

Phosphorus Removal

Blue PRO[®]

Advanced Phosphorus Removal

Blue PRO[®] uses reactive filtration to lower phosphorus to extremely low levels. Reactive filtration features continuous regeneration of reactive filter media within a moving bed filter.

A hydrous ferric oxide (HFO) coating is formed on the media surface, abraded away within the filter, and continuously regenerated. HFO allows adsorption of phosphorus, a more efficient removal mechanism than coagulation-filtration for removing contaminants to extremely low levels. Through adsorption Blue PRO[®] is able to achieve total phosphorus levels <0.010 mg/L.

Single-pass systems may meet total phosphorus regulations as low as 0.1 mg/L, depending on the influent concentration. Lower limits are achieved with two-pass systems, and reject recycle. With these alternative configurations, full-scale installations have reached <0.010 mg/L. Blue Water maintains an active research program to continually improve performance for limit-of-technology phosphorus removal results.

Blue PRO[®] is more cost effective than any other tertiary treatment technologies for phosphorus removal to low levels. It has lower operations and maintenance costs than biological phosphorus removal and MBR for phosphorus removal, and consumes less chemical than dosing schemes in secondary systems.

Advantages of Blue PRO[®] over other technologies:

- Low capital and O&M costs
- Continuous flow – no interruption for backwash or changing media
- Modular design easily handles capacity increases
- Simple operation, low chemical use, and no pH adjustment



Blue PRO[®] 1.5 MGD Installation

The Blue PRO[®] System

Blue PRO[®] systems are available in a number of configurations to accommodate any system size or phosphorus regulation. The filters are available as free-standing fiberglass units or as concrete fiberglass installations. Smaller units may be mounted on skid systems for mobility. The modular nature of the filters allows easy system expansion.

Waste particulates, including the iron and phosphorus, are continuously separated from the process flow. Reject recycle refers to the return of process residuals to an earlier point in a wastewater plant. Blue PRO[®] reject particulates contain significant adsorptive capacity. Recycling this material can achieve significant additional phosphorus reduction through the plant's secondary system, further reducing the final effluent phosphorus concentration. Phosphorus is not released in the secondary system or through digestion. No change is required in the plant's sludge handling system, plus the iron helps control odor and may produce a drier biosolid.

The Blue PRO[®] filters may also be used for denitrification, and this application may be combined with phosphorus removal. Nutrient removal projects are currently installed around the country. In addition, pilot projects are currently operating in several different states. Contact Blue Water for information about piloting at your location.

Blue PRO[®] applications include:

- Tertiary phosphorus removal
- Combined phosphorus removal and denitrification
- Combined phosphorus and algae removal



For more information, please contact Blue Water:

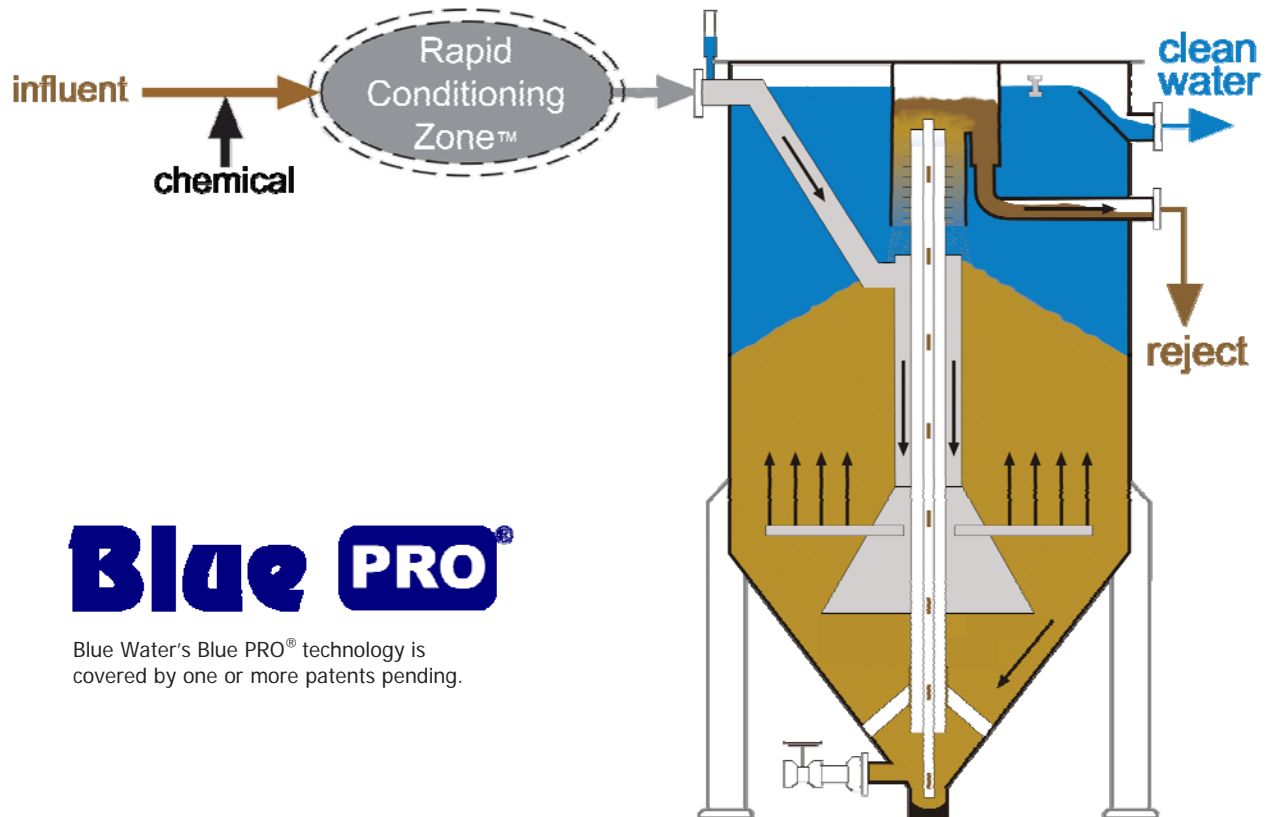
(888) 710-2583, sales@blueh2o.net, www.blueh2o.net

Blue Water for a Green World[®]



Modular Blue PRO[®] reactive filtration systems are available in the following models:

Blue PRO [®] Models	Flow Rate	Footprint
Skid systems	5-100 gpm	8' x 10' and up
CF-50 fiberglass	0.25 MGD	8' diameter
CF-50 concrete	0.25 MGD	7' x 7'
Quad concrete	1 MGD	15' x 15'



Blue Water is proud to offer a broad platform of water treatment technologies, from primary wastewater treatment to advanced effluent polishing steps to environmental remediation processes. We strive to meet our customers' needs cost-effectively, considering both capital expense and ongoing operations and maintenance costs. Additionally, we keep an eye on the future by looking for sustainability in our technologies, including environmentally friendly materials and energy conservation.