

## Case History no. 1 – Lens Manufacturer Water Filtration

Fluid	: deionised water
Temperature	: up to 80 degrees C
Pressure	: 135 – 165 barg (200 barg max), pump causes fluctuation on 10 second cycle.
Max Pressure Drop	: 7 barg currently they want higher ideally.
Retention ratings	: 1 & 3 micron nominal
Flow rate	: 10 lpm
Line size	: 3/4"

They use high pressure water for washing and cutting lenses for glasses that are made from a monomer. They have been using thimble size (12mm Ø x 20mm long ) Sintered st.st. elements which fit into small pipe fitting. They clean them in ultrasonic cleaning baths a couple of times. These elements cost them approx. €1.52 each. They also use some larger ceramic filter elements.

### **Problem:-**

They were unhappy with the quantity of lenses they had to reject and were unhappy with the fact that they were finding contamination downstream of the 1 micron sintered st.st. powder elements. So they needed a filter that would withstand the working temperature & the maximum DP possible and improve filtration efficiency and the media should be re-generable.

I believe the source of their problem was the fact that they were using these very low area thimble sized st. st. powder filter elements and the flow rate was too high for them.

**E.g.** their small 12mm Ø x 20mm sintered elements have an area of 0.000742 sq. mtr. Compared 0.5 sq mtr. For a 10" pleated or 0.039275 for a 10" depth cartridge both of which would have a max design flow rate of 10 lpm !

Running a high flow rate through a small area element greatly reduces its efficiency and your DP rapidly builds up which can also result in soft deformable contaminants being extruded through the filter media.

### **Solution:-**

We gave them a headline model SS150HP with a 1 micron sintered stainless steel 7 layer woven wire mesh element measuring 51mm Ø x 230mm long ( 0.0368556 sq. mtrs. of area or 48 times greater than their original units ). Sintered mesh is also absolute rated and more efficient.

### **Result:-**

By spending €2160 on a filter housing and €510 approx. on an element as opposed to €1.52 per element they have reduced the amount of reject product.

They estimate each filter they have bought from us has saved them €38100.00 already.