



Best Maintenance Practices & Innovations

Electric ReGen Heaters

VALIN HOUSTON



How do electric heaters work? How can we use to heat Resids?

Designing Heaters

What are you heating? *M

How hot does it need to get?*M

What voltage do you have available?*E

Do API Rules apply?*M

Corrosive Considerations*M

Watt Density Considerations*M

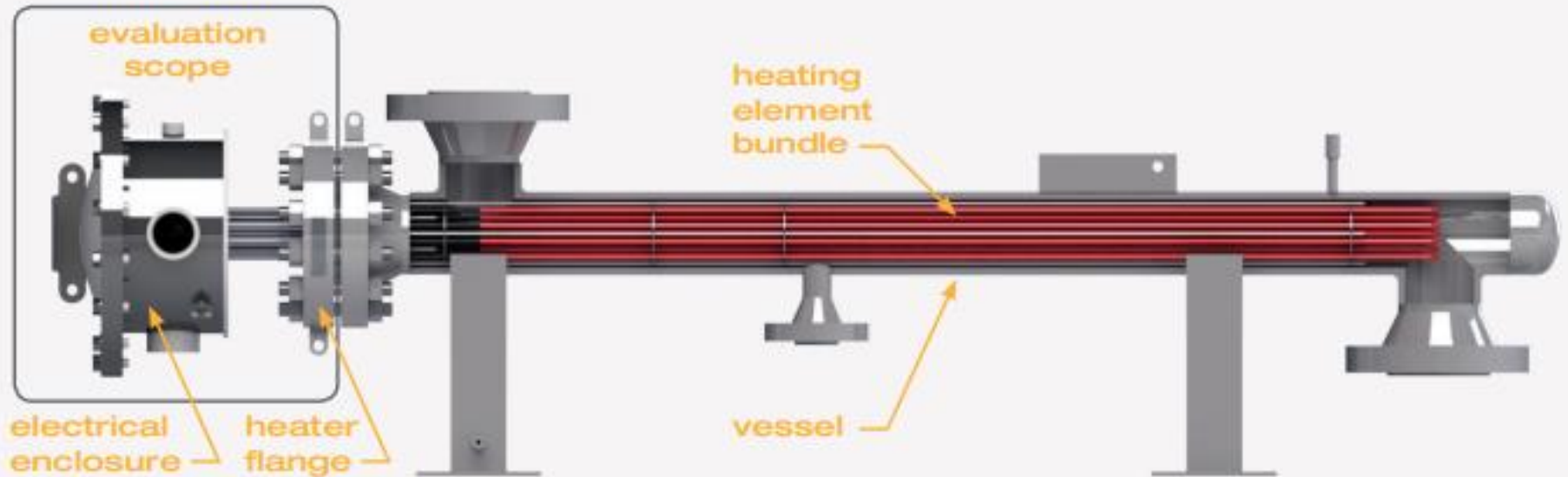
Attachment Methods*M

What if the temp goes too hi?

Area Classification?

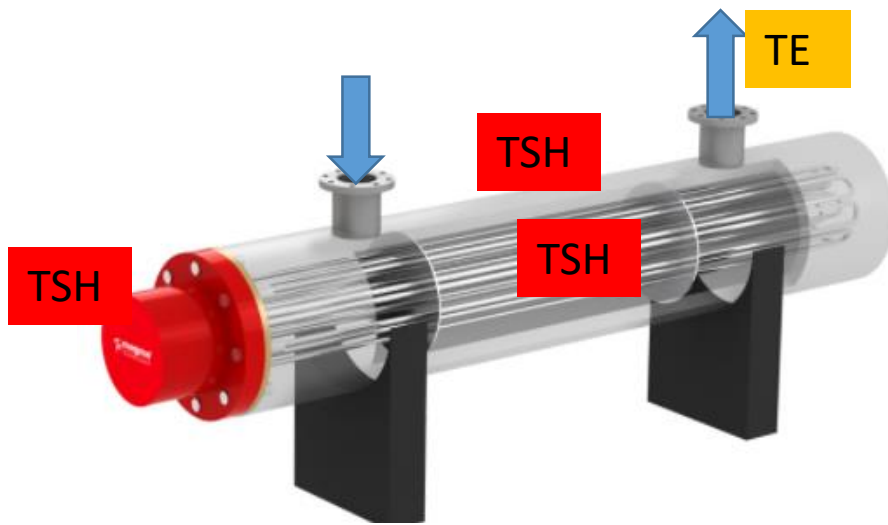


Designing Heaters



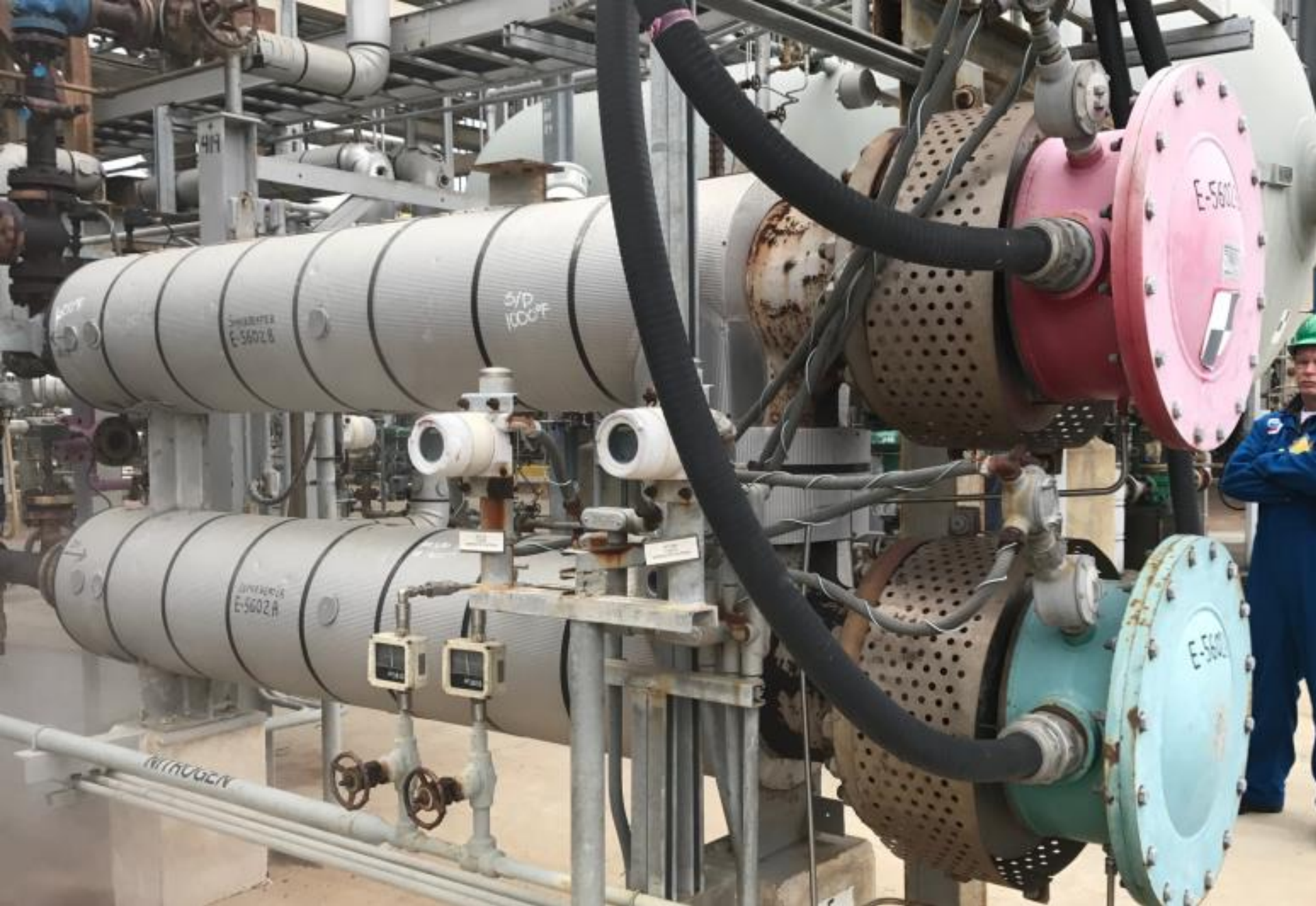
Designing Heaters

Circulation Heaters



Things to consider:

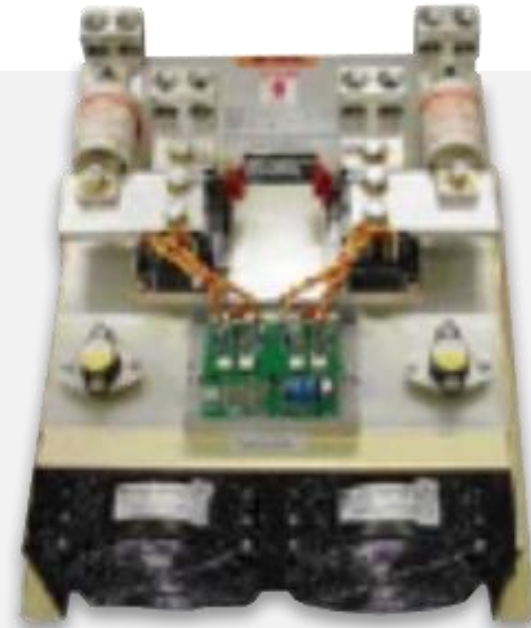
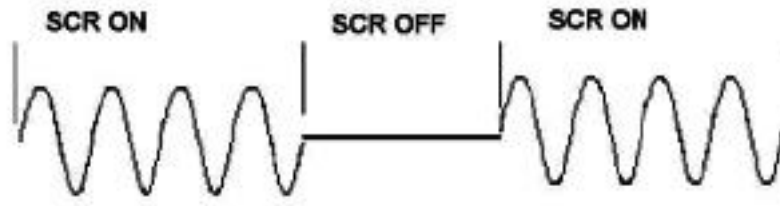
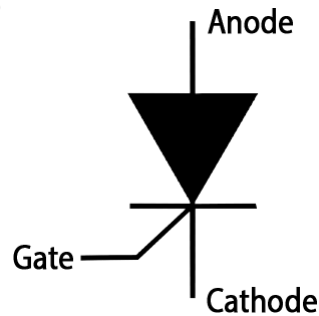
- Flow Rate (s)
- Process Control Location
- Hi Temp Shutdowns
- ASME/ANSI B31.3 considerations
- Area Classification
- Terminal Box Temps



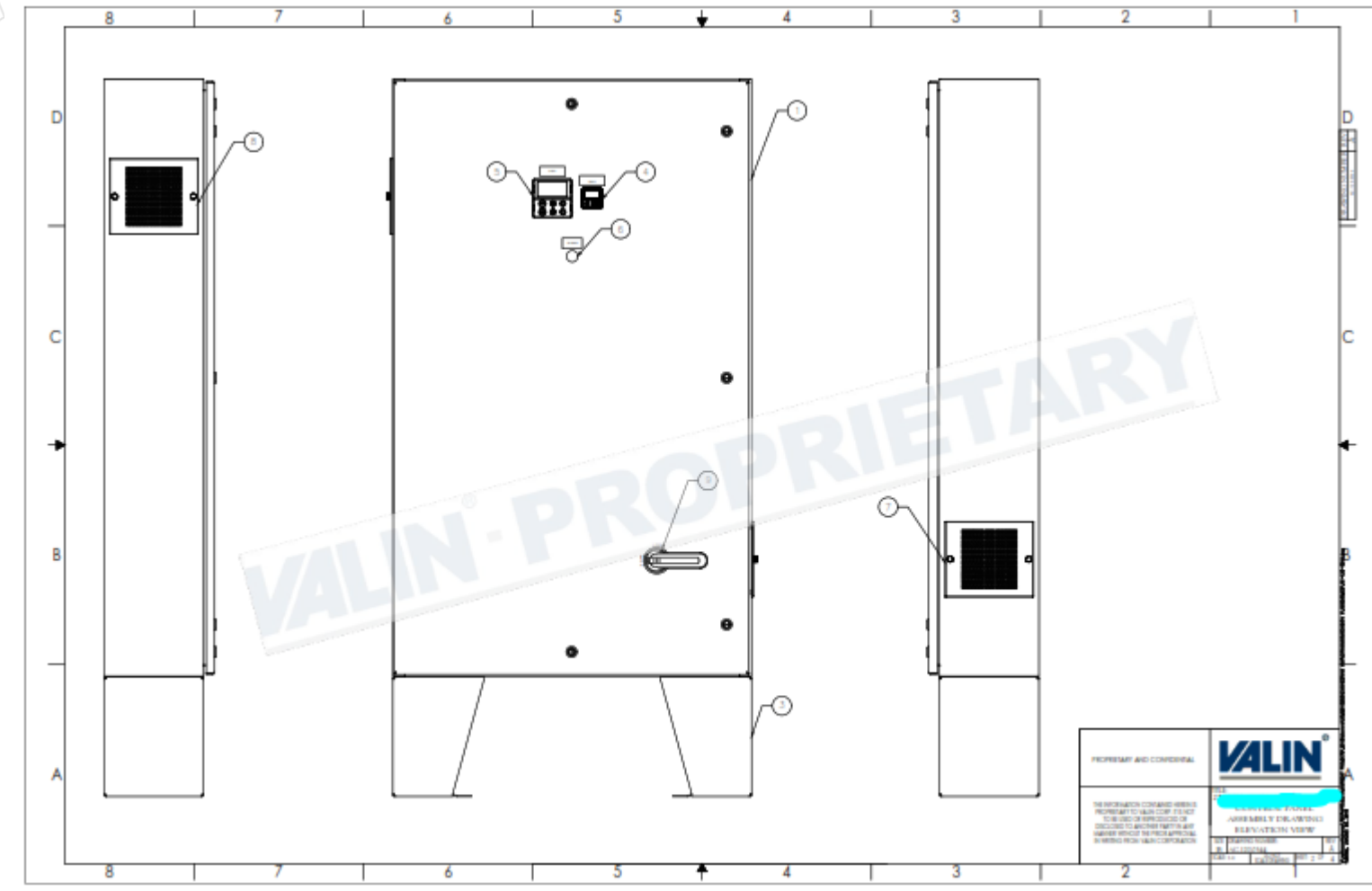
Flanged Immersion Heater

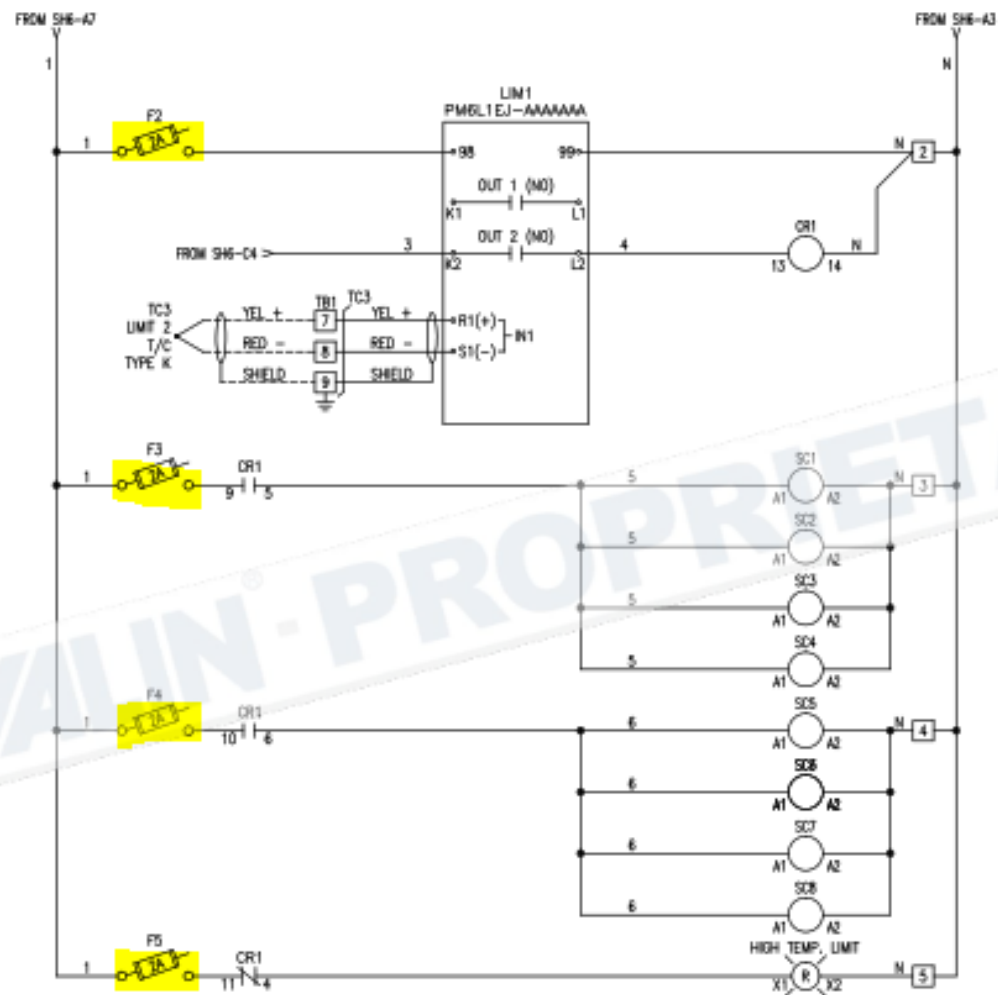


Controlling Electric Process Heaters



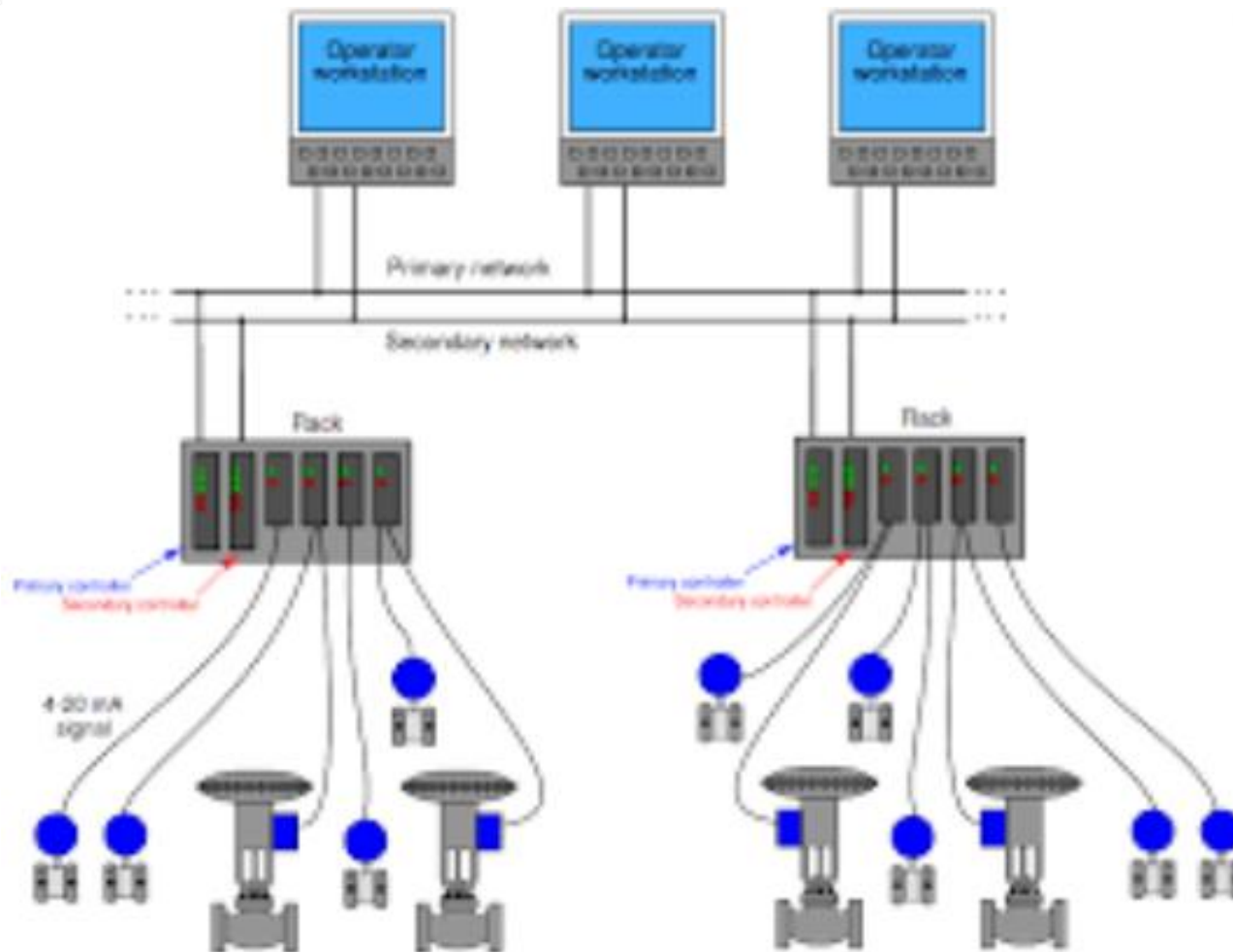
Control Panel





Process Control-Local & Remote







So how do heaters **FAIL**?

1

Terminal Pin failure

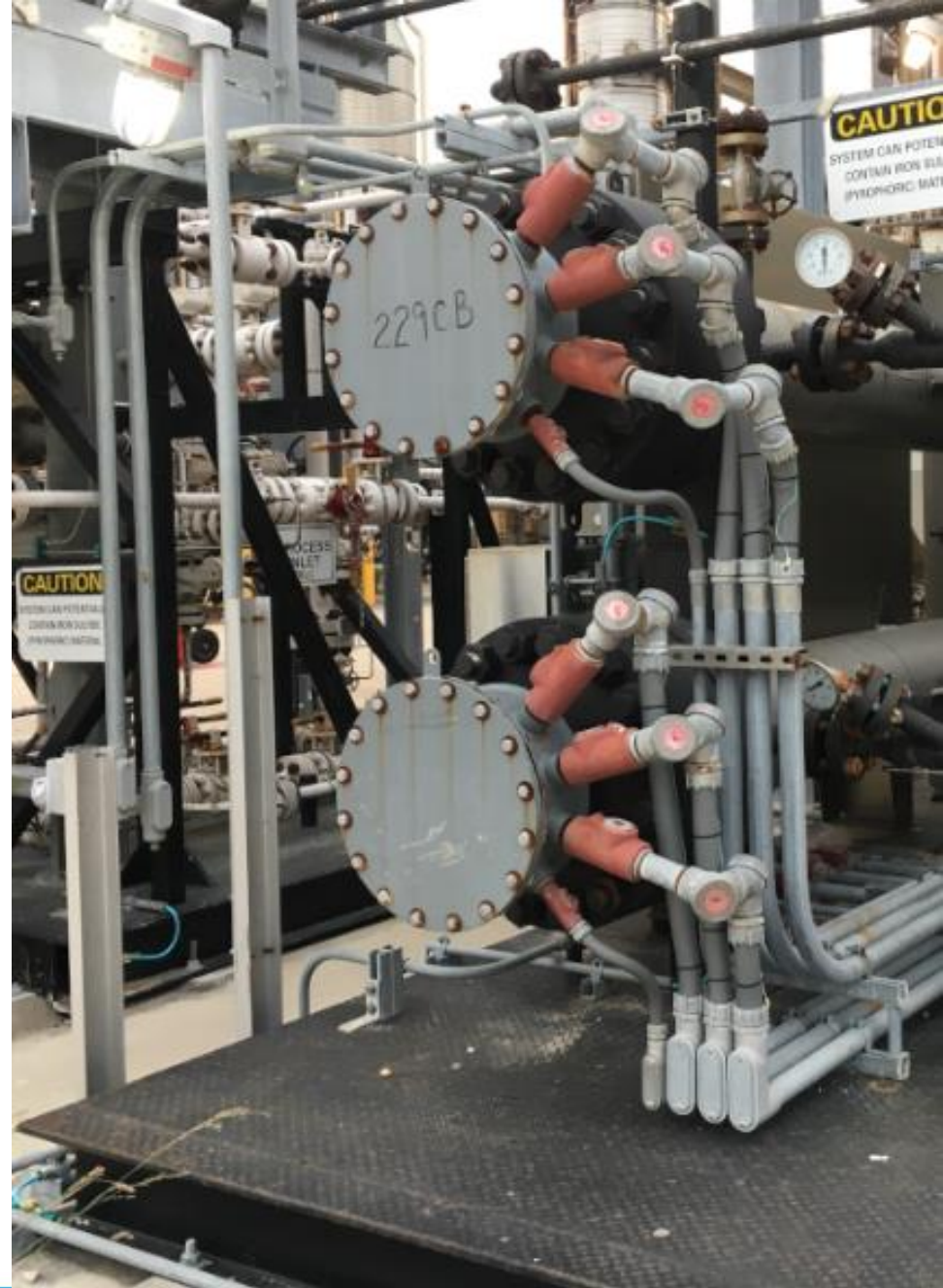
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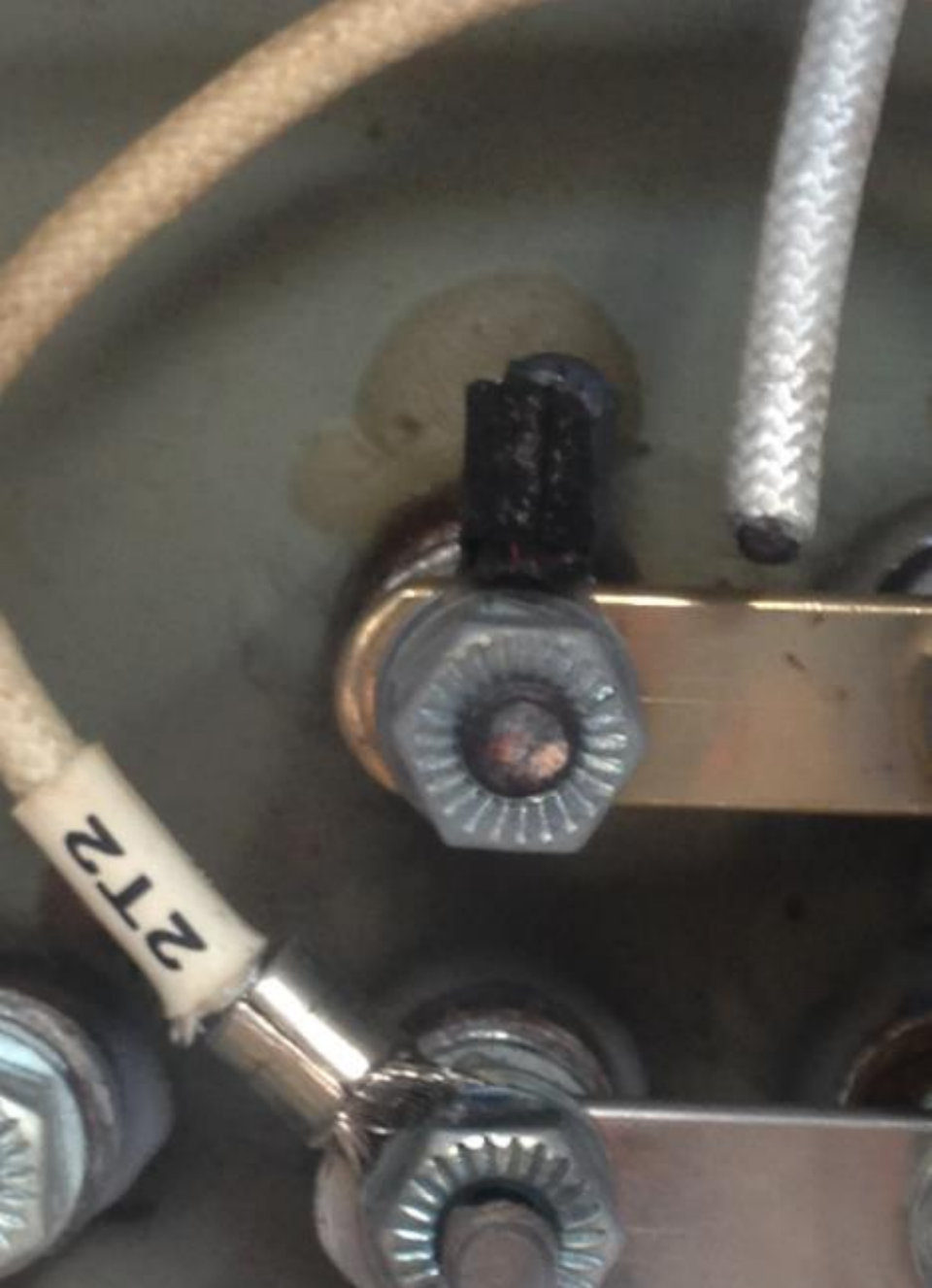
Moisture in T Box

3

Low Flow or No Flow issues















Meg that Heater!

Start Up

Before energizing the heater, the following items should have been checked with the heater power disconnected:

1. Electrical **termination is tight** and wiring is per wiring diagram supplied with heater
2. Proper disconnecting means and fusing have been installed
3. The voltage rating of the heater is the same as that being applied
4. Megohm is within **acceptable limits**
5. Proper temperature controls and safety limiting devices are in place
6. Heater is securely installed in tank heater and no leaks are visible

Tight Termination = 20 inch pounds

Megging an electric process heater

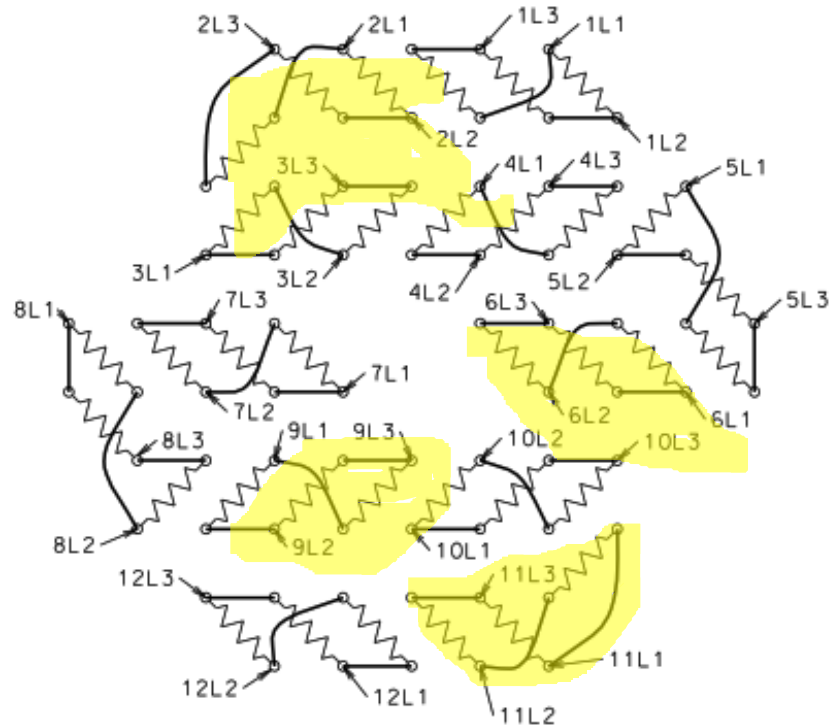


Perfect = Infinity

“OK” = 20 +



Electric Process Heater Megging



When:

Meg in the crate

Meg after installation and prior to wiring

Meg at Commissioning (with/without wire)

As a PM punch list item annually

How:

Disconnect all wires/t stats etc

Connect (-neg) lead to ground

Connect (+pos) lead to circuit group

Set meter to 500 Vdc. Test for 1 min

Record values

Repeat at 1000 and 2500 Vdc and record

Heater Low Meg - **What should you do?**

Contact Valin Account Manager

120V bake out

Oven bake out at Valin Houston





Preventing Most Common Failures

1

Welded Bus Terminals

2

Modern Control Innovations

3

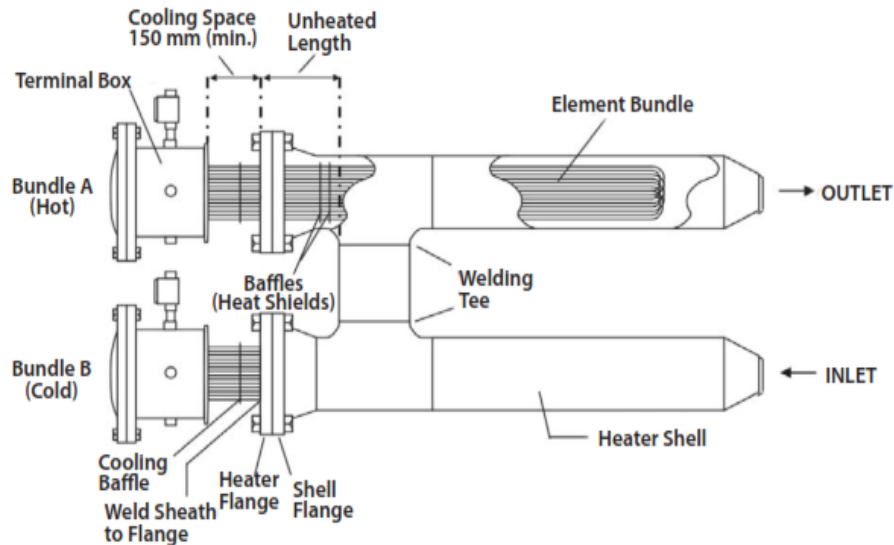
Cooler Running Heaters



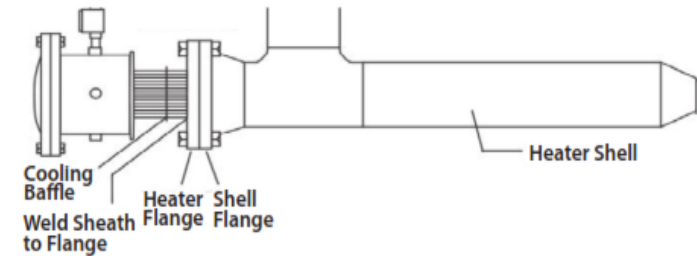
The Aspyre SCR



Modern Innovations in Electric Process Heat



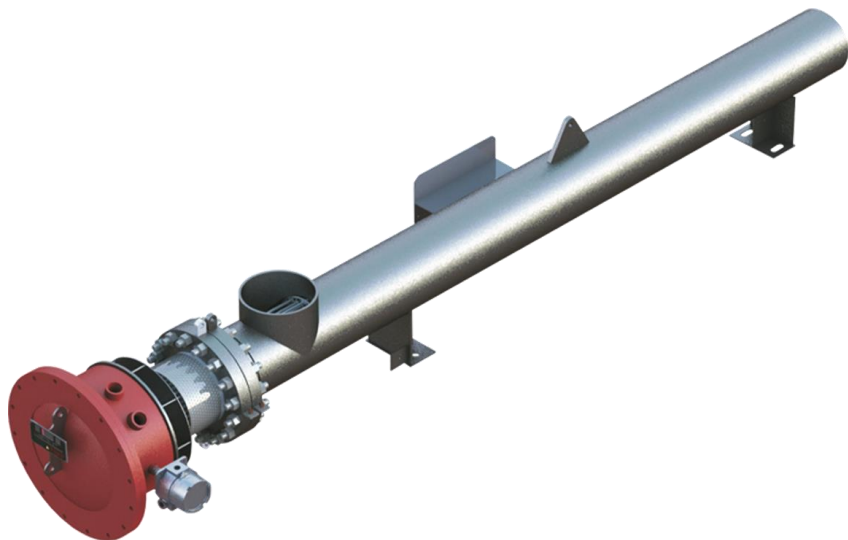
An entire element bundle and heater shell can be eliminated with OPTIMAX technology.



Improvement Summary

Application	OPTIMAX Improvements		
	Number of Heater Bundles	Total Element Surface Area	Total Immersion Length
Reduction Gas No. 2	50% less	51.4% less	108 in. shorter

Up to half the size & Cooler

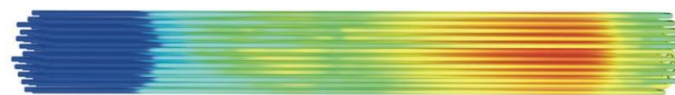


Conventional Heat Exchanger

Conventional Heat Exchanger Size



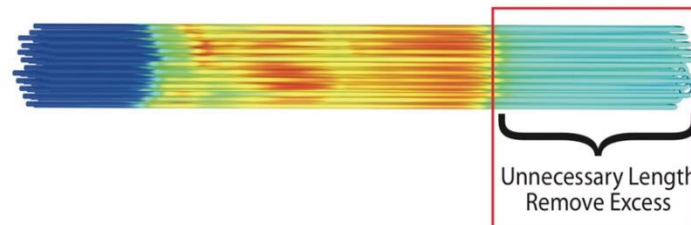
Conventional Element Sheath Temperatures



New OPTIMAX



Smaller
and
Lighter





Spares Program

Valin can store or service your spares

24 hr notice and we will have it on your dock

Valin Storage

Monthly monitoring in climate controlled facility and health check reports

On Site Care Program

Valin Thermal Solutions