you through every phase, including conceptual drawings, engineering, project management of construction and installation and follow-up support. In the end you'll have much more than an outstanding BAHX system – you'll have a high-performance, cost saving solution.

Air Separation, Petrochemical  
Gas Treatment, Synthetic Gases,  
Helium Liquefaction, Biotech,  
Natural Gas Liquefaction,  
All Cryogenics



**CRYOCORE**

6715 Theall  
Houston, Texas 77066  
sales@cryocore-usa.com  
www.cryocore-usa.com

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CryoCore Process Equipment,  
manufactured by Zhongtai.

