



DESIGN REVIEW & EQUIPMENT STARTUP

Checklist for Chiller (Absorption) Replacement / Retrofit

Equipment type: Absorption chiller
Equipment designation: CH-1
Bar code designation: 111111
Area served: Base building
Equipment location: Chiller room 1-110

ELECTRICAL INSPECTION

- | | YES | NO |
|----------------------------------------------------------------------|--------------------------|--------------------------|
| • Electrical completed and disconnect installed per code compliance. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Starter and wire sized per contract documents. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Motor "bumped" to verify rotation. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Terminations and panel circuit labeled. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Voltage and motor amps (per phase) documented. | <input type="checkbox"/> | <input type="checkbox"/> |

ELECTRICAL INSTALLATION (PER CONTRACT DRAWINGS AND SPECIFICATION)

- | | YES | NO |
|---------------------------------------------------------------------|--------------------------|--------------------------|
| • Knockdown shipment required? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Responsibility assigned to equipment manufacturer for reassembly. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Piping complete at unit. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Adequate steam trap capacity for system startup. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Seismic restraints complete. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Manufacturer's O&M available. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Manufacturer's startup sheets attached with this checklist. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Warranty certificate available. | <input type="checkbox"/> | <input type="checkbox"/> |

DISTRIBUTION (TO AND FROM EQUIPMENT)

- | | YES | NO |
|---------------------------------------------------------------------------------------|--------------------------|--------------------------|
| • Piping pressure tested per contract documents. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Piping adequately supported independent to the chiller. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Steam and condensate piping properly sized and pitched to prevent liquid hammering. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Consideration given to steam flow velocity at PRV if noise is a concern. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Steam relief venting to safe discharge location. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Insulation completed. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Insulation per contract documents (specification and details). | <input type="checkbox"/> | <input type="checkbox"/> |
| • Test TAB report (and field notes) attached with this checklist. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Identification per contract documents. | <input type="checkbox"/> | <input type="checkbox"/> |

AUTOMATIC CONTROLS

- | | YES | NO |
|-----------------------------------------------------------------|--------------------------|--------------------------|
| • Temperature controls complete. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Control points confirmed. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Electrical system interlocks complete. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Unit-furnished controls interfaced with owner's BAS computer. | <input type="checkbox"/> | <input type="checkbox"/> |

ENERGY EFFICIENCY AND OTHER ADVANTAGES

- | | YES | NO |
|----------------------------------------------------|--------------------------|--------------------------|
| • Steam available for campus or hospital campus in | <input type="checkbox"/> | <input type="checkbox"/> |

- | | | |
|----------------------------------------------------------------------|--------------------------|--------------------------|
| summer. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Possibility to reduce peak electric charges. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Consider using a waste heat boiler. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Water vs. refrigerant that contains no CFCs. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Could possibly be a small footprint for existing locations. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Consider two-stage absorption if high-pressure steam is available. | <input type="checkbox"/> | <input type="checkbox"/> |

REFERENCE

- 2004 ASHRAE Handbook – Systems & Equipment, Chapters 1 and 4 for additional information relative to central chiller plants
- 2002 ASHRAE Handbook – Refrigeration, Chapter 41 for additional information relative to absorption chillers.

DESIGN REVIEW / TRICKS OF THE TRADE

- Confirm safe access to the equipment.
- Confirm manufacturer's recommended clearance around equipment.
- Spot-check cooling capacity by dividing square feet by tons-cooling for sq ft/ton.
- Spot-check steam capacity at 17 lb steam/hr. (13 lb for two-stage).
- Spot-check condenser water capacity at 3.4 gpm/ton.
- Spot-check total pump head for excessive/inadequate water pressure drop.
- Attach equipment schedule and design criteria to checklist.
- Attach sequence of operation to checklist.
- Attach associated contract detail drawing to checklist.

NOTE

- Refer to equipment manufacturer's literature for additional data and requirements.
- Refer to the April 2006 "HVACR Designer Tips" for more information on the design review and equipment start-up for chiller replacement/retrofit. **ES**



If you have any comments, suggestions, or questions regarding this designer checklist, contact Amanda McKew at amckew@rdkengineers.com.

This column is meant to provide some basic guidelines for good design. Always consult all necessary codes and resources relevant to each particular project.

