

## Electric Boiler For Clean steam at Food Processing School



### **Business Case Study**

This case was for a food lab requiring high quality instant steam but no gas was available. The skid was intended to be a show piece to illustrate the high levels of technology for the food industry. Fully integrated with all provisions for water treatment, blow-down, feed-water heating and steam control for both pressure and level. It was an all stainless steel design.

### **Solution**

A completely skidded electric Coil Boiler design for clean steam. This design was well laid and modular to clearly identify each segment of the system to help students learn better.

### **Application**

A Clean steam electric generator constructed to ASME Section I certified with CRN for Ontario. Design pressure 150 psig 450 Deg F. A design was selected with a Corrosion Allowance of 1/16" on the tubes. the unit comprised of 30" diameter x 78" high vessel 304 Stainless Steel vessel designed to ASME Section

I design pressure 150 psig. Water softener for Duplex 20 GPM . The feed pumps were appropriately sized and had 1 HP motor on them.

The packages was supplied with 600V power panel containing Siemens 90A contactors. 400A disconnect all CSA approved. The Boiler was sized and selected to have 27 KW electric elements from CCI with Thermal High Density with Incoloy Sheath 600v supply. The steam outlet separator was sized at 4" 300# flanged connection. The outlet was equipped with moisture separator and filters for producing culinary quality steam.

The Control Panel was 16"x14" Nema 4 HMI with 7" touch-screen and Ascon D3 Delta modules for pressure and level control. Being installed at a university for demonstration, the panels and system were fully equipped with all safety elements such as High and Low Pressure alarms, High and Low Pressure level alarms, Single loop PID controller password protected and Disconnect switch and also mechanical safety valve set at 150 psi. Also on the boiler feed safety such as Level controls with low, second low and high alarm with manual reset were provided.

The feed tank was appropriately designed and engineered to long life complete in stainless steel and with smooth injection Sparge-tube. Feed water of 20 gallon capacity and a vented design with 24" diameter tank.

## **Advantages**

- Electric Boiler design for clean steam application and no stacks from Boiler
- Skid mounted frame and piping stainless steel piping, powder coated for ready to Install. Completely engineered, built and tested before dispatch
- Stainless Steel Design gives longer Life
- Good Modulation on electric elements for better efficiency
- HMI panel all pre programmed to highest level of safety for demonstration or teaching use.
- Local Panel with centralized control for Level, Boiler, Blow-down and Pressure. Capable of communicating with the facilities central Automation system