Model # MCP

Modular Chilled Water Pre-engineered Plant

c UL us LISTED PACKAGED PUMPING SYSTEMS

c UL us LISTED INDUSTRIAL CONTROL PANELS

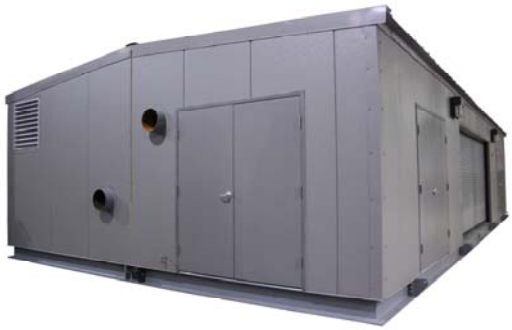
Unfired Pressure Vessels

National Board

TYPICAL SPECIFICATIONS	
System Cooling Load	100 ≤ 12,000 Tons
Chilled Water Temperature	28 to 60 deg F
Chilled Water System	Variable Primary or Variable Secondary
Standard Power	460 V (Other Voltages Available)
Dimensions	Based Upon Customer Requirements
Working Pressure	100 to 300 psig (6.8 to 21 barg)
Working Temperature	< 140 deg F (< 60 deg C)

Standard Features:

- **Energy-Efficient Variable Speed Centrifugal or Screw Chillers**
- **Integrated Pumping System—Chilled Water & Condenser Water**
- **Hydronic Accessories, Air Separation, & Expansion Tank**
- **Evaporative Cooling Tower**
- **Variable Frequency Drives & Chiller Plant Optimization Controller, with Touchscreen Interface**
- **Differential Pressure, Temperature, & Flow Transmitters**
- **Communication Interface to Building Management System**
- **Environmentally-controlled Building Enclosure with Single-point Power Connection**



EnviroSep MCP, Modular Chilled Water Plant, is a UL-Listed, factory engineered and manufactured Mechanical Room utilized in conventional building cooling systems which uses Chilled Water as the cooling medium. The ***Model MCP*** provides a Lower Cost alternative to site-built Central Plants while avoiding costly project delays. All components required to integrate a stand-alone Chiller Plant are included, eliminating site coordination, and negating start-up irregularities. Being custom-engineering by ***EnviroSep***, enables the owner to specify key components from a range of manufacturers that meet performance needs. ***EnviroSep*** factory service personnel, who have followed the project from inception, perform Site Start-up eliminating errors from multiple hand-offs. The ***Model MCP*** is controlled by a non-proprietary, Chiller Plant Optimization Controller, providing the best system operating efficiency. ***Variable Frequency Drives*** may be incorporated with Manual or Automatic Bypasses. A User-friendly, Color Touch Screen Operator Interface is utilized for simple operation. Factory Engineering staff are available to assist facility owners or engineers in conceptual development and planning.

Typical Plant Performance

Chiller Type	kW/Ton (Full Load)	kW/Ton (IPLV)
Air Cooled Screw	1.30	1.10
Centrifugal—Constant Speed	0.90	0.75
Centrifugal—Variable Speed	0.80	0.65
Screw—Variable Speed	0.70	0.55

1. Chilled Water Supply Temperature = 42 deg F
2. Condenser water Temperature = 85 deg F
3. Outdoor Air Temperature = 95 deg F

Options:

- **Turbocor Variable Speed Chiller**
- **Internet Connectivity for Remote System Monitoring**
- **Cooling Tower Side-stream Filtration with Tower Sweep**
- **Free Cooling Heat Exchanger**
- **Chemical Treatment and Control System**
- **System without Building Enclosure**
- **Specific Performance Criteria (Upon Request)**

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Model # MCP

Modular Chilled Water Representative Installation

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EnviroSep Model MCP, Modular Chiller Plants provide a simple and problem-free installation for any commercial contractor. If desired, ***EnviroSep*** Field Service personnel are available for site assistance in Receiving and Installation. Many Modular Chilled Water Plants may be provided as a single, UL-Listed, packaged system shipped in One-section. A One-section Chiller Plant provides for the most simple of installations, as minimal field piping and power connections are required. Typical One-section Chiller Plants are available up to 1,000 Tons, depending on system configuration. For larger Chilled Water Plants, multiple sections may be required. Multiple sectioned Chiller Plants are designed for simple, modular field assembly resulting in minimal installation time and labor. Upon assembly completion, ***EnviroSep*** Field Service personnel are dispatched to the site to perform a comprehensive site start-up and commissioning process. For Water-cooled Condenser Systems, Cooling Towers are typically shipped separately requiring field erection and interconnection to the Chilled Water Plant. Factory Operational and Hydrostatic Testing is performed prior to shipment; therefore, minimal site testing is required. Although, complete system hydrostatic testing is recommended for validation of field interconnections and loosening of fasteners which can occur during shipping. Seismic analysis and calculations are available upon request with pre-identified site requirements.

Typical Installation Requirements:

- **Site Rigging Upon Delivery**
- **Alignment and Leveling**
- **Piping Connection between Sections (for multiple section buildings only)**
- **Piping Connection from External Sources**
- **Single Point Power Connection to Main Power Disconnect**
- **Control Wiring and Power Wiring Termination between Sections (for multiple section buildings only)**
- **Communication Interface to Building Management System**
- **Cooling Tower Erection and Interconnecting Piping**

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Model # MCP

Model MCP
Modular Chiller Plant Order Form

Specify the following parameters:

I. System Cooling Load = _____ Tons

II. System Differential Pressure Required = _____ psid

III. Condenser Inlet Temperature = ____ °F

IV. Location = _____

V. Return Temperature = 52 °F

VI. Supply Temperature = 42 °F

VII. System Electrical = _____V _____ Hz

VIII. System Volume = _____ Gal.

Note: System medium assumed to be water, unless otherwise specified.

SYSTEM OPTIONS

Chiller Type
- Variable Speed Screw
- Variable Speed Centrifugal
- Constant Speed Centrifugal
- Constant Speed Screw
- Air-cooled

Stand-by Pump

Vertical In-line Pump

Split-coupled Vertical In-line Pump

Closed-coupled end-suction Centrifugal Pump

Auto standby pump start on lead pump failure

Auto Pump Alternation

Remote start connection

Variable Frequency Drives
- Manual Bypass
- Automatic Bypass

Remote System Monitoring
- Ethernet
- Dial-up Modem

Communication Protocol
- Ethernet I/P
- Modbus RTU
- Siemens FLN
- Johnson Controls N2
- BACnet (MS/TP)
- Lon Works
- Profibus
- DeviceNet

Chilled Water System
- Variable Primary Flow
- Constant Primary/Variable Secondary
- Constant Primary/Constant Secondary

Condenser Water System
- Variable Flow
- Constant Flow

Cooling Tower
- Variable Speed
- Two Speed
- Cooling Tower Bypass Control Valve

Flexible Connectors

Chiller Minimum Flow Bypass Control Valve

Cooling Tower Side-stream Filtration
- Centrifugal Solids Separator
- Multi-media Filter
- Self-cleaning Filter

Chemical Treatment System w/ Blowdown Control

Non-chemical Treatment System

System Flow Meter

Differential Pressure Transmitter across Pump suction/ discharge

Regardless of system size, temperature, pressure, fluid medium, or space requirements, *EnviroSep* can provide solutions to all specialized needs.

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Typical Specifications for MCP

Furnish and install one *EnviroSep* Model CPVS- [A] - [B] - [C] - [D] Chilled Water Packaged Pumping System with the system capacity to cool _____ BTU/hr of _____ (fluid) from_____psig to _____psig.

KEY:
[A] = Model # (BTU/hr)
[B] = # of pumps (1,2,3,etc.)
[C] = Parallel (P) or Stand-by (S) pump designation
[D] = Manual (M) or Automatic (A) alternation for multiple pumps

GENERAL - This package shall be factory assembled with pump(s), air separator, expansion tank, triple duty valves, hydronic accessories, fabricated steel frame, interconnection piping (welded per ASME Section IX certified welders), UL-listed Industrial Control Panel factory wired for single-point field connection per NEC, (and including Variable Speed Pump Controller).

PUMPS-Pump(s) shall be single, end-suction type with radically split, top center-line discharge, self-venting casing. Pump construction shall be cast iron, bronze fitted and shall be fitted with a long-life, product lubricated, drip tight mechanical seal, with O-ring seat retainer. Impeller shaft to be 416SS fitted with a SS shaft sleeve and be supported by two heavy duty ball bearings. The design shall allow back pull out servicing, enabling the complete rotating assembly to be removed without disturbing casing piping connections. The pump shall be mounted on a rigid, single base plate and by flexible with guard to the motor. Seal shall be rated for continuous duty at 270°F, motor shall be open drip proof, NEMA MG-1 with 1.15 service factor

VARIABLE FREQUENCY DRIVE – Variable Frequency Drive shall be variable torque AC inverter enclosed in NEMA 1 or 12 enclosure. Standard features shall include circuit breaker disconnect, Hand-Off-Auto selector switch, manual potentiometer (speed pot), door-mounted keypad, run relay contacts, fault relay contacts, and top/bottom conduit entry. Drive bypass shall be provided as standard with Drive-Off-Bypass selector switch. Class 20 overloads are included.

SYSTEM CONTROLLER – Controller shall include all controls necessary to operate the system as a stand-alone system. The PLC-based controller shall be of the same manufacturer as the Packaged Pumping System. Controller shall include Remote/Local system start capability. Acceptance of up to 16 remote 4-20 ma signals shall be provided for modulation of pump speed, and other optional control functions. Enclosure shall be NEMA 12 with thru-the-door disconnect. Operator Interface shall be a color touch screen type. Controller shall include independent PID control loop for each remote signal.

AIR REMOVAL EQUIPMENT- System shall include one tangential air separator with internal stainless steel collector tube. Connections to be flanged with a rating of 150 psig. System shall be equipped with ¾" Pressure Relief Valve, ¾" Pressure Regulating Valve, ASME Compression / Expansion Tank (sized by or provide system volume and temperature difference), and tank fitting, sight glass, and tank drain connections to tank.

TRIPLE DUTY VALVE- System shall include, on the discharge of each pump, a combination valve incorporating three functions in one body: tight shut-off, spring closure type silent non-slam check, and flow measured/throttling. Valve body shall be ductile iron with two ¼" NPT connections on each side of the valve seat. The valve disc shall be bronze plug disc type with high impact engineered resin seat to ensure tight shut-off and silent check valve operation. Valve stem shall be SS with flat surfaces provided for adjustment with open end wrench.

SUCTION DIFFUSER- System shall include, on the suction of each pump a suction diffuser with cast iron body, outlet guide vanes and removable SS strainer.

CONTROL PANEL - System shall include one (1) UL - Listed, NEMA 12, Industrial Control Panel with single-point power connection, pre-wired to all electrical components. Panel shall have thru-the-door fused disconnect; magnetic circuit breaker supplementary motor protector with fast-closing contacts, non-reversing 3-pole contactor, and variable setting, bi-metallic overload relay for each motor; control transformer; Automatic Alternator (if required). System Controller shall be Programmable Controller with 14" Color Touch Screen Operator Interface. Controller have capability of Remote network communication interface for remote system monitoring and logic maintenance/ troubleshooting by factory personnel with Managed Ethernet Switch. Operation of each pump shall be Hand-Off-Auto with external connection to terminal blocks. When standby pump(s) are used, the standby pump(s) shall manually/automatically (customer specified) start on primary pump failure. All internal wiring shall be placed in conduit.

CHILLER - Centrifugal or Screw Chiller shall be a factory-assembled, factory charged, and factory run-tested water-cooled packaged chiller. Each unit shall be complete with a single-stage hermetic centrifugal compressor with lubrication and control system, factory mounted starter, evaporator, condenser, refrigerant control device and any other components necessary for a complete and operable chiller package. The unit shall have single point power connection to a factory-installed, non-fused disconnect switch with through-the-door handle. Chillers shall be charged with a refrigerant such as R-134a, not subject to the Montreal Protocol and the U. S. Clean Air Act.

MAKE-UP WATER ASSEMBLY - Make-up Water Assembly shall be pre-piped and installed into system suction header; including, Self-contained, Cast Iron Pressure Reducing Valve, set @ 12 psig; Bronze isolation and bypass valves; Cast Iron Y-strainer; Bronze Backflow Preventer; System Pressure Relief Valve, set @ 75 psig; and Liquid Filled Pressure Gauge with Bronze Isolation Valve.

BUTTERFLY VALVES - System Butterfly Isolation Valves shall be Lug-mounted, Cast Iron with 10-position Lever Operator for 6" and below; and Gear Operated above 6" in size. Disc shall be Al-Br or Stainless Steel. Seat material shall be Buna-N or EPDM.

BALL VALVE - Isolation Ball Valves shall be Bronze 2-pc with 316L Stainless Steel Ball and RTFE seats. All Valves shall have Latch-lock lever for Lock-Out procedures.

MANUFACTURER - Shall assume system liability, and performance guarantee and warranty all equipment on system for 12 months after initial start-up.

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