

# Lifecycle OEM Service and Support Air Cooled Heat Exchangers



Maintenance, Parts, Repair & Testing Services



[www.ChartLifecycle.com](http://www.ChartLifecycle.com)



Chart Lifecycle, Inc.

# Chart Lifecycle can provide immediate field assistance, inspections and technical support no matter the severity of the issue.

## **Start-Up Operations & Commissioning Support**

### ***Fan Drive Assemblies & General Inspection***

- Sonic belt tensioning (per drive design program)
- Fan hubs & bushings
- Motor sheaves & bushings
- Fan sheaves & bushings
- Fan bearings
- Motor / fan sheave alignments
- Fan shaft alignments
- Fan blade angle (verification & adjustment)
- Fan tip clearances (verification & adjustment)
- Motor & fan bearing lubrication service
- Run testing, vibration testing with verification of motor FLA
- Insulation resistance testing of electric induction motors

### ***Louvers (manual, automatic & recirculation)***

- Connections and synchronization
- Failure operation verification
- Operation

### ***ACHX General Inspection***

- Air flow obstructions
- Fan area, foreign object
- Removal of shipping restraints
- Check list & test certifications

## **Testing**

### ***Coil Sections***

- Face velocity (FV) air flow measurements
- Infrared thermal imaging (identification of unintended heat sources)

### ***Plenum & Fan Drive***

- Fan speed & pitch verification
- Motor full load amperage
- Motor insulation resistance / phase imbalance testing (Meggar testing)
- Plenum static pressure measurements
- Air velocity (AV) airflow measurement (fan inlet)
- Fan inlet air temperature (Synchronized Data Log)
- Perimeter recirculation air temperature measurements
- Identification of fan proximity air flow
- Obstruction
- Wind speed, direction & ambient air temperature (Synchronized Data Log)

### ***Synchronized Interval Data & Event Logging***

- Wind speed, direction & ambient temperature
- Fan inlet temperature, four (4) places / fan
- Gas, or liquid process flow rate
- Inlet / outlet process pressure
- Inlet / outlet process temperature



Our trained engineers provide a full service scope, from helping you keep your coolers in perfect working order to tailored engineered solutions that upgrade their performance.

## **Maintenance & Repair**

### ***Coil Sections***

- Hydrostatic testing
- Soap air testing
- Individual mid span tube leak detection
- Shoulder access, NPT plug & gasket

### ***Replacement***

- Re-tubing (shop & field)
- Tube to tube sheet expansion
- Tube to tube sheet plugging
- Weld repair (ASME & AWS)
- Finning repair
- Repair of machined surfaces & threading

### ***Plenum & Fan Drive Assemblies***

- Motor replacement
- Fan repair & replacement
- Drive alignment repair & replacement (shaft, bearings, sheaves, belts & gears)
- Structural weld repair & replacement (AWS)
- Vibration analysis & repair
- Lubrication service
- Repair of protective coatings

## **Modifications**

### ***Coil Sections***

- Increased / decreased surface - coil replacement
- Louver design & installation
- Hail guard design & installation
- Manual to auto, or auto to manual louver operation
- Warm air recirculation systems
- Magnetic shoulder access plugs for lubrication oil coolers.
- Valve, gauge & thermowell installation
- Section re-rate

### ***Plenum, Fan Drive & Sub-Structural***

- Motor horsepower
- Fan speed
- Fan design
- Vibration switch / transmitters
- Perimeter bug screen design & installation
- Maintenance walkway, platform design & installation
- Air recirculation design & installation
- Automatic lubrication installation (motor & fan bearings)
- Fan anti-reverse wind-milling design & installation

### ***Long Term Storage Maintenance & Restorations***

- Inspection
- Extended preservation
- Storage maintenance
- Restoration



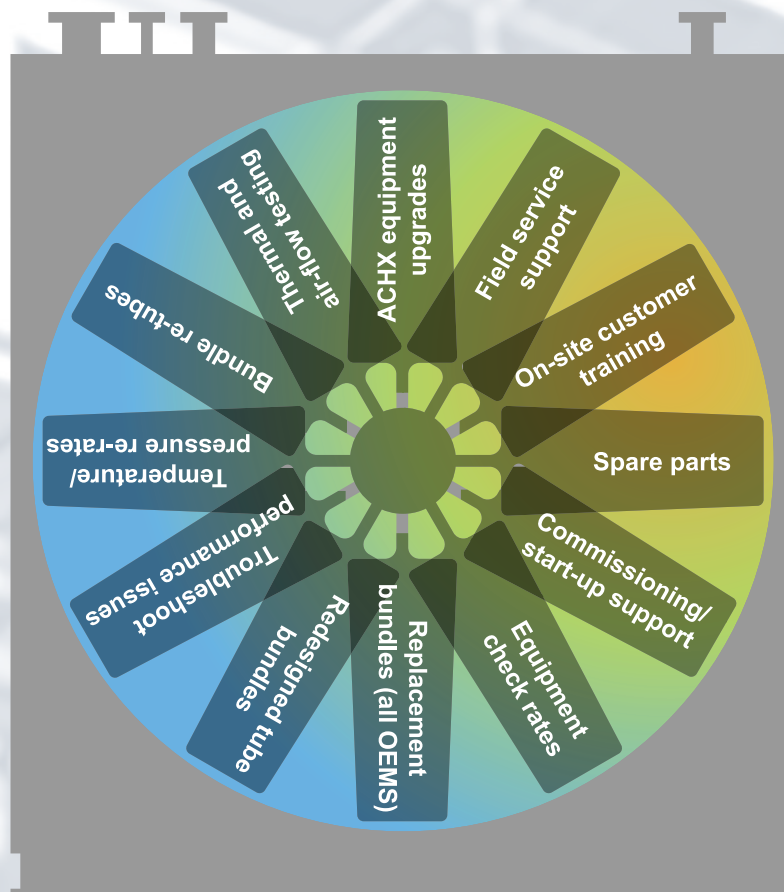
# Lifecycle Service and Support

Chart Lifecycle is an OEM service provider for all Chart owned air cooled heat exchanger (ACHX) brands, including Hudson Products, Air-X-Changers, Cooler Service Company, Smithco, Hammco and associated legacy brands Happy, Amercool, Tri-Thermal, Essex, Conrad, Godfellow and Western.



## Industries Served

- Natural gas processing, compression & transmission
- LNG
- Refining
- Petrochemicals
- Power
- Bitumen extraction & upgrading
- Industrial process applications



With shops and bases of operation in Tulsa, OK, Houston, TX and Franklin, IN, we are prepared for rapid deployment; domestically and internationally.

We service our competitor's products.

Our technical and field service teams boast unrivalled experience, so you can be certain that your enquiry will be dealt with by an experienced individual who understands the products and your needs.

**Q: Do you experience seasonal thermal performance issues with your air-cooled heat exchangers?**

**A:** Chart Lifecycle (CLI) offers reports and recommendations based on engineer check ratings to existing field and operating conditions and a full range of mechanical and thermal performance testing in accordance with ASME PTC 30.1 -2007. In addition to manual testing, we employ synchronized interval data logging of up to forty channels of performance data over hours of recording.

**Q: Do you experience uncontrollably low outlet temperatures in the winter months?**

**A:** CLI can help you control those low outlet temperatures with engineered louver and warm air recirculation systems specific to your equipment, regardless of OEM. We provide the engineering, drafting, fabrication and installation with a minimum interruption to your operations.

**Q: Do you have a shut-down scheduled but have your resources committed to plant priorities that exclude maintenance or repair of air-cooled heat exchangers?**

**A:** Our field service engineers can visit your site and inspect your ACHX, report findings and provide you with valid recommendations. CLI can staff your shut-down with well trained technicians to address equipment specific repair or maintenance, as coordinated. We can resource to meet the time constraints of your scheduled down-time and come prepared with contingencies for the unexpected. You can resume operations on time knowing your equipment has been expertly repaired, serviced and tested.

**Q: Do you have equipment installed that needs safe maintenance access?**

**A:** CLI can design, engineer, fabricate and install maintenance platforms, walkways, handrails, ladders and stairs to your existing equipment.

**Q: Do you have occasional tube leaks on your air-cooled heat exchangers?**

**A:** Instead of the usual method of repair in most plants that involves plugging or isolating leaking tubes and which can cause permanent equipment damage and reduced performance, CLI technicians favor non-invasive methods that are both extremely reliable and do not inhibit performance.

**Q: Do you need commissioning support?**

**A:** Our commissioning support is extremely thorough. Our technicians will inspect and service your ACHX insuring reliable operation. Our commissioning services conclude with run-in vibration testing, with all inspection and test reports provided to the customer upon completion. This service is particularly beneficial following long-term storage durations, where operational reliability may be in question.

**Q: Do you need a scheduled maintenance program?**

**A:** CLI offers long term storage, preservation and periodic inspection and maintenance services (monthly, bi-annual, annual). Our annual maintenance program involves all of the inspection and testing provided in our start-up services in support commissioning. Inspection and test reports are provided with all of our scheduled maintenance programs.

**Q: Do you need shop restoration, or complete refurbishment for off-line, or new equipment following long term dormancy, or unprotected storage?**

**A:** Whether routing old equipment to a new location, or finally pulling new equipment out of storage, CLI probably has a shop en-route or nearby to your final destination.

**Q: Do you need parts for air-cooled heat exchangers?**

**A:** CLI is a one stop shop for parts and service for all ACHX regardless of OEM. Most common parts are available for same day shipment. Not sure what you need? We can build a data base by item identifying the parts you might need in the future.

**Q: Do you have a well-trained maintenance staff, but still encounter premature outages and break downs?**

**A:** We provide operator and maintenance training that will help provide you with a more effective maintenance program. Training can be tailored to your specific equipment, processes, location and operating environment.

**Q: Do you need technical assistance regarding an issue with an air-cooled heat exchanger?**

**A:** Call us 24/7/365. In our many years of experience in manufacturing, repairing and maintaining ACHX there is little we have not encountered, so if you need a little advice, just give us a call. You will find us always eager to assist.

# Combined Services

Chart Lifecycle provides a range of services that can be accessed individually or combined for a complete turn-key solution. We work with you to define the scope and deliver a project that is professionally and meticulously engineered, planned, organized, staffed, mobilized and managed ensuring your operations resume on time and within budget.

## Lifecycle OEM Service & Support

- Brazed Aluminum Heat Exchangers
- Air Cooled Heat Exchangers
- Cryogenic Plant Services
- Safety & Rescue



**E-mail: [Chart.Aftermarket@ChartIndustries.com](mailto:Chart.Aftermarket@ChartIndustries.com)**

**1 918 834 3600**

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*Chart Lifecycle, Inc.*