



Upgrade to Condensate Filter Elements Saves Power Plant \$110,000/Year

Overview

At the four-unit power plant in Southern Indiana, Units 2 and 3 are supercritical boilers with original-equipment two vessel condensate filter demineralizer systems. Unit 4 is a supercritical boiler with a powdered resin precoat condensate filter demineralizer system.

Units 2 and 3 have traditionally been operated using string wound filter elements with powdered resin precoat and cellulose fiber overlay, which acts as a filtration aid and protects the string wound elements from premature fouling. Unit 4 uses the same precoat material with stainless steel spiral wound elements.



Hydro-Guard® R filters with Pall's proprietary CoLd Melt™ technology are specifically designed for the use of backflushable, resin precoated power plant applications. The powdered resin removes dissolved and suspended copper, silica, and sulfate contaminants.

The Problem

The station was precoating every 30 days. The cost for one precoat on Unit 2 is approximately \$1900 per vessel (resin acquisition cost only). The station's goal was to reduce resin costs while maintaining required condensate chemistry.

The station precoated monthly because the string-wound elements being used tended to foul with particulate contamination and embedded powdered resin due to the filters' depth filtration characteristics. In addition, the strings would loosen and stretch as a result of forward and backflush flows.

It was necessary to find a way to optimize the plant's condensate demineralizer system in order to reduce system operating costs.

The Solution

In October 2002, the station upgraded the Unit 2 polisher by installing the new Hydro-Guard elements with Pall's proprietary CoLD Melt technology. These meltblown elements comprise 100% polypropylene depth filter media with a reverse, graded pore structure. They have a 57.2 mm (2.25 in) outside diameter (OD), compared with the 50.8 mm (2 in) OD of the old string-wound elements. This slight increase in OD provided a 14% increase in precoatable surface area, which lowered the vessel flux rates significantly. All of these features helped improve operating performance because they contributed to better backflush ability, more uniform precoat application, absolute filtration matrix, and precise element permeability.

The station replaced the Unit 3 string-wound elements with Pall's Hydro-Guard elements in March 2004 and has experienced similar cost savings. The station recently initiated a project to upgrade the old vessels with Hydro-Guard elements.

The Benefits

- The station is now precoating every 60 days versus every 30 days, cutting precoat costs in half.
- By reducing precoat frequency from 12 precoats per year to 6 precoats per year, the station has saved \$50,000 per year on resin costs for Units 2 and 3.
- The system needs less oversight and requires less manpower, allowing staff to concentrate efforts on other key plant issues.



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