

Understanding Your Filtration Costs

Introduction:

Filtration is an important and necessary part of your process. It assures product quality, protects downstream equipment, allows for collection of expensive catalysts, etc.

Manufacturers, while recognizing the benefits of filtration, often look for ways to maintain quality while reducing overall filtration costs.

Filtration System Costs:

The most obvious cost of filtration is the cost of the elements themselves. However, there are other associated costs, including operating and disposal costs which can potentially exceed the costs of the filter elements themselves.

Only by comparing the direct and associated filtration costs of different filtration system choices, can a true cost/value analysis be made. Components of the total cost of a filtration system follow:

- **Element Costs** - The unit price of a given filter element
- **Operating Costs**

1. **Dirt Holding Capacity** - A filter element's dirt holding capacity directly affects its on-stream life. The longer the on-stream life, the less frequent the changeouts, thereby reducing element replacement costs, downtime, labor and disposal costs.

2. **Initial Element Pressure Drop** In general the lower the initial pressure drop, the longer an element will last in service, given equal removal ratings.

3. **Terminal Pressure Drop** - A typical recommendation is to change out filter elements at 35 PSID. However, frequently manufacturers change out filters more often to avoid pushing contaminant through the filter media.

4. **Maintenance Costs** - Filters should provide protection for downstream equipment. Inefficient filters will allow contaminant downstream which can then foul RO membranes, harm pump seals, erode close fitting metal parts or clog nozzles.

- **Changeout Costs**

1. **Downtime Costs** - For continuous processes, downtime associated with filter changeouts can be costly due to lost production. Similarly, for batch processes, mid-batch filter changes lengthen batch processing times and increase overall production costs.

2. **Labor Costs** - Regional differences will greatly impact the labor costs associated with filter changeouts. The higher your labor cost, the more costly is each filter changeout.

3. **Lost Fluid Costs** - The amount of fluid held up within a filter element is generally less with a pleated filter cartridge than it is with a depth filter. For some commodity chemicals or water systems, the lost fluid cost may be negligible. However, for more expensive fluids, such as photoemulsions these costs can become significant.

- **Disposal Costs**

1. **Filter Element Disposal Costs** Disposal costs have become significant, often exceeding the purchase price of a new element.

2. **Fluid Disposal Costs**-Fluids classified as harmful, hazardous or radioactive are extremely expensive to dispose of, as are the filters contaminated with this fluid.

For assistance please contact WACO.