



**FLUID HANDLING** INC  
HYDRONICS | STEAM | SOLUTIONS

# INDUSTRIAL PRODUCTS

LINE CARD - 2024

**Specializing in Steam, Hot Water, Process Heating & Cooling,  
HVAC and Water/Energy conservation**

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414.358.2646



[www.fluidh.com](http://www.fluidh.com)



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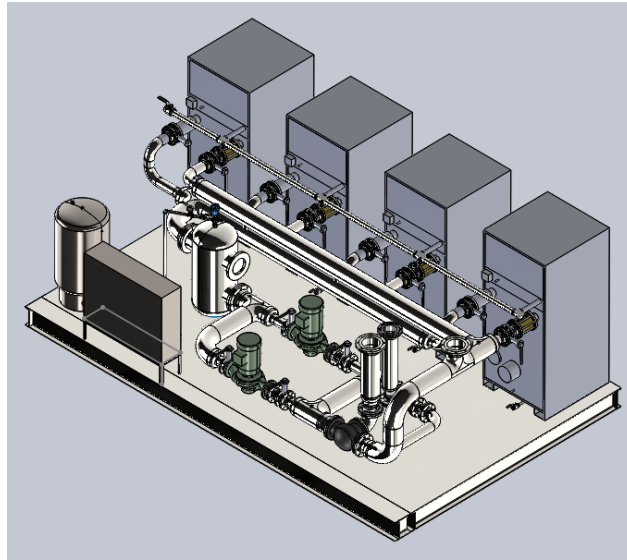
# PIPING AND SKID FABRICATION

From small equipment skids that can fit in the back of a pick-up to large modular process units, our integrated process combines engineering, design, control systems, and fabrication to achieve our mission of providing Efficient Engineered Solutions.

With over 30 years of experience, however complicated your project, FHI's engineers, designers, and fabrication professionals can design and build your system to your standards and specifications

At FHI, we've had the opportunity to design process skids tailored for a myriad of industries, each presenting its unique demands and nuances:

- **Oil and Gas**
- **Chemical Processing**
- **Pharmaceuticals**
- **Food and Beverage**
- **Power Generation**
- **Water Treatment**
- **Petrochemical**
- **Dairy**
- **Breweries**
- **Heat Treat Metal Manufacturing**
- **Mining and Minerals**
- **Pulp and Paper**



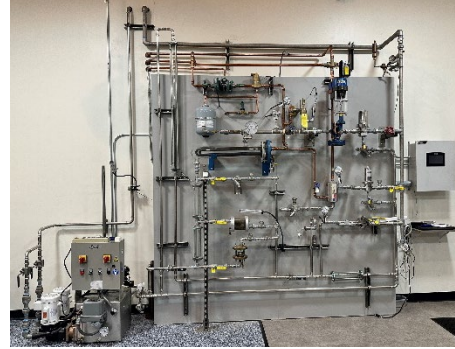
Our in-depth understanding of diverse sectors, combined with our unparalleled expertise, positions us as a trusted partner for all your process skid needs, regardless of your industry.

# MANUFACTURERS WE REPRESENT



Our classroom allows us to offer a variety of CEU and PDH courses in Pumping, HVAC and Steam-related topics. Come view and learn on our fully functioning, live Steam and Hot Water hands-on training display boards! In need of specific training? Let us know! We can come to you or host the class in our facility. At Fluid Handling, we strive on education.

**SIGN UP AT WWW.FLUIDH.COM**



## REFERENCES

### CONVERSION FACTORS

MULTIPLY	BY	TO OBTAIN
Cubic Feet	7.48	Gallons
Gallons of Water	8.345	Lbs. of Water
Gallons of Water	0.1337	Cubic Feet
Feet of Water	0.432	PSI
Horsepower	33,000	Foot - Lbs.
Horsepower	0.746	KW
Horsepower	2545	Btu/hr
Horsepower (Boiler)	33,493	Btu/hr
In. of Mercury	1.13	Feet of Water
Kilograms	2.2	Pounds
KW	3413	Btu/hr
Liters	0.2642	Gallons
Parts/million	0.0584	Grains/US gal
Pounds	7,000	Grains
Pounds/sq. inch	2.036	Inches Mercury
Square Foot EDR	240	Btuh
TO OBTAIN	BY	DIVIDE

### PROPERTIES OF SATURATED STEAM

Gauge Press. (lbs.)	Temp °F	Lat. Heat	Gauge Press. (lbs.)	Temp. °F	Lat. Heat
2	219	965	90	331	885
5	227	960	100	338	880
10	239	952	125	353	868
15	250	945	150	366	857
20	259	939	175	377	847
25	267	933	200	388	838
30	274	928	225	397	830
40	287	919	250	406	822
50	298	911	275	414	812
60	307	904	300	422	805
70	316	897	325	429	797
80	324	891	350	436	786

### CALCULATING HEAT EXCHANGE LOADS

$$Q = 500 \times \text{GPM} \times (T_2 - T_1) \times \text{SP HT} \times \text{SP GR}$$

Typical Values for SP HT and SP GR:

Fluid	At 20° F		At 200° F	
	SP HT	SP GR	SP HT	SP GR
Water	*	*	1.0	1.0
50% Eth Gly	.75	1.08	.87	1.02
40% Eth Gly	.81	1.06	.90	1.01
50% Prop Gly	.84	1.06	.92	.99
40% Prop Gly	.88	1.05	.95	.98
SAE 30 Oil	.41	.91	.52	.84
#6 Fuel Oil	.40	1.0	.49	.94
Soybean Oil	.41	.94	.51	.87
Therminol 66	.36	1.03	.44	.96

\* Use 1.0 for temperatures of 32°F to 212°F.

### USEFUL INFORMATION

**Pump Hp =**

$$\frac{\text{GPM} \times \text{Ft Head} \times \text{SP Gr}}{3960 \times \text{Pump Efficiency}}$$

**Temperature Conversion**

$$^{\circ}\text{F} = (^{\circ}\text{C} \times 9/5) + 32 \quad ^{\circ}\text{C} = (^{\circ}\text{F} - 32) \times 5/9$$

### CONDENSATE PUMP SIZING

#### PUMPS:

1. Heating Load in Btu/hr \_\_\_\_\_
2. Load from Step 1  $\div$  Latent Heat of available steam = \_\_\_\_\_ #/hr of condensate
3. #/hr condensate  $\div$  500 = \_\_\_\_\_ GPM of condensate
4. Recommended Pump Capacity = \_\_\_\_\_  
(2.5 or 3.0) x Step 3 = \_\_\_\_\_ GPM
5. Pump Head = \_\_\_\_\_  
Static Lift in Feet \_\_\_\_\_  
+ Friction Losses in Feet \_\_\_\_\_  
+ Pressure in vessel that pump is pumping to \_\_\_\_\_ PSIG x 2.31 = \_\_\_\_\_  
= Total head required of pump = \_\_\_\_\_ Feet

#### RECEIVER: (Minimum)

##### Condensate:

1 minute x GPM from Step 4 = \_\_\_\_\_ Gallons

##### Boiler Feed:

1 Boiler Horsepower = 1 Gallon receiver cap. (gross)

##### Capacity of Cylindrical Tank (U.S. Gal.) =

diameter (in feet) squared x length (in feet) x 5.88

