

## Clean-In-Place (CIP) System

Clean-In-Place (CIP) Systems offer important advantages to processing facilities, from efficient, reliable and repeatable cleaning of process equipment and piping at lower costs to improved product quality. The sanitary design of the Budzar Industries CIP system tanks, pumps, heaters, valves and orbital welding ensures the integrity of the equipment and cleaning process.



Features include:

- Budzar Industries CIP Systems guarantee operational cleanliness due to reproducible cleaning processes. The entire cleaning process can be data recorded into either existing PLC systems or stand alone control systems with the Budzar Industries CIP System.
- CIP Systems improved product quality die to enhanced plant hygiene
- Budzar Industries CIP Systems reduce the time and personnel typically required to perform cleaning tasks
- Safe detergent handling
- Multiple Designs available
- Single Pass
- Single Use
- Multi-Tank Resuses Systems
- Dual & Simultaneous Solution Supply
- Control options are flexible. System control can be integrated into existing PLC's or can be provided as a stand alone option to each CIP system
- PLC programming is done by experienced Budzar Industries Systems Engineers. PLC programming can be integrated into existing PLC's or delivered as a part of a complete PLC solution
- Each Budzar Industries CIP System is constructed with non-proprietary parts
- Factory tested prior to shipment

# HIGH-VOLUME HOT WATER



## **HWT HIGH-VOLUME HOT WATER UNITS**

BTU HWT Series High-Volume Hot Water Systems are engineered to provide accurate, reliable and cost effective temperature control for your company's mill, calender, reactor or any other high-capacity process load.

The HWT Series is available for use with plant steam or electricity as the heat source. Both steam and electric units come in single and dual zone configurations. This series is designed for industrial processes requiring fluid temperatures up to 250°F.

Budzar also designs and manufactures specialized equipment for non-standard applications. Our engineers have extensive experience in process chilling and heating applications for such industries as: chemicals, petroleum, plastics, rubber, paper, power, steel, food, and pharmaceuticals. We take the time to understand your current and future needs and design a solution targeted at high quality and fast payback.



engineering

# PRECISION

### **EXCELLENT RETURN ON INVESTMENT**

- Each Budzar unit is designed to maximize the productivity of your process. Budzar quality and reliability provide excellent value for each dollar invested
- Reliable temperature control improves process consistency, reduces scrap, speeds start-up and increases production rates.

### **LOW-COST, SIMPLE OPERATION AND MAINTENANCE**

- Solid-state, microprocessor-based controls provide reliable accurate operation
- Heavy-duty structural steel open framework for rugged use and easy access to all components
- Pneumatic control valves for reliable operation
- A.S.M.E. constructed shell and "U" tube heat exchangers to insure mechanical integrity
- Stand-by pumps are available to reduce down-time
- A limited-rate-of-change temperature controller is available to control the rate of temperature changes

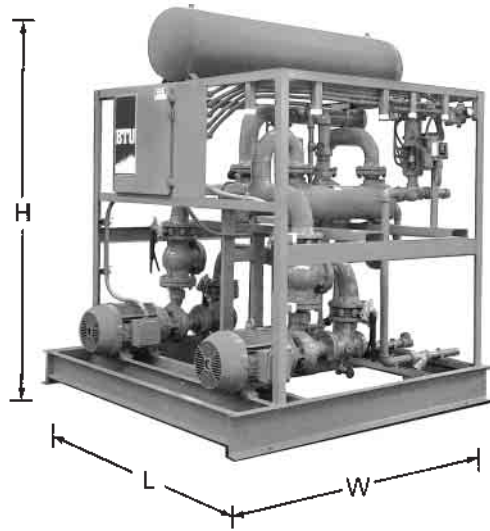
### **QUICK AND EASY INSTALLATION**

- Single point connections for all utilities
- All units are factory tested prior to shipment

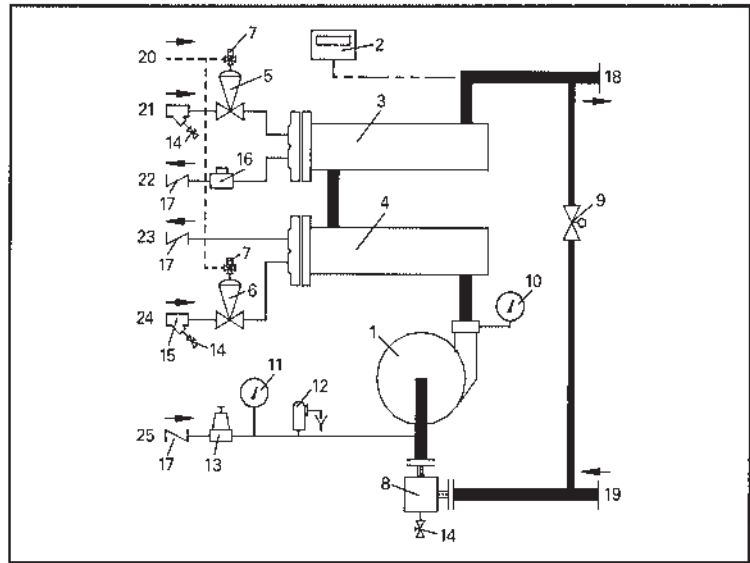


process  
**TEMPERATURE**  
control

# HIGH-VOLUME HOT WATER



Model 1WT-S150-C with optional stand-by process pump. The optional stand-by pump eliminates down time should a pump failure occur.



- |                            |                     |                           |
|----------------------------|---------------------|---------------------------|
| 1. Pump and Motor Assembly | 9. Bypass Valve     | 18. To Process            |
| 2. Temperature Controller  | 10. Discharge Gauge | 19. From Process          |
| 3. Steam Heater            | 11. Fill Gauge      | 20. Instrument Air Supply |
| 4. Water Cooler            | 12. Relief Valve    | 21. Steam Supply          |
| 5. Steam Control Valve     | 13. Water Regulator | 22. Condensate            |
| 6. Water Control Valve     | 14. Blow Down Valve | 23. Cooling Water Drain   |
| 7. Pilot Solenoid          | 15. Strainer        | 24. Cooling Water Supply  |
| 8. Suction Diffuser        | 16. Steam Trap      | 25. System Fill           |
|                            | 17. Check Valve     |                           |

## HWT HIGH-VOLUME HOT WATER

Model	Heating Sq. FT	Flow GPM@ 50 PSI	HP	FLA @ 460V Steam	Cooling Sq. FT	Approximate Dimensions L x W x H <sup>5</sup>	Weight (LBS)
1WT-S 50-C	15	50	3	5	15	60 x 48 x 72	900
1WT-S 75-C	15	75	5	8	15	60 x 48 x 72	1000
1WT-S100-C	15	100	7.5	12	15	60 x 48 x 72	1200
1WT-S150-C	35	150	7.5	12	35	60 x 48 x 72	1400
1WT-S200-C	35	200	10	15	35	60 x 48 x 72	1600
1WT-S250-C	35	250	15	22	35	60 x 48 x 72	1800
1WT-S300-C	82	300	15	22	82	60 x 48 x 72	2000
2WT-S 50-C	15	50	3	10	15	60 x 84 x 72	1800
2WT-S 75-C	15	75	5	16	15	60 x 84 x 72	2000
2WT-S100-C	15	100	7.5	23	15	60 x 84 x 72	2400
2WT-S150-C	35	150	7.5	23	35	60 x 84 x 72	2800
2WT-S200-C	35	200	10	29	35	60 x 84 x 72	3200
2WT-S250-C	35	250	15	43	35	60 x 84 x 72	3600
2WT-S300-C	82	300	15	43	82	60 x 84 x 72	4000

- 1 - System Design Pressure - 125 PSI
- 2 - Maximum Steam Pressure - 60 PSI
- 3 - Maximum Cooling Water pressure - 60 PSI
- 4 - Sizing can vary per application
- 5 - Based on close coupled pump arrangement

Units also available at 80 PSI (consult factory)

Budzar Industries reserves the right to discontinue or change specifications without notice, consistent with sound engineering practice and current industrial standards.



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Bulletin #13  
10/03

# MINI TEMPERATURE CONTROL UNIT



## MINI PORTABLE HOT WATER UNITS

Budzar's MTC (Mini Temperature Controller) Portable Hot Water System delivers full feature temperature control in the smallest cabinet on the market. The MTC, at 11" wide, 19" high and 24" long, is perfect for any industry process: rubber, plastics, pharmaceutical, chemical, power, steel, petroleum or food requiring a reliable temperature control unit with a small footprint.

The MTC brings unmatched reliability and power to your production process. The MTC eliminates pump failures by using industrial duty pumps with an EPDM Carbon/GI Silicar Seal rated up to 300° F. The standard 30 PSI discharge pressure delivers a powerful, turbulent flow. All units may be upgraded to 50 PSI. A continuous automatic air vent prevents heater burn-out and insures optimum heat transfer through your process. The MTC is built to deliver maintenance-free operation.

The brains of the MTC is a non-proprietary, full function PID controller that comes with a full 5 year warranty. "Continuous Self-Tuning" allows you to set the controller once and then forget it. The controller continuously adjusts the operation of the MTC to optimize the productivity of your process. A bright dual display shows separate set point and process temperatures that are easy to read under any factory lighting.

## engineering PRECISION

### EXCELLENT RETURN ON INVESTMENT

- A non-proprietary "self-tuning" controller continuously adjusts to your process to increase production rates, improve process consistency, reduce scrap and speed startup
- Exclusive use of quality equipment: I.E.C. electrical components, nonoverloading ODP motor, industrial duty pump with a 300°F rated EPDM HT Carbon/GI Silicar Seal, and long life cooling valve, work together to provide many years of outstanding service from your investment
- Flow rates are available from 20 to 100 GPM @ 30 PSI for turbulent flow. All units may be upgraded to 50 PSI.

### LOW-COST, SIMPLE OPERATION AND MAINTENANCE

- Two quick release side panels and a heavy duty easy release clamp fitting provide complete maintenance access.
- All components are arranged for easy access and service
- Separate process and set point temperature display, return and supply pressure gauges and full lighted status display provide complete diagnostics for the system

### QUICK AND EASY INSTALLATION

- The MTC size makes this unit easy to locate. At 11" wide and 19" high by 24" long the MTC will fit anywhere.

### OPTIONS

- Stainless steel brazed plate exchanger provided for closed loop cooling

# MINI TEMPERATURE CONTROLLER

## DIRECT INJECTION-SOLENOID COOLING VALVE

Model	KW	Pump HP	Valve Size	Volt	Amps	GPM	Head
MTC-9-.75-.25-DS-460	9	0.75	0.25	460	1.6	15	30 psi
MTC-9-1-.25-DS-460	9	1.00	0.25	460	3	22	30 psi
MTC-9-1.5-.25-DS-460	9	1.50	0.25	460	3	35	30 psi
MTC-9-2-.5-DS-460	9	2.00	0.50	460	3.4	50	30 psi
MTC-9-3-.5-DS-460	9	3.00	0.50	460	4.8	90	30 psi

## DIRECT INJECTION MODULATING COOLING VALVE

Model	KW	Pump HP	Valve Size	Volt	Amps	GPM	Head
MTC-9-.75-.5-DM-460	9	0.75	0.50	460	1.6	15	30 psi
MTC-9-1-.5-DM-460	9	1.00	0.50	460	3	22	30 psi
MTC-9-1.5-.5-DM-460	9	1.50	0.50	460	3	35	30 psi
MTC-9-2-.5-DM-460	9	2.00	0.50	460	3.4	50	30 psi
MTC-9-3-.5-DM-460	9	3.00	0.50	460	4.8	90	30 psi

## CLOSED LOOP-SOLENOID COOLING VALVE

Model	KW	Pump HP	Valve Size	Volt	Amps	GPM	Head
MTC-9-.75-.25-DS-460	9	0.75	0.25	460	1.6	15	30 psi
MTC-9-1-.25-DS-460	9	1.00	0.25	460	3	22	30 psi
MTC-9-1.5-.25-DS-460	9	1.50	0.25	460	3	35	30 psi
MTC-9-2-.5-DS-460	9	2.00	0.50	460	3.4	50	30 psi
MTC-9-3-.5-DS-460	9	3.00	0.50	460	4.8	90	30 psi

## CLOSED LOOP—MODULATING COOLING VALVE

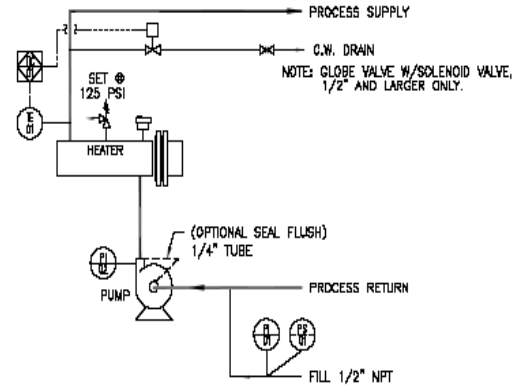
Model	KW	Pump HP	Valve Size	Volt	Amps	GPM	Head
MTC-9-.75-.5-DM-460	9	0.75	0.50	460	1.6	15	30 psi
MTC-9-1-.5-DM-460	9	1.00	0.50	460	3	22	30 psi
MTC-9-1.5-.5-DM-460	9	1.50	0.50	460	3	35	30 psi
MTC-9-2-.5-DM-460	9	2.00	0.50	460	3.4	50	30 psi
MTC-9-3-.5-DM-460	9	3.00	0.50	460	4.8	90	30 psi

12 and 18 kw units available; 230/3/60 electrics available

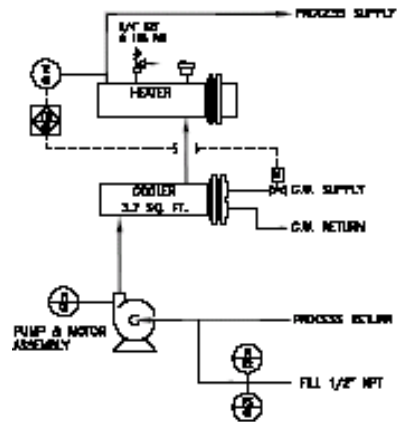
Budzar Industries reserves the right to discontinue or change specifications without notice, consistent with sound engineering practice and current industrial standards.

## Schematics

### Direct Injection



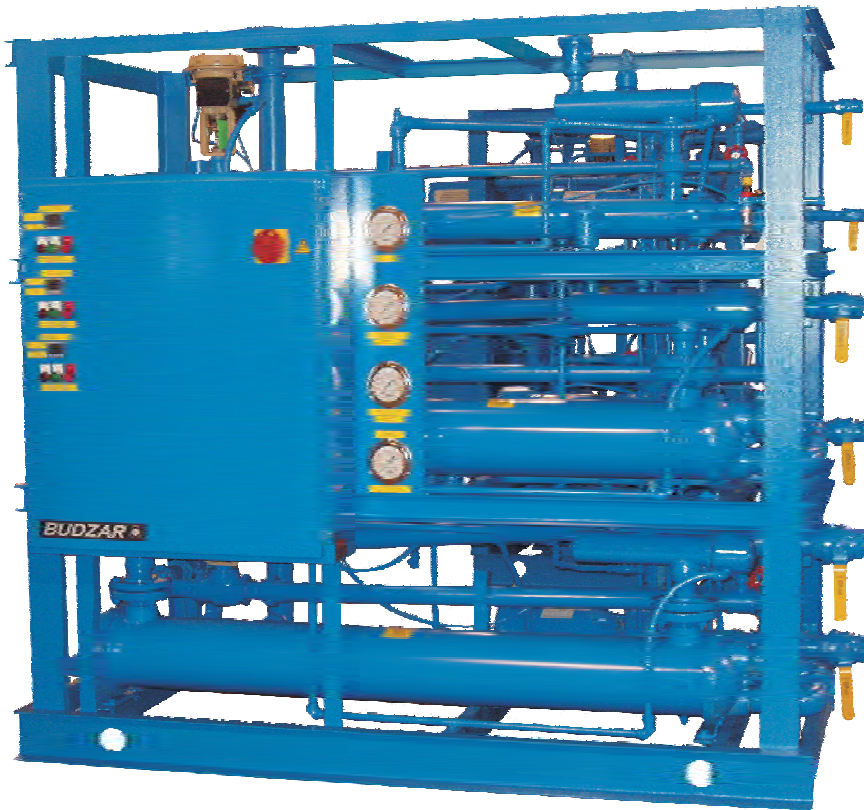
### Closed Loop



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Bulletin #10  
 5/05

# MIXER TEMPERATURE CONTROL



MXR Series intensive Mixer Temperature Control Systems offers multi-zone fluid heat transfer capability for high velocity, controlled-temperature water to mixer sides, rotor and drop door.

The MXR Series is designed to withstand demanding mixing room atmospheres and is available in both direct-injection and closed-loop operations. This series is designed for industrial applications requiring fluid temperatures up to 250°F.

Budzar Industries also designs and manufactures specialized equipment for non-standard applications. Our engineers have extensive experience in process chilling and heating applications for such industries as: chemical, petroleum, plastics, rubber, paper, power, steel, food and pharmaceutical. We take the time to understand your current and future needs and design a solution targeted at high quality and fast payback.



engineering  
**PRECISION**

## COMPARE THESE FEATURES

- Each Budzar Industries Unit is designed to maximize the productivity of your process. Budzar Industries quality and reliability provide excellent value for each dollar invested
- Consistent temperature control results in more uniform batch characteristics, scrap reduction and elimination of the "first-batch" effect

## LOW-COST, SIMPLE OPERATION AND MAINTENANCE

- Solid-state, microprocessor based controller and pneumatic modulating control valves provide reliable accurate operation without cycling
- "At-a-glance" digital read-out controller and function indicator lights display important operating conditions
- Close-coupled centrifugal pumps with high temperature seals and TEFC motors
- Electric heaters or shell and "U" tube heat exchangers for heating with steam are available for fast start-up and flexibility
- All electrical components are housed in a NEMA 12 dust-tight enclosure

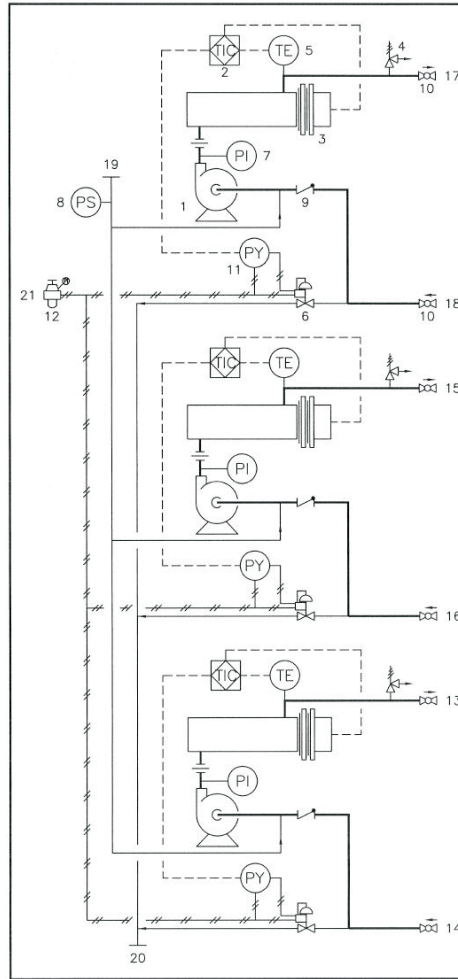
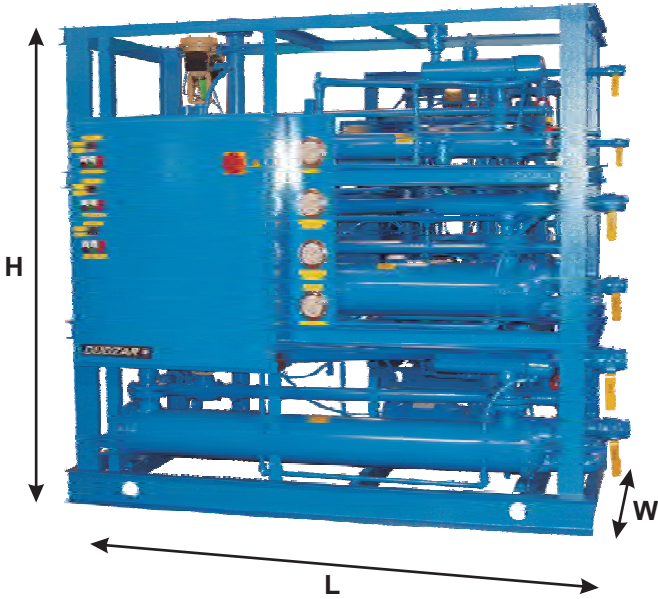
## QUICK AND EASY INSTALLATION

- Single-point connections for all utilities
- All units are factory tested prior to shipment



process  
**TEMPERATURE**  
control

# MIXER TEMPERATURE CONTROL



1. Pump and Motor Assembly
2. Temperature Controller
3. Electric Heater (optional)
4. Relief Valve
5. Cooling Control Valve
6. Pressure Gauge
7. Pressure Switch
8. Check Valve
9. Thermocouple
10. Isolation Valves (optional)
11. Pressure Transducer
12. Air Filter / Regulator
13. To Sides
14. From Sides
15. To Rotors
16. From Rotors
17. To Doors
18. From Doors
19. Cooling Water Supply
20. Cooling Water Return
21. Instrument Air Supply

## MXR SERES INTENSIVE MIXER TEMPERATURE CONTROL UNITS

Model	Flow GPM/HP			Pump Discharge Pressure PSI			Steam Heat Ft <sup>2</sup>			Optional Heating kW			Optional Closed Loop Cooling Ft <sup>2</sup>			ELA@460V		Approximate Dimensions (L x W x H) <sup>1</sup>	Weight (LBS)
	Side	Rotor	Door	Side	Rotor	Door	Side	Rotor	Door	Side	Rotor	Door	Side	Rotor	Door	Elec	Steam		
MXR-1	60/3	40/1.5	20/1	45	38	32	8.1	3.7	3.7	9	4.5	4.5	61	48	20.4	32.0	9.5	54 x 39 x 84	1,200
MXR-9	90/5	60/3	20/1.5	56	45	36	8.1	8.1	3.7	9	9	4.5	88	61	20	43.0	15.0	54 x 39 x 84	1,425
MXR-11	120/7.5	85/5	20/1.5	60	56	36	15	8.1	3.7	12	8	4.5	131	88	20	53.5	21.5	54 x 39 x 84	1,550
MXR-15	150/10	120/7.5	30/3	60	60	43	15	15	3.7	15	12	4.5	153	131	38	69.5	30.0	60 x 48 x 105	1,800
MXR-27	180/15	150/10	30/3	60	60	43	15	15	3.7	18	15	9	207	153	38	87.0	40.0	60 x 48 x 105	2,080

<sup>1</sup> - Steam units add 6" to width

### Notes:

System design pressure - 125 psi  
 Maximum steam pressure - 60 psi  
 Maximum cooling water pressure - 60 psi  
 Direct Injection Standard



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Bulletin #14

# MULTI-ZONE HOT WATER TCU & "QUICK CHANGE" SLIDING TRAYS



6-Zone Vertical Temperature  
Control Unit



2-Zone Unit with Removable  
Sliding Trays

## "QUICK CHANGE" MULTI-ZONE HOT WATER UNITS & BUDZAR'S EXCLUSIVE SLIDING TRAY

BTU Multi-Zone Hot Water Systems provide up to eight independent zones, of temperature control, each with its own each own controls, pumps, heaters and cooling modes.

With the smallest footprint possible, the Multi-Zone units are perfect for processes which require controlling more than one temperature and floor space is at a premium. The sliding tray design eliminates maintenance down time. Should a component fail, the process, cooling and electricity connections are disconnected, the failing component is replaced all under one minute without stopping the process.

The replaced component is either repaired on site or the complete tray may be returned to Budzar for an overnight restoration to factory specifications

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 **BUDZAR**  
INDUSTRIES, INC.

engineering  
**PRECISION**

### **EXCELLENT RETURN ON INVESTMENT**

- Each Budzar unit is designed to maximize the productivity of your process. Budzar quality and reliability provide excellent value for each dollar invested
- Reliable temperature control improves process consistency, reduces scrap, speeds start-up and increases production rates.

### **LOW-COST, SIMPLE OPERATION AND MAINTENANCE**

- Each zone is controlled by a "self-tuning" PIC microprocessor controller. The controller has a five year warranty
- "At-a-glance" indicator lights display important operating conditions
- High temperature (300°F) EPDM mechanical seal prevents pump seal failure
- Individual heater case continuous air vents prevent heater burn-out
- Sliding trays simplify maintenance
- Overnight delivery of replacement trays
- Available Closed Loop configurations for temperature up to 250°F and Direct Injection configurations for temperature up to 210°F
- System and operator are protected by low-pressure safety switch and relief valve
- Optional modulating cooling control valve eliminates water "hammer" and solenoid failure

### **QUICK AND EASY INSTALLATION**

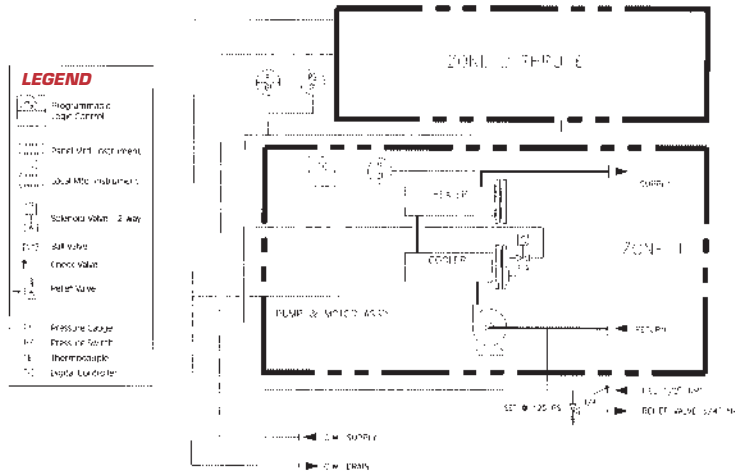
- Single point connections for all utilities
- Minimal floor space design makes placement easy
- All units are factory tested prior to shipment



process  
**TEMPERATURE**  
control



# MULTI-ZONE HOT WATER



## MULTI-ZONE HOT WATER

	Model <sup>1</sup>	Heater kW <sup>2</sup>	Motor HP	Cooling Valve Size	Voltage	Per Zone GPM @ 30 PSI <sup>3</sup>
Direct Injection Solenoid Valve Cooling 9kw Heater	2WT-9-.75-.25-DSM-X	9	.75	.25	460	20
	2WT-9-1-.25-DSM-X	9	1	.25	460	30
	2WT-9-1.5-.25-DSM-X	9	1.5	.25	460	40
	2WT-9-2-.5-DSM-X	9	2	.5	460	60
	2WT-9-3-.5-DSM-X	9	3	.5	460	100
Direct Injection Modulating Valve Cooling 9kw Heater	2WT-9-.75-.25-DMM-X	9	.75	.25	460	20
	2WT-9-1-.25-DMM-X	9	1	.25	460	30
	2WT-9-1.5-.25-DMM-X	9	1.5	.25	460	40
	2WT-9-2-.5-DMM-X	9	2	.5	460	60
	2WT-9-3-.5-DMM-X	9	3	.5	460	100
Closed-Loop Solenoid Valve Cooling 9kw Heater	2WT-9-.75-.25-CSM-X	9	.75	.25	460	20
	2WT-9-1-.25-CSM-X	9	1	.25	460	30
	2WT-9-1.5-.25-CSM-X	9	1.5	.25	460	40
	2WT-9-2-.5-CSM-X	9	2	.5	460	60
	2WT-9-3-.5-CSM-X	9	3	.5	460	100
Closed-Loop Modulating Valve Cooling 9kw Heater	2WT-9-.75-.25-CMM-X	9	.75	.25	460	20
	2WT-9-1-.25-CMM-X	9	1	.25	460	30
	2WT-9-1.5-.25-CMM-X	9	1.5	.25	460	40
	2WT-9-2-.5-CMM-X	9	2	.5	460	60
	2WT-9-3-.5-CMM-X	9	3	.5	460	100

1 - "X" denotes no Tray. Change the suffix to "T" to denote Modular trays

2 - 12,18,24,36kw per zone available

3 - 50 psi optional

### Options

#### Electric Heater Upgrade

- 12kw, 18kw, 24kw 36 kw

#### Sliding Trays

- Remove a zone tray and replace it with a spare in less than one minute while the TCU is running

#### Modulating Cooling Control Valve

- All Multi-Zone TCUs come standard with solenoid cooling control valves. Modulating valves improve temperature control and extend the life of the valve

#### Closed-Loop Cooling Heat Exchanger

- A copper tube heat exchanger separates the fluid circulating through the process from your cooling water source. A good idea if your source cooling water is dirty or if you need to run your process at temperatures above 212°F

#### Flow Switch

- All Multi-Zone TCUs come standard with a Pressure Switch that protects against pump seal failure and heater burn-out by turning off the pump and heater when there is a loss of pump fill pressure. A flow switch adds further protection against pump seal failure and heater burn-out by turning off the pump and heater when there is a loss of flow

#### Pump Seal Flush

- Extends the life of the pump seal by continuously flushing the pump seal with process water. This option is NOT recommended for dirty water

#### Electrical Cord & Plug

- 15' electrical cord and plug. Plug options include all NEMA Twist-Lock Plugs
- Devices: L14 thru 22-20P thru 30P

#### Voltages

- 460/3/60, 230/3/60, 575/3/60, 380/3/50, 415/3/50

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Bulletin #11  
 11/03

# MULTI-ZONE HOT WATER



## MWT MULTI-ZONE HOT WATER UNITS

BTU MWT Series Multi-Zone Hot Water Systems provide up to six independent zones, each with its own controls, pumps, heaters and cooling modes. Independent zone control maximizes production by operating each zone at independent set points. The MWT Series is available for use with plant steam or electricity as the heat source.

The MWT Series is available in both direct-injection or closed loop operation. This series is designed for industrial processes requiring fluid temperatures up to 250°F

Budzar also designs and manufactures specialized equipment for non-standard applications. Our engineers have extensive experience in process chilling and heating applications for such industries as: chemicals, petroleum, plastics, rubber, paper, power, steel, food, and pharmaceuticals. We take the time to understand your current and future needs and design a solution targeted at high quality and fast payback.



engineering  
**PRECISION**

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- Each Budzar unit is designed to maximize the productivity of your process. Budzar quality and reliability provide excellent value for each dollar invested
- Reliable temperature control improves process consistency, reduces scrap, speeds start-up and increases production rates.

### LOW-COST, SIMPLE OPERATION AND MAINTENANCE

- Solid-state, microprocessor-based controls provide reliable accurate operation
- Easy-to access components allow quick servicing
- "At-a-glance" indicator lights display important operating conditions.
- Available closed loop system minimizes injection of raw water with its contaminants into the circulating loop.
- System and operator are protected by low-pressure safety switch and relief valve.
- All electrical components are housed in a NEMA 12 enclosure with through the door disconnect for safe operation.

### QUICK AND EASY INSTALLATION

- Single point connections for all utilities
- Minimal floor space design makes placement easy
- All units are factory tested prior to shipment



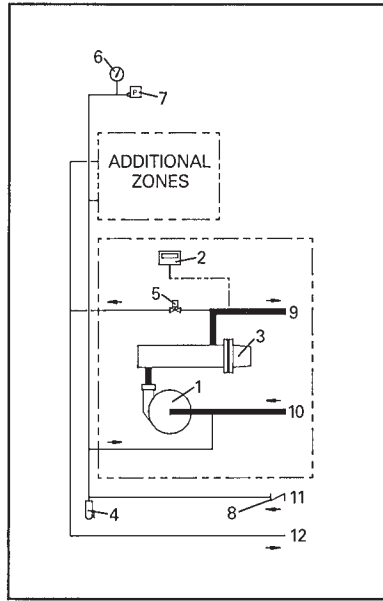
process  
**TEMPERATURE**  
control

# MULTI-ZONE HOT WATER



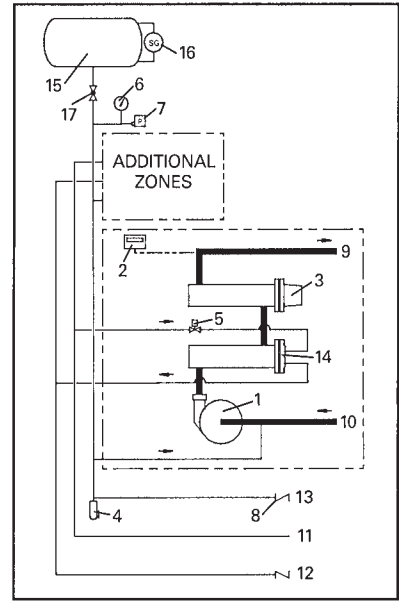
Model 4WT-930-C complete with expansion tank. NEMA 12 enclosure with disconnect switch is standard.

**DIRECT INJECTION**



- 1. Pump and Motor Assembly
- 2. Temperature Controller
- 3. Electric Heater
- 4. Relief Valve
- 5. Cooling Valve
- 6. Pressure Gauge
- 7. Pressure Switch
- 8. Check Valve
- 9. To Process
- 10. From Process
- 11. Cooling Water Supply
- 12. Cooling Water Drain

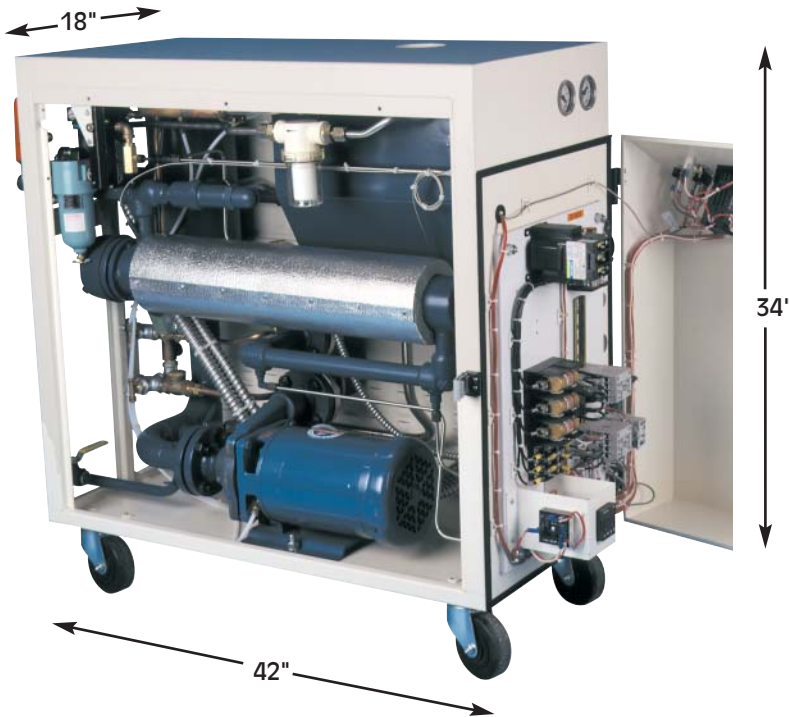
**CLOSED LOOP**



- 1. Pump and Motor Assembly
- 2. Temperature Controller
- 3. Electric Heater
- 4. Relief Valve
- 5. Cooling Valve
- 6. Pressure Gauge
- 7. Pressure Switch
- 8. Check Valve
- 9. To Process
- 10. From Process
- 11. Cooling Water Supply
- 12. Cooling Water Drain
- 13. System Fill
- 14. Cooler
- 15. Expansion Tank (Opt.)
- 16. Sight Glass (Opt.)
- 17. Tank Isolation Valve (Opt.)

MODEL	Heating (kW/FT <sup>2</sup> )	FLOW (GPM) @ 30 PSI	H.P.	FLA @ 460V Elec/Steam	Cooling Sq Ft.	Approximate Dimensions L x W x H (inches)	Weight (lbs)
1WT-415-CV	4.5 kW	15	1	7.8	2.2	36 x 20 x 48	300
1WT-930-CV	9 kW	30	1.5	14.3	3.1	36 x 20 x 48	325
1WT-950-CV	9 kW	50	2	14.7	3.5	36 x 20 x 48	350
2WT-415-CV	4.5 kW	15	1	15.7	4.4	36 x 23 x 60	600
2WT-930-CV	9 kW	30	1.5	28.8	6.2	36 x 23 x 60	625
2WT-950-CV	9 kW	50	2	29.6	7.0	36 x 23 x 60	650
3WT-415-CV	4.5 kW	15	1	23.5	6.5	36 x 23 x 60	950
3WT-930-CV	9 kW	30	1.5	43.1	9.2	36 x 23 x 60	975
3WT-950-CV	9 kW	50	2	44.3	10.4	36 x 23 x 60	1000
4WT-415-CV	4.5 kW	15	1	31.2	8.6	36 x 23 x 72	1150
4WT-930-CV	9 kW	30	1.5	57.4	12.2	36 x 23 x 72	1175
4WT-950-CV	9 kW	50	2	59.0	13.8	36 x 23 x 72	1200
5WT-415-CV	4.5 kW	15	1	39.0	10.7	36 x 23 x 72	1500
5WT-930-CV	9 kW	30	1.5	71.7	15.2	36 x 23 x 72	1530
5WT-950-CV	9 kW	50	2	73.7	17.2	36 x 23 x 72	1560
6WT-415-CV	4.5 kW	15	1	48.7	12.8	36 x 23 x 84	1700
6WT-930-CV	9 kW	30	1.5	86.0	18.2	36 x 23 x 84	1735
6WT-950-CV	9 kW	50	2	88.4	20.6	36 x 23 x 84	1775

# THERMAL VAC NEGATIVE PRESSURE HOT OIL & HOT WATER TEMPERATURE CONTROL SYSTEMS



- IMPROVED SAFETY
- Operates completely LEAK FREE
- EVACUATE your process fluid back into the Thermal VAC tank
- Pre-Heat Molds Safely & Cleanly
- Faster Mold Changes
- Vacuum fill from Oil Drum (no more hand pumping)
- All welded and flanged pipe construction
- Internal pressure relief/by-pass valve
- High level switch to prevent reservoir overflow

Thermal VAC Negative Pressure WATER Model	Heater kW	Water Pump GPM	Water Pump HP	Vacuum Pump SCFM @ 15"	F.L.A. (460)*	Optional Cooler Ft. sq. **	Dimensions WxLxH
1NPWT-620-460-DS	6	20	3	15	12.6	3.7	18"x32"x26"
1NPWT-920-460-DS	9	20	3	15	16.3	3.7	18"x32"x26"
1NPWT-1220-460-DS	12	20	3	15	20.1	3.7	18"x32"x26"
1NPWT-1820-460-DS	18	20	3	15	27.6	3.7	18"x32"x26"

\* 230 Volt AMPs = 460 Volt Amps x 2

\*\*3.7 ft. sq. provides 132,000 BTUH @ 200 deg. F.

Thermal VAC Negative Pressure HOT OIL Model	Heater kW	Oil Pump GPM*	Oil Pump HP	Vacuum Pump SCFM @ 15"	F.L.A. (460)**	Cooler Ft. sq. (optional)***	Dimensions WxLxH
1NPOT-920-VL-460-C	9	20	1-1/2	20	15	3.1	18"x42"x34"
1NPOT-1220-VL-460-C	12	20	1-1/2	20	19	3.1	18"x42"x34"
1NPOT-1820-VL-460-C	18	20	1-1/2	20	27	3.1	18"x42"x34"
1NPOT-2420-VL-460-C	24	20	1-1/2	20	34	3.1	18"x42"x34"

\* 30 GPM available

\*\*230 Volt AMPs = 460 Volt Amps x 2

\*\*\*3.1 ft. sq. provides 48,000 BTUH @ 350 deg. F., 20 ft. sq. exchanger available (100,000 BTUH @ 350 deg. F.)

# NEGATIVE PRESSURE HOT OIL & HOT WATER- TCU<sub>s</sub>



## *Thermal VAC Negative Pressure Hot Oil and Hot Water Systems*

Don't stop production just because the process has developed a leak. Budzar's Thermal VAC Negative Pressure Hot Oil and Hot Water Temperature Control Units allow you to continue running even with leaks. And when you don't have a leak take advantage of the improved safety and heat transfer characteristics of running your temperature control oil circuit under vacuum.

A successful negative pressure temperature control system is driven by three critical factors: vacuum pressure, vacuum air CFM and process fluid GPM. Thermal VAC's dual pump design, with a separate vacuum and process pump, delivers the **maximum** on all three of these critical factors.

- **Vacuum Pressure** - The deeper the vacuum pressure the more of the mold or process will be under vacuum. Thermal VAC units incorporate an on-board vacuum pump that can deliver up to 24" of mercury (near perfect vacuum).
- **Vacuum Air CFM** - The greater the CFM the bigger the leak that can be handled. Thermal VAC's on-board vacuum pump pulls enough CFM to handle as much as possible of the fluid (oil or water) flow rate through the mold or process.
- **Process Fluid GPM** - The greater the process fluid (oil or water) flow the more consistent the temperature control at the process. The Thermal VAC is a two pump system. The fluid pump delivers full rated flow to the mold or process even under full vacuum.

Of course all of this is of little use unless the unit also delivers accurate temperature control. The Thermal VAC provides ultra precise temperature control through a self tuning PID microprocessor that controls the low watt density electric heater and cooling exchanger control valve. The controller even has a 5 year warranty!



engineering  
**PRECISION**

### **MAXIMUM SAFETY**

- The Thermal VAC reduces the chance of your operators coming in accidental contact with hot oil or water.
- Should a leak develop the Thermal VAC will not spray out hot fluid, it will suck in air instead.

### **MAXIMUM VACUUM**

- Thermal VAC's on board vacuum pump pulls up to a 24" of mercury vacuum. That is much more than single pump systems and means more of your process will be under vacuum.

### **MAXIMUM CFM**

- Thermal VAC's vacuum pump is sized to pull 2 to 15 SCFM. That means the Thermal VAC can handle bigger leaks!

### **MAXIMUM GPM**

- All other negative pressure systems force a trade-off between vacuum pressure and process fluid GPM.
- Thermal VAC's separate process pump delivers 20 GPM even under full vacuum and that means your process can continue to run at full capacity even with a leak!

### **NO SMOKE**

- Most negative pressure oil units belch smoke from the vacuum pump discharge. The smoke fouls your plant and irritates operators.
- The Thermal VAC incorporates a proprietary condensing system that eliminates smoke discharge into the plant.

### **SIMPLE OPERATION AND MAINTENANCE**

- Thermal VAC's controls are all automatic. You just turn the unit on and set the required process temperature and vacuum level.



process  
**TEMPERATURE**  
control

# Director Series Temperature Control System



Shown with optional Stainless Steel cabinet

Budzar Industries Director Series Reactor Temperature Control Systems deliver accurate and reliable temperature control to your process vessel across a very wide temperature range from -85° to 200°C. The heart of the Director is a PLC control system. The PLC includes a graphic Class 1, Div II user interface with a touch screen for ease of use, and simple control and monitoring of your process. Data Collection and trending are also available.

The Director Series incorporates a seal-less magnetic drive pump for leak free operation. The pump can be controlled by an optional variable frequency drive to allow jacket delivery pressure to be precisely maintained anywhere from 4 PSI to 50 PSI. The electric immersion heater is energized by an SCR for true modulating output and extremely accurate temperature control.

The expansion tank is thermally isolated from the process loop to maintain the fluid in the tank at ambient temperature and protect the fluid from oxygen and thermal related damage.

Low temperature control is provided by an on-board low temperature refrigeration circuit complete with compressor, electronic modulating hot gas by-pass valve, electronic modulating thermal expansion valve, and compressor suction regulator. All these combine to provide trouble free operation even in the most demanding process conditions. Temperature down to -40°C are available in single compressor configurations. Optional cascade compressor configurations provide temperatures down to -85°C.

The PLC offers unparalleled flexibility and control. Single loop control can be selected with input from the vessel jacket or vessel contents. The Director Series also offers optional true cascade control with dual loop control of both the jacket and contents temperature.



engineering  
**PRECISION**

## COMPARE THESE FEATURES

- Each Budzar Industries unit is designed to maximize the productivity of your process. Budzar Industries quality and reliability provide excellent value for each dollar invested
- Temperature Range from 200°C to -40°C with single compressor modules and -85°C with cascade compressor modules
- Optional variable speed drive pump control from 4PSI to 50PSI to protect pressure sensitive jackets such as are used on glass vessels
- Magnetic Drive Seal-less Pump, all welded and flanged construction eliminates leaks, guaranteed
- SCR Modulating Heater Controls for precise temperature control
- Electronic modulating refrigeration capacity control down to 2%
- PLC Controls
  - Selectable Temperature Control, Jacket or Vessel Contents Temperature Control
  - Graphical user interface for easy operation
  - Ability to store temperature recipes
  - Communications options include: RS-485 and Ethernet
  - Data logging and trending software
  - Optional - DH+, Controlnet & Devicenet
- Electric Immersion Heaters rated from 6 to 96kW, low watt density design, flange mounted
- ± 1°C Temperature Control Accuracy
- Made in the USA

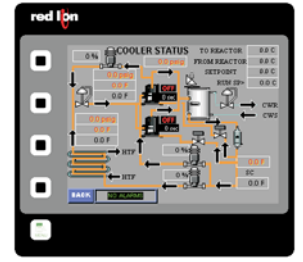
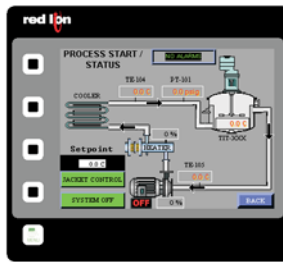
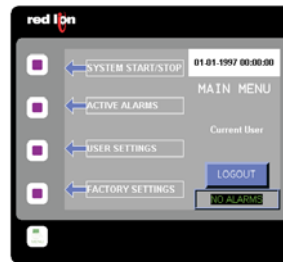
process  
**TEMPERATURE**  
control

# Director Series Temperature Control System

Model	Heater (kW)	***Net Cooling Capacity, kW @ °C								7/15/2016	Pump GPM / PSI	Dimensions Cabinet # - W(in) x D(in) x H(in)	FLA 460/3/60	10°C Cond. Water
		200	20	0	-20	-40	-60	-80	-85					
DSFW-0202-C-FCB-S1(425W)	2	10.15	10.15	6.05	2.45	0.75	-	-	-	14 / 25	23.5X32.25X60	10.4	5.9	
DSFW-2.504-C-FCB-S1(430W)	4	12.85	12.85	7.65	3.45	1.05	-	-	-	14 / 25	23.5X32.25X60	13.6	12	
DSFW-3.506-C-FCB-S1(510W)	6	14.85	14.85	11.35	5.05	1.65	-	-	-	14 / 25	23.5X32.25X60	18	12	
DSFW-0506-C-FCB-S1(520W)	6	25.85	25.85	16.55	7.15	2.75	-	-	-	14 / 25	23.5X32.25X60	20.3	12	
DSFW-0606-C-FCB-S1(610W)	6	31.35	31.35	18.75	8.75	3.15	-	-	-	14 / 25	29.5X44.25X60	20	18	
DSFW-0612-C-FCB-S1(615W)	12	31.35	31.35	18.75	8.75	3.15	-	-	-	14 / 25	29.5X44.25X60	27.5	18	
DSFW-7.512-C-FCB-S1(620W)	12	35.45	35.45	23.95	10.55	3.85	-	-	-	14 / 25	29.5X44.25X60	33.3	18	
DSFW-1012-C-FCB-S1(625W)	12	36.65	36.65	29.65	14.55	5.35	-	-	-	14 / 25	29.5X44.25X60	38.7	24	
DSFW-1324-C-FCB-S1(630W)	24	44.25	44.25	36.95	17.75	6.85	-	-	-	14 / 25	37.88X44.25X65	54.9	24	
DSFW-1524-C-FCB-S1(635W)	24	60.05	60.05	43.95	21.55	8.55	-	-	-	14 / 25	37.88X44.25X65	59.6	24	
DSFW-2030-C-FCB-S2(640W)	30	71.1	71.1	57.1	26.9	8.5	-	-	-	40 / 28	37.88X52.63X65	88.8	30 or 36	
DSFW-2636-C-FCB-S2(645W)	36	86.3	86.3	71.7	33.3	11.5	-	-	-	40 / 28	47.2X72.0X72.0	98.6	30 or 36	
DSFW-3048-C-FCB-S2(650W)	48	117.9	117.9	85.7	40.9	14.9	-	-	-	40 / 28	47.2X72.0X72.0	123	30 or 36	
DSFW-6096-C-FCB-S4(680W)	96	239.1	239.1	174.7	85.1	33.1	-	-	-	40 / 28	78.7X177.2X78.7	234	60	
DSFW-5.502-C-FCB-S2(815W)	2	15.15	15.15	11.65	5.35	7.15	3.66	1.45	1.08	7/15	23.5X32.25X60	16.1	9	
DSFW-7.503-C-FCB-S2(825W)	3	16.85	16.85	16.85	7.45	8.19	4.05	1.56	1.17	7/15	23.5X32.25X60	19.6	22	
DSFW-9.503-C-FCB-S2(830W)	3	19.05	19.05	19.05	9.05	10.76	5.41	2.15	1.62	7/15	29.5X44.25X60	21.2	26	
DSFW-1106-C-FCB-S2(910W)	6	35.75	35.75	24.25	10.85	11.55	5.73	2.26	1.73	7/15	29.5X44.25X60	27.7	30	
DSFW-1512-C-FCB-S2(920W)	12	36.65	36.65	29.65	14.55	16.27	7.9	3	2.2	14 / 25	37.88X52.63X65	47.3	52	
DSFW-22.512-C-FCB-S2(925W)	12	60.05	60.05	43.95	21.55	23.45	11.67	4.59	3.56	14 / 25	37.88X52.63X65	0	0	
DSFW-3024-C-FCB-S3(930W)	24	57.1	57.1	57.1	26.9	28.7	13.22	3.69	2.11	14 / 25	37.88X52.63X65	0	0	
DSFW-4536-C-FCB-S3(950W)	36	85.7	85.7	85.7	40.9	44.7	20.92	6.87	4.61	40 / 28	51.2X103.5X76.0	0	0	



## PC Control, Data Logging & Trending Screens



## Fluid Temperature Ranges

	200°C	180°C	150°C	100°C	50°C	0°C	-20°C	-40°C	-80°C	
HTF (High)										
HTF (Medium)										
HTF (low)										

HTF= HEAT TRANSFER FLUID, PSF-POLYDIMETHYSILOXANES



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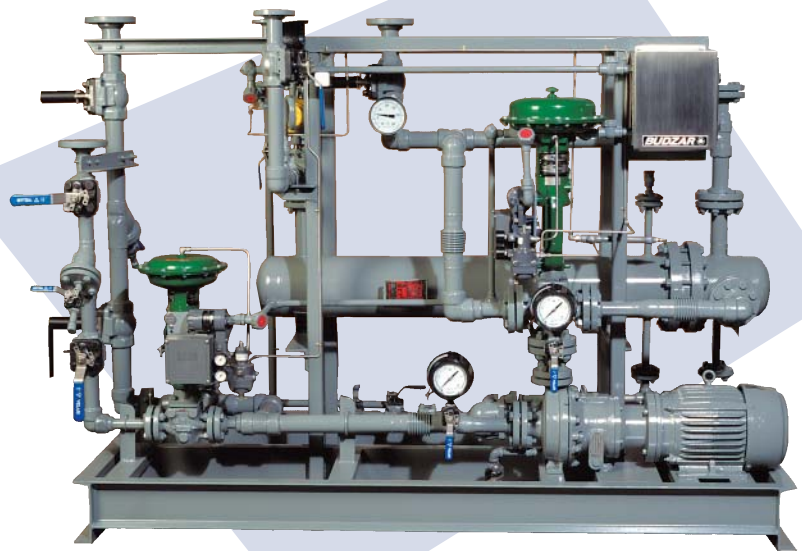
## The most complete line of chillers and batch temperature control systems in the world...

**B**udzar ESD has over 28 years of experience in custom designing fluid heat transfer systems. Budzar ESD systems can be constructed to your exact specifications whether it's a custom explosion proof design, a system designed for extreme temperature range, an instrument selection to match your company stores, a critical space problem, or any other custom request, Budzar's Engineered Systems Division will meet the challenge...

**ON SPEC, ON TIME, ON BUDGET.**

### Temperature Control Modules

- Temperatures from -100° to 700° F
- Water, Glycol, or Heat Transfer Fluids
- Capacities for batch sizes to 5,000 gallons
- Indoor, Outdoor and **Explosion Proof**
- Interface with all types of plant utilities
- Local, PLC or DCS control systems



### Chillers

- Temperatures to -40° F
- Capacities to 300 Tons
- Water or Air Cooled Condensers
- Screw or reciprocating compressors
- Indoor, Outdoor and **Explosion Proof**
- All types of refrigerants

