

**Module 1**

- (1) Simplex UL/C-UL Listed, Model ES-3000-GLY packaged glycol system, consisting of:  
Condition Point: 5 gpm @ 50 psi
  - (1) MTH Model T-31, cast iron, bronze fitted, mechanical seal, pump, close-coupled to a **1/2 hp, 3600 rpm, 120/1/60**, odp high efficiency motor
    - \*Condition Point: 5 gpm @ 50 psi
    - (1) 55 gallon polyethylene glycol tank with cover
    - (1) 1/2" PVC non-slam check valve
    - (2) 1/2" PVC ball valves
    - (1) Low level float switch
    - (1) 1/2" Model 530C adjustable relief valve with poly piping back to tank
    - (1) 2-1/2" diameter glycerine filled pressure gauge with gauge cock
  - (1) UL/C-UL listed, Nema **4X fiberglass**, power and control panel with:
    - (\* U.L. 508 Label
      - Pressure sequencing for start/stop with Square D pressure switch
      - Pump run indicator
      - Hand-off-auto selector
      - Low level alarm with time delay relay and float switch
    - (1) FVNR magnetic starter with 3-leg overload protection
- (1 set) 1/2" poly and black steel piping
- (1) Model ST-12, 4.4 gallon, 150# Non-ASME Code bladder tank – **skid mounted**

**Secondary Chilled Water Package (480/3/60):**

- (3) Pumps and motors, \_\_\_\_ HP
- (3) \_\_\_\_" triple duty valves
- (1) \_\_\_\_" air separator
- (4) \_\_\_\_" flex connectors
- (3) \_\_\_\_" suction diffusers
- (1) ASME Code, bladder tank model (CA2000)
- (3) Variable frequency drives with disconnects and FVNR manual bypasses
- (2) Variable frequency drives with disconnects and FVNR manual bypasses for *Cooling Tower Fans*

- (2) \_\_\_\_" lug style butterfly isolation valves with gear operators
- (3) \_\_\_\_" lug style butterfly isolation valves with gear operators
- (1) Tank feed line with isolation valves





- (3) Automatic air release valves
- (\*) Pete's plugs
- (1) (5) 4-1/2" diameter pressure gauges with gauge cocks
- (1 set) \_\_\_\_" standard weight supply and return headers with cross-over bridge
- (1) Steel system skid with all necessary pipe supports, tubing and wiring for complete package – **built-in inertia base with springs.**
- (1) **TIGERFLOW** UL/C-UL Listed, Nema 3R, **Tiger's Eye Mark VI**, solid state, PLC, multi-compartment power and **SCHW** control panel with:
  - (\*) UL 508 Label
  - (\*) Micro controller
    - Flash main memory
    - EEPROM memory for all user setpoints
  - (\*) Panel face-mounted, 4-line operator, 20-button interface touchpad
  - (\*) Best efficiency pump control
  - (\*) System enable
  - (\*) End of curve protection
  - (\*) Individual zone failure alarms
  - (\*) Individual zone setpoints
  - (\*) Remote system enable contact
  - (\*) Individual pump run indicator
  - (\*) Hand-off-automatic selector switches
  - (\*) Elapsed time meters
  - (\*) Automatic alternation of equal sized pumps
  - (3) Pump failure alarms with D-P pump switches
  - (1) 120/1/60 control circuit transformer
  - (1) Power on light
  - (1) Alarm horn and reset button
  - (\*) Individual auxiliary alarm contacts
  - (\*) BAS interface (MODBUS)
  - (1) UL/C-UL Listed, Nema 3R, single point distribution lug panel
- (1) **TIGERFLOW** UL/C-UL Listed, Nema 3R, **Tiger's Eye Mark VII**, solid state, PLC, multi-compartment power and **CHILLER SEQUENCING** control panel with:
  - (\*) UL 508 Label
  - (\*) Micro controller
    - Flash main memory
    - EEPROM memory for all user setpoints
  - (\*) Panel face-mounted, 4-line operator, 20-button interface touchpad
  - (\*) Remote system enable contact
  - (\*) Hand-off-automatic selection
  - (\*) Temperature Control
  - (\*) Wire-Water Efficiency
  - (\*) Chiller Sequencing
  - (\*) Heat Load Calculations
  - (\*) Cooling Tower Control
  - (\*) Automated Valve Control Elapsed time meters



- (\* ) Automatic alternation of Chillers
- (\* ) Chiller failure alarms
- (\* ) Fieldbus communication via MODBUS
- (\* ) Enable/Disable (BAS, Internal Time Schedule, Temperature Override)
- (\* ) Demand Limiting
- (\* ) Chilled Water Reset (OAT, CHWRT)
- (\* ) Power Failure Restart
- (1) 120/1/60 control circuit transformer
- (1) Power on light
- (1) Alarm horn and reset button
- (1) UL/C-UL Listed, Nema 3R, single point distribution lug panel

**(1) Electrical distribution center**

- (1) Spectra Bolt on Panel: 1200A, fully rated, 480 volt, 3 phase, 4W, aluminum bus, 14k AIC, 1200A main CKT BKR, surface mounted, bottom feed:
  - (1) 40A, 3pole
  - (1) 25A, 3pole
  - (1) 100A, 1pole
  - (1) 50A, 3pole
  - (1) 175A, 3pole
  - (1) 300A, 3pole
  - (1) 700A, 3pole
  - (1) Aluminum Bus Heat Rated (Al/Cu cable)
  - (1) Panel nameplate
  - (1) Type 1 enclosure
  - (1) Standard trim
  - (1) Standard Cover

- (\* ) 1-1/2" make-up water assembly with (1) pressure reducing valve, relief valve, (2) 2-1/2" diameter pressure gauges with gauge cocks and 3-valve bypass
- (\* ) Install dearator tank and pumps: **TIGERFLOW** to provide (3) isolation gate valves, (3) check valves, (5) 1 1/2" ball valves, individual suction lines, 3" common Schedule 40 black steel suction header, (1) triplex level control panel with (3) disconnects, starters, hand-off-automatic switches, run lights, etc.
- (1) Onicon dual turbine flow meter with hot tap assembly – **for remote mounting by others**
- (2) 4-20 ma differential pressure transmitters – **for remote mounting by others**
- (\* ) Mount customer supplied equipment

System to be completely, electrically, hydrostatically and run tested before shipment (**X-Y Test Report**).



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MODULE 2

- (1) Package Utilities Module complete with:  
 A) 1-Primary Chilled Water Circuit & piping  
 B) 1- Air Compressor & piping  
 C) 1-High Pressure Steam Boiler & piping

Customer to supply:

- (1) \_\_\_\_ Nominal Ton Centrifugal Chiller
- (1) \_\_\_\_ HP Curtis Air Compressor
- (1) \_\_\_\_ MBTU/hr \_\_\_\_ Boiler
- (1) Flash Recovery Vessel (CA2000) w/Sterling Temperature regulating valve (Model R-151-F)
- (1 set) Boiler gate valve and Check valve
- (2) pumps and motors, \_\_\_\_ hp
- (2) \_\_\_\_" triple duty valves
- (6) Flex connectors (2@1\_\_\_\_", 4@\_\_\_\_")
- (1) \_\_\_\_" Wye strainer w/ball valve and hose bib

(2) \_\_\_\_" lug style isolation butterfly valves with gear operators

(3) \_\_\_\_" lug style isolation butterfly valves with gear operators

(1) Automatic air release valve

(\* ) Pete's plugs

(1) (4) 4-1/2" diameter pressure gauges with gauge cocks

(1 set) \_\_\_\_" standard black steel supply and return headers

(1) \_\_\_\_" schedule 40 black steel ASME certified spool piece.

(1) Steel system skid with all necessary pipe supports, tubing and wiring for complete package – **built-in inertia base with springs.**

(1) **TIGERFLOW** UL/C-UL Listed, Nema 3R, **Tiger's Eye Mark IV**, solid state, PLC, multi-compartment power and control panel with:

- (\* ) UL 508 Label
- (\* ) Micro controller
  - Flash main memory
  - EEPROM memory for all user setpoints
- (\* ) Panel face-mounted, 4-line operator, 20-button interface touchpad
- (\* ) Constant speed remote stop / start
- (\* ) System enable
- (2) Thru-door disconnects
- (2) FVNR magnetic starters with 3-leg overload protection
- (\* ) Individual pump run indicator



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- (\*) Hand-off-automatic selector switches
- (\*) Elapsed time meters
- (\*) Automatic alternation of equal sized pumps
- (2) Pump failure alarms with D-P pump switches
- (1) 120/1/60 control circuit transformer
- (1) Power on light
- (1) Alarm horn and reset button
- (\*) Individual auxiliary alarm contacts
- (\*) BAS interface (MODBUS)
- (1) UL/C-UL Listed, Nema 3R, single point distribution lug panel

System to be completely, electrically, hydrostatically and run tested before shipment (**X-Y Test Report**).

**(1) Electrical distribution center**

- (1) Spectra Bolt on Panel: 1200A, fully rated, 480 volt, 3 phase, 4W, aluminum bus, 14k AIC, 1200A main CKT BKR, surface mounted, bottom feed:
  - (1) 150A, 3pole
  - (1) 15A, 3pole
  - (1) 350A, 3pole
  - (1) 1200A, 3pole
  - (1) Aluminum Bus Heat Rated (Al/Cu cable)
  - (1) Panel nameplate
  - (1) Type 1 enclosure
  - (1) Standard trim
  - (1) Standard Cover



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MODULE 3

- (1) Package Utilities Module complete with:
  - A) 1-Primary Chilled Water Circuit & piping
  - B) 1- Air Compressor & piping
  - C) 1-High Pressure Steam Boiler & piping

**Customer to supply:**

- (1) \_\_\_ Nominal Ton Centrifugal Chiller
- (1) \_\_\_ HP Curtis Air Compressor
- (1) \_\_\_ MBTU/HR \_\_\_\_\_ Boiler
- (1) Flash Recovery Vessel (CA2000) w/Sterling Temperature regulating valve (Model R-151-F)
- (1 set) Boiler gate valve and Check valve
- (2) pumps and motors, \_\_\_ hp
- (2) \_\_\_" triple duty valves
- (6) Flex connectors (2@ 14", 4@ 10")
- (1) \_\_\_" Wye strainer w/ball valve and hose bib

- (3) \_\_\_" lug style isolation butterfly valves with gear operators
- (3) \_\_\_" lug style isolation butterfly valves with gear operators
- (2) Automatic air release valve
- (\*) Pete's plugs
- (1) (4) 4-1/2" diameter pressure gauges with gauge cocks

(1 set) \_\_\_" standard black steel supply and return headers

(1) Steel system skid with all necessary pipe supports, tubing and wiring for complete package – **built-in inertia base with springs.**

- (1) **TIGERFLOW** UL/C-UL Listed, Nema 3R, **Tiger's Eye Mark IV**, solid state, PLC, multi-compartment power and control panel with:
  - (\*) UL 508 Label
  - (\*) Micro controller
    - Flash main memory
    - EEPROM memory for all user setpoints
  - (\*) Panel face-mounted, 4-line operator, 20-button interface touchpad
  - (\*) Constant speed remote stop / start
  - (\*) System enable
  - (2) Thru-door disconnects
  - (2) FVNR magnetic starters with 3-leg overload protection
  - (\*) Individual pump run indicator
  - (\*) Hand-off-automatic selector switches



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- (\*) Elapsed time meters
- (\*) Automatic alternation of equal sized pumps
- (2) Pump failure alarms with D-P pump switches
- (1) 120/1/60 control circuit transformer
- (1) Power on light
- (1) Alarm horn and reset button
- (\*) Individual auxiliary alarm contacts
- (\*) BAS interface (MODBUS)
- (1) UL/C-UL Listed, Nema 3R, single point distribution lug panel

**(1) Electrical distribution center**

- (1) Spectra Bolt on Panel: 1200A, fully rated, 480 volt, 3 phase, 4W, aluminum bus, 14k AIC, 1200A main CKT BKR, surface mounted, bottom feed:
  - (1) 150A, 3pole
  - (1) 15A, 3pole
  - (1) 350A, 3pole
  - (1) 1200A, 3pole
  - (1) Aluminum Bus Heat Rated (Al/Cu cable)
  - (1) Panel nameplate
  - (1) Type 1 enclosure
  - (1) Standard trim
  - (1) Standard Cover

**(2) TIGERFLOW UL/C-UL Listed, Nema 3R, Tiger's Eye Mark IV, solid state, PLC, multi-compartment power and constant speed control panels with MODBUS interface: (1) boiler control, (1) air compressor control**

- (\*) UL 508 Label
- (\*) Micro controller
  - Flash main memory
  - EEPROM memory for all user setpoints
- (\*) Panel face-mounted, 4-line operator, 20-button interface touchpad
- (\*) Constant speed remote stop / start
- (\*) System enable
- (2) Thru-door disconnects
- (2) FVNR magnetic starters with 3-leg overload protection
- (\*) Individual pump run indicator
- (\*) Hand-off-automatic selector switches
- (\*) Elapsed time meters
- (\*) Automatic alternation of equal sized pumps
- (2) Pump failure alarms with D-P pump switches
- (1) 120/1/60 control circuit transformer
- (1) Power on light
- (1) Alarm horn and reset button
- (\*) Individual auxiliary alarm contacts
- (\*) BAS interface (MODBUS)
- (1) UL/C-UL Listed, Nema 3R, single point distribution lug panel

System to be completely, electrically, hydrostatically and run tested before shipment (**X-Y Test Report**).



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ENCLOSURE

**Customer to supply: (optional)**

- (1) Refrigerant Monitor
- (1) Master Thermostat
- (4) 1400 CFM Fan Coil Units w/ 5kw Heaters
- (3) Exterior lights with photocells

(1) **34'-6" wide x 59'-0" long x 12'-3" high +/-**, prefabricated environmental enclosure complete with [(3) **11'-6" wide x 59'-0" long x 12'-3" high +/- sections**]:

- (\*) **Texas P.E. Stamp**
- (\*) **11" finished ceiling height**
- (\*) **Kysor Needham Building**

Therma-Structure Panels:  
 3-1/2" poured in place urethane wall panels, R30  
 5" poured in place urethane ceiling panels, R42

Finish:  
 Interior – white embossed, 26 gauge, galvanized steel  
 Exterior – embossed, 24 gauge, galvanized steel  
 10' finished ceiling height

Roof:  
 Membrane roof system (field installed), single slope 1/4" per foot slope, one galvanized gutter (no downspout)

Door:  
 (1 set) 6' x 7' double-leaf metal commercial doors, each with threshold, stop and latch devised, astragal, head and foot bolts, dummy knob on inactive leaf, emergency panic bar, fully gasketed and painted  
 (6) roll-up doors

Features:  
 All wood members will be treated for moisture and vermin protection  
 Perimeter roof fascia trim  
 Trim for electrical continuity

Exterior Color:  
**White –**

- (1) 6 x 7 double-door with (emergency push bar) passage latchset
- (6) 7 x 7 Roll-up doors
- (1 set) Gutters



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- (2) 24" exhaust fans interlocked with (**Customer Supplied-Refrigerant Monitor** )
- (2) 30" Dampers – power close/spring open
- (18) GFCI convenience outlets, 115/1/60
- (21) Gasketed fluorescent light fixtures and bulbs
- (4) Exterior lights with photocells
- (6) 4" diameter floor drains
- (7) Battery powered emergency lights
- (\* ) Pump house sprinkler systems
- (4) Square tubing and channel support – frames
- (\* ) Cross-bracing and plastic coverings

(3) 10" open steel perimeter skid base with all necessary sensing lines, pipe supports, and wiring for complete package system.

(1) 4" 304, Schedule 10 stainless steel air lines with bronze/brass isolation ball valves

(1) 2" Schedule 80 steel condensate lines each with 2" wye strainer, 2" float and thermostatic trap, and 2" gate valves

(1) 2" 304, Schedule 10 black steel Fan Coil Cooling Loop lines with bronze/brass isolation ball valves, circuit setters, and drains.

(1) 1 1/2" " 304, Schedule 10 black steel sprinkler lines

(1) Duplex boiler steam piping, 2" Schedule 40 black steel piping with wye strainer, gate valves, drip let float and thermostatic trap, gate valve, (2) 2-1/2" diameter pressure gauges, pigtails, and gauge cocks

(\* ) Mount and Wire all customer supplied equipment

(\* ) **Seismic calculations with Texas P.E. Stamp**

(\* ) All welding to be done by ASME Section 9 certified welders

(\* ) **Power/electric meter and box by others**

(\* ) Unit to be factory primed and painted with machine grade **blue** finish coat

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## COOLING TOWER PACKAGE

### Cooling Tower Water Triplex Constant Speed Pumping Package

- (3) Close-coupled end suction pumps and motors
- (3) \_\_\_\_” triple duty valves

- (3) \_\_\_\_” lug style isolation butterfly valves with gear operators
- (1) Automatic air release valve
- (\* ) Pete’s plugs
- (1) (5) 4-1/2” diameter pressure gauges with gauge cocks

(1 set) 12” Schedule 40 black steel suction and discharge headers

(1) Steel system skid with all necessary pipe supports, tubing and wiring for complete package - **built-in inertia base with springs.**

(1) **TIGERFLOW** UL/C-UL Listed, Nema 3R, **Tiger’s Eye Mark IV**, solid state, PLC, multi-compartment power and control panel with:

- (\* ) UL 508 Label
- (\* ) Micro controller
  - Flash main memory
  - EEPROM memory for all user setpoints
- (\* ) Panel face-mounted, 4-line operator, 20-button interface touchpad
- (\* ) Constant speed remote stop / start
- (\* ) System enable
- (3) Thru-door disconnects
- (3) FVNR magnetic starters with 3-leg overload protection
- (\* ) Individual pump run indicator
- (\* ) Hand-off-automatic selector switches
- (\* ) Elapsed time meters
- (\* ) Automatic alternation of equal sized pumps
- (3) Pump failure alarms with D-P pump switches
- (1) 120/1/60 control circuit transformer
- (1) Power on light
- (1) Alarm horn and reset button
- (\* ) Individual auxiliary alarm contacts
- (\* ) BAS interface (MODBUS)



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- (1) UL/C-UL Listed, Nema 3R, single point distribution lug panel

System to be completely, electrically, hydrostatically and run tested before shipment (**X-Y Test Report**).

**SURGE TANK PUMP PACKAGE**

**Duplex pumping skid**

(2) _____ Inline pump and motor 2 hp
--------------------------------------

- (2) \_\_\_\_\_" Wye strainers
- (4) \_\_\_\_\_" Gate Valves
- (\*) Pete's plugs
- (3) (5) 4-1/2" diameter pressure gauges with gauge cocks
- (1 set) \_\_\_\_\_" standard weight supply and return headers
- (1) Steel system skid with all necessary pipe supports, tubing and wiring for complete package

System to be completely, electrically, hydrostatically and run tested before shipment (**X-Y Test Report**).

Each **TIGERFLOW** package system is UL/C-UL listed as a system, so meeting OSHA and Federal Regulations 29CFR1910.303 and .399, as well as NFPA Pamphlet #70 (National Electric Code) Article 90-7; City of Los Angeles Approval Code #M-980006; CMR 248 Massachusetts State Plumbing Code Approval #P3-0204-58.



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