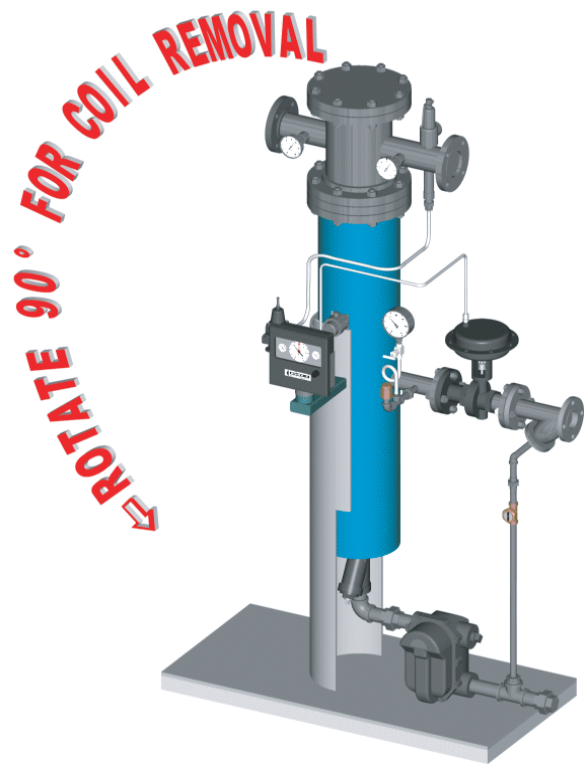
11 Jocama Blvd., Suite 11A, Old Bridge NJ 08857 USA p. 718.824.4901 f. 718.409.3605 www.alstromenergygroup.com

Instantaneous Water Heater Series "ECO-PACK"

ALSTROM ENERGY GROUP LLC



Standard Features & Equipment

316 L Stainless Steel Tube Bundle

Control Valve:
1. Self-operated
2. Pilot-operated
3. Air-operated
4. Electric-operated

Trim

A.S.M.E. Water Relief Valve

Vacuum Breaker

Hot Water Thermometer

Thermal Insulation

Metal Jacket

Optional Features

Circulating Pump

Three Way Valve

Custom Designed Configurat

Other Liquids & Materials

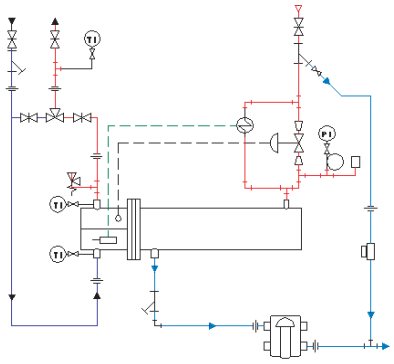
Alstrom "Eco-Pack" Water Heater represents a proven, economical solution for providing water for central heating, service and process applications. Steam condenses in the shell, and water is heated in the tubes. Due to small volume of water in the tubes, steam control valve responds virtually instantaneously to water flow fluctuations.
Unique stand design permits vertical or horizontal installation depending on available space as well as easy tube bundle replacement.
Single or Double Tubesheet models provide engineering solution for most applications including cross-non-contaminating requirement.

Service Water

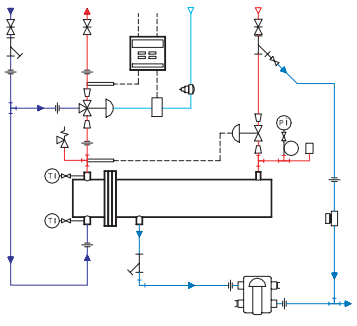
Usually, city water is heated to 140 F for domestic use and 180 F for laundries, kitchens and other service applications. In orer to prevent corrosion of the heater by released oxygen, the tube bundle and head are manufactured from stainless steel.
Various types of temperature regulators are available but the best control is acheived by use of additional tempering valve (Fig. 1).
This system requires that continuous running return water will be mixed with city water before entering tempering valve. Stevens Institute of Technology Lab tests confirm that the outgoing temperature is maintained in the range of +/- 2F., which exceeds ASSE Standard 1017, Performance requirements for Temperature Actuated Mixing Valves for Primary Domestic Use.

Process Steam

The common temperature raise of central heating water or glycol is from 160 F to 180 F, but other conditions may occur. Since closed heating system practically has no free oxygen, economical carbon steel head and tubesheet may be used. Three-way water temperature regulating valve in conjunction with pressure regulating valve provide desirable temperature control (Fig.2)



Service Water Piping Diagram (Fig 1)



Central Heating Piping Diagram (Fig 2)

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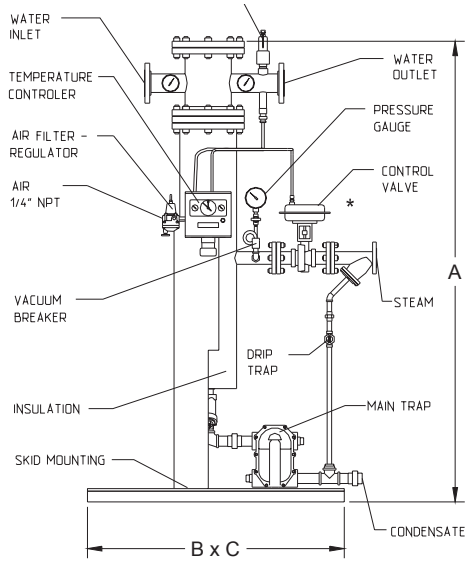
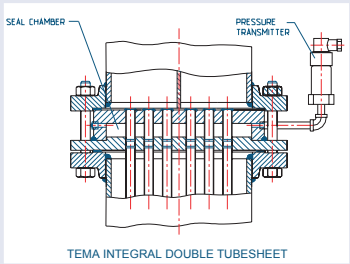
HEATER DIMENSIONS IN INCHES				OPENING SIZE BASED ON FLOW VELOCITY	
MODEL NO.	A	B	C	GPM	OPENING SIZE
EP - A	85	48	24	73	2 1/2
	85	48	24	49	2
	85	48	24	50	2
EP - B	86	48	24	186	4
	86	48	24	126	3
	86	48	24	98	3
	86	48	24	80	2 1/2
	86	48	24	47	2
EP - C	90	54	30	299	5
	90	54	30	259	5
	90	54	30	132	3
	90	54	30	134	3
	90	54	30	102	3
EP - D	90	54	30	480	6
	90	54	30	295	5
	90	54	30	350	5
	90	54	30	120	3
Control valve, type and size, is selected per job specification				MAX. VELOCITY - 6 ft/sec	



SELECTION TABLES											
STEAM LINE PRESSURE		2	5	10	15	25	40	50	75	100	150
STEAM PRESSURE IN ELEMENT		0	2	5	10	15	25	30	50	65	100
STEAM FACTOR - K		0.516	0.52	0.523	0.528	0.534	0.543	0.548	0.55	0.567	0.583
MODEL NO		TUBE BUNDLE SELECTION IN GPM									
TEMP. RANGE 40° 110°	EP - A	23	25	28	31	35	39	43	47	52	73
	EP - B	68	75	82	90	99	109	120	132	146	186
	EP - C	122	134	144	151	159	167	175	184	193	299
	EP - D	160	176	184	194	203	261	271	282	296	480
TEMP. RANGE 40° 120°	EP - A	19	21	23	24	26	27	28	31	33	49
	EP - B	51	60	66	71	75	79	85	89	94	126
	EP - C	104	106	118	132	148	163	168	178	184	259
	EP - D	144	155	179	189	201	241	265	273	287	295
TEMP. RANGE 40° 140°	EP - A	14	15	17	19	21	24	26	27	30	50
	EP - B	36	36	42	46	54	57	60	63	72	98
	EP - C	51	56	59	66	69	83	89	106	109	132
	EP - D	102	113	127	153	180	223	238	245	275	350
TEMP. RANGE 40° 160°	EP - B	30	35	36	40	46	51	55	58	66	80
	EP - C	50	60	72	84	88	91	93	112	128	134
TEMP. RANGE 40° 180°	EP - B	10	10	13	16	19	27	30	38	44	47
	EP - C	20	23	28	35	41	51	56	72	80	102
	EP - D	36	42	51	63	72	82	91	102	115	120
STEAM RATE (Ms) lbs/hour = STEAM FACTOR (K) • GPM • (T_2 - T_1)											
CUSTOM DESIGNS AVAILABLE FOR VARIOUS CONDITIONS PLEASE PROVIDE MAX LENGTH AND PRESSURE DROP											

**Optional Double Tubesheet Leak Eliminating Construction



TEMA INTEGRAL DOUBLE TUBESHEET

This TEMA recommended design eliminates possible contamination of either tube or shell side fluid with at tube-to-tubesheet joint leakage. Should a leak occur, the liquid goes into the seal chamber filled with inert liquid. This event will be reported via pressure transmitter to system control or can be visually detected by pressure gauge reading. Meanwhile, the leak will stop due to equal pressure in the seal chamber and leaking part. Seal welding of tubes to the external tube sheet and quality expansion in to the double grooved inner tube sheet provides sufficient time for replacement.