

NR – Pressure Filters



**Horizontal and Vertical Pressure Filters
for
Municipal and Industrial Water treatment**



NR - Pressure Filter - Process Description

Napier Reid's pressure filtration systems are designed to carry out filtration in closed vessel under pressurized condition. As NR Pressure Filters have high filtration rate and ability to operate at higher pressure drop compared to gravity filters and the footprint is relatively smaller compared to conventional gravity filters.

In NR – Pressure Filters, the incoming raw water is distributed over the filtration area of the filter through our unique well designed flow distribution system. The water filters down through the different layers of the filter bed. The filtration media mechanically strains out dirt, suspended solids, sediment, algae, bacteria, microscopic worms, cryptosporidium and asbestos, color, odor, precipitates of iron /manganese and other impurities.

The filter bed is designed to capture and hold the suspended solids and impurities throughout the depth of the filter bed (and not just at the surface layer), hence increasing the solids holding capacity. Also the filter bed and internals are designed to prevent channeling and media upset. The capability of NR pressure filters to operate at higher terminal headlosses and higher solids holding capacity results in longer filter runs and a reduced backwash water requirement.

The filtered water is evenly collected over the filtration area by our unique water collection system that prevents channeling and short circuiting.

When the differential pressure across the filter increases beyond a preset value, the filter bed is backwashed to remove the entrapped impurities in the filter media bed and return the filter to its original filtration capacity. NR filters are equipped with air scouring system and efficient backwash water distribution system for effective backwash.



NR - Pressure Filtration Skid
OPG Lennox Power Generation Station
Bath, Ontario
Design Flow Rate: 197 m³ per day

Salient Features of NR - Pressure Filters

- High filtration rate up to 10 gpm/ft² (24 m/hr)
- High solids holding capacity, and ability to operate at high pressure loss, resulting in longer filter runs and reduced backwash water requirement as little as 2% of plant flow.
- High flexibility in mode of operation.
- Degree of automation can be provided as per client's requirement, from completely manual to fully automatic complete with automatic control valves, PLC / SCADA control package, and control panel.
- Available in vertical and horizontal configuration.
- Supplied with suitable media: dual bed, multi media bed, GAC or MD-80 catalytic media for iron and manganese, arsenic, H₂S removal.
- Well designed feed water distribution system.
- Efficient under-drain collection / backwash distribution system for minimal pressure drop and proper backwashing.
- Efficient backwash and air scour system.
- Package design and multi-tank configuration available. System can be supplied skid mounted, completely assembled, or loose for field assembly on concrete pads.
- Material of construction - Carbon steel or Fiberglass reinforced polyester (FRP), designed for 150 psig pressure.
- All CS vessels are designed and fabricated in accordance with ASME code. The vessel can be ASME "U" stamped if required.
- Carbon steel pressure vessel, interior NSF approved epoxy lined suitable for potable water service and prime exterior finished.
- All carbon steel vessels provided with lifting lugs and appropriate size man ways.



▲ **NR - Pressure GAC Tower**
 South Chatam, Ontario
 Design Flow of each tower:
 7600 m³ per day



▲ **NR - Horizontal Filters**
 Isashi, Lagos, Nigeria

- Smaller footprint compared to other systems.
- High degree of automation leads to reduced operator attention and lower O&M cost.

*Process designers of **Napier Reid** have over 300 years of cumulative experience.*

NR - Pressure Filter Applications

NR Pressure Filters are widely used for filtration of suspended solids and other impurities from:

- ▶ **Municipal Water**
- ▶ **Municipal Wastewater**
- ▶ **Surface water**
- ▶ **Ground water**
- ▶ **Industrial wastewater**



▶ **NR – Pressure Filters for Fe-Mn Removal**
 Innerkip, Ontario, Canada
 Design Flow 1296 m³ per day

▶ **NR - Pressure Filtration skid**
 c/w automatic valves & control panel
 Thamesford WTP, Ontario
 Design Flow 5520 m³ per day



About Napier - Reid

Over 60 years of excellence in water & wastewater treatment

Napier-Reid is located in the greater Toronto area in the Province of Ontario, Canada. We supply engineering services and process equipment for water and wastewater treatment.

We have the technology, resources and experience to design, manufacture and implement innovative water and wastewater treatment solutions worldwide. We have completed over 3000 projects since our inception in 1950. This stands as a testament of our ongoing commitment of providing the highest quality service, products and after sales support in the industry. Our capabilities include engineering, manufacturing, installation and field support. We have in-house personnel for complete mechanical, electrical and instrumentation process and control system design. As a manufacturer, our designs focus on cost-effective solutions, simplicity of installation and ease of maintenance.

Napier-Reid has developed an excellent team with many years of experience. We have a well-deserved reputation for innovation, service and integrity. A significant portion of Napier-Reid's business is now exported to regions such as the Caribbean, Central America, South America, Middle East, Eastern Europe, Africa, and Asia. Some of these projects are financed by Canadian government or International financing institutes. As a Canadian manufacturer, we are eligible for Canadian governmental funding and EDC export credit. We have the capability to handle a large range of projects, from engineering, equipment supply, installation, start-up, to turnkey projects. Let Napier-Reid be your single solution for water and wastewater purification.



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