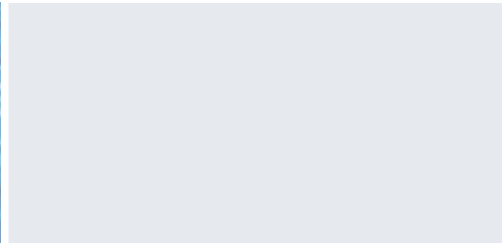
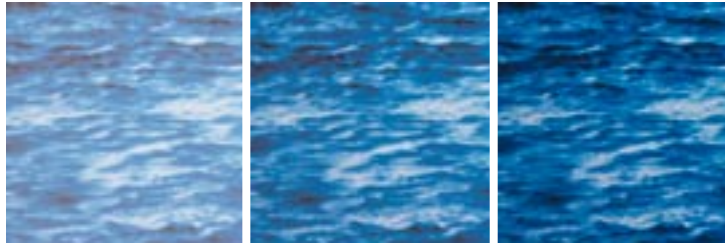


PWG arsenic removal solutions



The simple SOLUTION. By design.

Arsenic is a complex problem, but there's a simple solution for removing it. The *SORB 33™* System from *P W G* is economical, simple to operate and requires virtually no labor. And *SORB 33* delivers consistent, guaranteed performance.

In this simple pump-and-treat adsorption system, the contaminated water passes through a robust granular ferric oxide media, *Bayoxide® E33*, developed exclusively for Severn Trent and *PWG* by *Bayer AG*. As the water passes through the media at the wellhead, the arsenic is adsorbed and removed to a level below the drinking water standard of 10 micrograms per liter ($\mu\text{g}/\text{l}$).

The dry, crystalline media was designed with a high capacity for arsenic, providing long operating cycles and low operating costs. The exhausted media is non-hazardous and can be sent to a landfill, passing TCLP requirements.

To keep your costs even lower, the *SORB 33* system requires no cleaning, no regeneration and no complex, labor-intensive steps.

Severn Trent engineers the *SORB 33* systems in any size, accommodating any flow rate, so the largest municipalities or the smallest village wellhead can benefit from this simple, cost-effective approach to a difficult problem.

SORB 33 isn't just the simple solution. It's the proven solution. *SORB 33* has been proven effective in full-scale commercial applications since 1999. For more than a decade, Severn Trent and *PWG* have been actively involved in developing arsenic removal solutions to address this global concern.

a DECADE of development

1994

Severn Trent Arsenic Removal Research Begins

1996

Severn Trent Arsenic Removal Pilot Work Started

Severn Trent Arsenic Media Development Initiated

1997

Severn Trent Arsenic Removal Full Scale Implementation Design Initiated
Partnership with Bayer AG

Commercial Product Available (Bayoxide® E33)

1999

Burton Joyce, Nottinghamshire, North Midlands, UK
5.3 MGD SORB 33 installation

2000

First U.S. SORB 33 Pilot, New Mexico

2001

Chaddesley Corbett, Worcestershire, Midlands, UK
1.9 MGD SORB 33 installation

SORB 33 APU Standard System Design Complete
Small Water Systems

2002

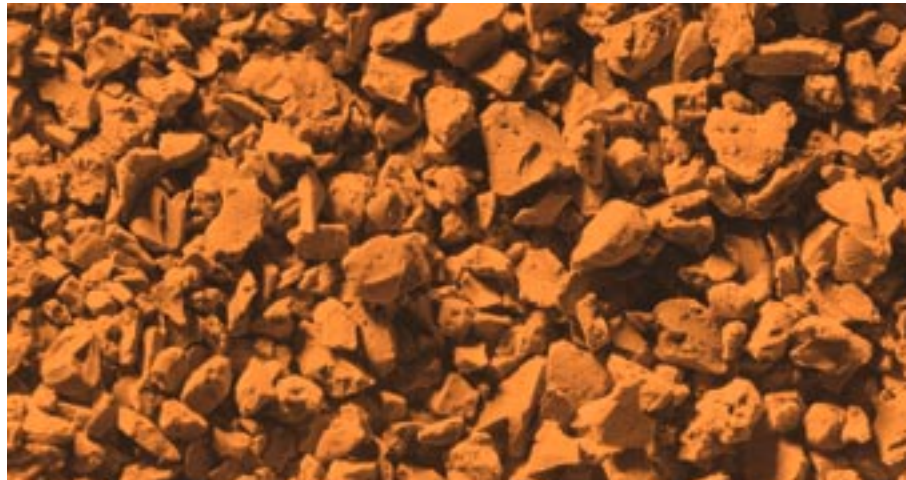
Arizona SWS 10 GPM Installed

Alaska Airlines SWS Installed

2003

Hilton, Shropshire, Midlands, UK
6.0 MGD SORB 33 installation

46.4 MGD Installed & Operational



The **DIFFERENCE** is simple.

- *Consistent, high quality Bayoxide® E33 media*
- *Manufacturing capacity to meet market demand*
- *A decade of global arsenic removal experience*
- *Proven in full-scale operations since 1999*
- *Cost effective treatment option*
- *Guaranteed performance*
- *Simple operation and maintenance*

SORB 33 features

- *Removes both As (III) and As (V)*
- *Robust dry media with high capacity for arsenic*
- *Bayoxide® E33 media life up to 2 years under continuous use*
- *Very low residual effluents: < 0.1% of water treated*
- *No re-pumping*
- *No chemicals for regeneration*
- *Low maintenance – no moving parts*
- *Small footprint*
- *NSF Standard 61 Approved Media*

SORB 33 benefits

- *Low capital costs*
- *Low operating costs*
- *Readily available media in any quantity*
- *Easy disposal of spent media – no hazardous waste generated*
- *Low extractables*
- *Low shipping cost and long shelf life of dry media*
- *Unattended operation – no manpower required*



The SIMPLE solution is also the COST-EFFECTIVE solution.

Lower costs are engineered into every aspect of *PWG SORB 33™ System*.

The *Bayoxide® E33* media is crystalline, so it's robust, ships dry, is easy to handle and has a longer shelf life than competitive iron-based media. The media was designed for long use. Depending on your water quality, the media can last up years.

After use, the media isn't hazardous waste as measured by TCLP, so there's no costly disposal. The *SORB 33* system uses no chemicals and never needs cleaning. It wastes less than 0.1% of your water, compared to up to 25% for other technologies.

For most applications, the *SORB 33* arsenic adsorption system is the simplest and most cost effective solution on the market—compared to reverse osmosis, ion exchange, activated alumina, coagulation microfiltration and others.





RELIABILITY you can trust from companies you know.

The *SORB 33™* arsenic removal system is the result of a powerful partnership between one of the most trusted names in water and wastewater treatment and the global leader in technical oxide production.

Severn Trent Services provides innovative water and wastewater treatment solutions for municipal, industrial and commercial use. They offer extensive operating, pipeline and environmental service solutions; including managing more than 600 treatment facilities in the U.S. alone.

When Severn Trent set out to develop the *SORB 33* system in 1995, they knew that consistent performance depended on high quality media. Just as important, Severn Trent wanted to partner with a manufacturer with the capacity to meet future worldwide demand. So they turned to the world's largest technical oxide producer, [Bayer AG](#).

[Bayer AG](#) developed the [Bayoxide® E33](#) media in cooperation with Severn Trent. [Bayer AG](#) has the capacity to produce 300,000 tons per year of iron oxides, so your community is assured that this highly effective, low-maintenance dry media will be available no matter what future markets demand.

You can depend on *Suko* as your exclusive supplier of adsorptive media or as your partner in building and maintaining a customized arsenic removal solution for your operation. Either way, *Bayoxide E33* is the simple solution—and the simple decision.

SORB 33™ As Removal Package Unit for Arsenic Removal in Drinking Water

The PWG SORB 33™ Arsenic removal system is a proven adsorption process designed specifically for drinking water sources.

The process utilises Bayoxide® E33, which is a granular ferric oxy hydroxide adsorbent. The process provides a simple and economical solution for drinking water purification.

The SORB™ 33 Process was originally designed for Municipal water applications but the introduction of the As Removal Package Unit (APU) now means this proven technology is available to the Private and Commercial user. The APU range of systems offer the following features:

- ◆ Simple adsorption process with automatic backwash operation
- ◆ Arsenic removal to $<10\mu\text{g/l}$
- ◆ No regenerate chemicals as the media is simply removed and replaced when exhausted
- ◆ High selectivity provides for long bed life of 1 to 3 years in most applications
- ◆ Spent media passes TCLP for easy landfill disposal as a non-hazardous waste

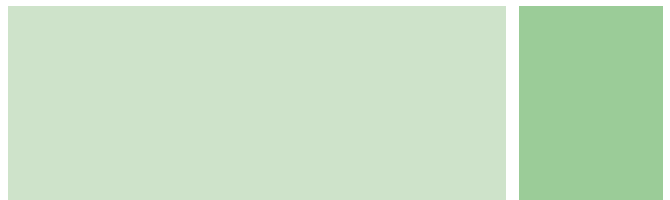


Typical applications for the APU system include:

- ◆ Bottled Water Production
- ◆ Food and Beverage
- ◆ Factories and Process
- ◆ Private Wells

.....and many more

Even if your application falls outside these the SORB 33 process can be adapted to meet it.

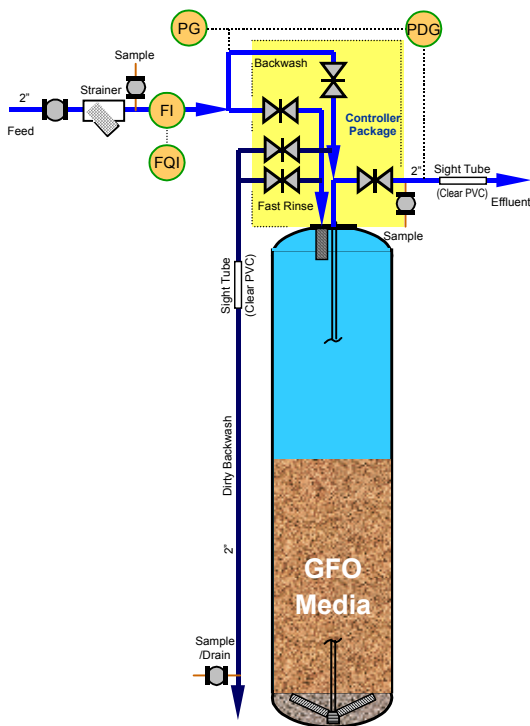


APU SYSTEM RANGE TECHNICAL INFORMATION

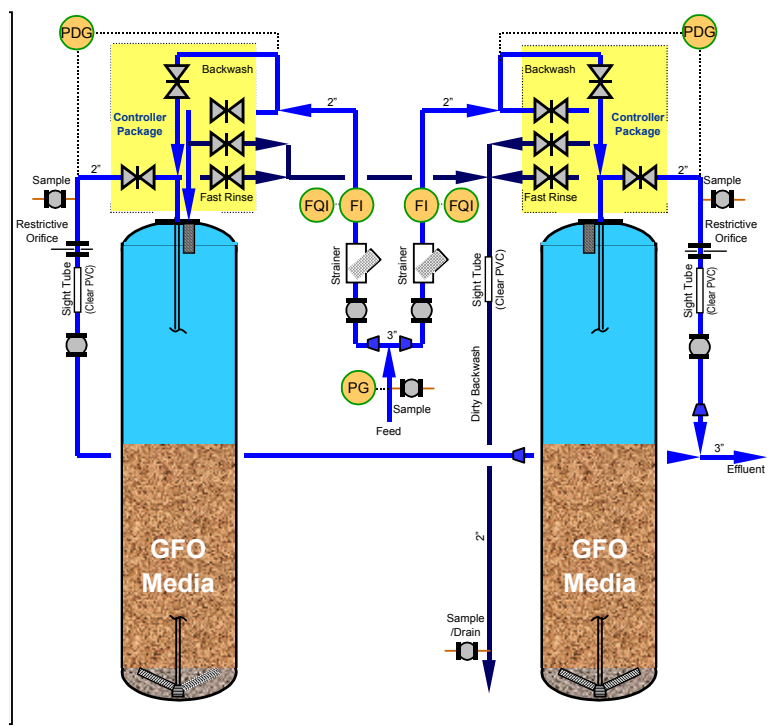
Model	APU-007	APU-010	APU-020	APU-040	APU-050	APU-100
Normal Flow m ³ /hr	0.7	1.14	3.60	7.30	9.10	18.20
Capacity, g of As	175	275	813	1625	1875	3750
No of Vessels	1	1	1	2	1	2
Bayoxide E33 Media Volume (litres)	70	110	325	650	750	1500
Backwash m ³ /hr	1.1	1.4	4.2	4.2	9.5	9.5
Inlet/Outlet in	¾	1	1½	1½	2	2
Skid Dimensions Approx mm (LxWxH)	400x400x1600	460x460x1840	710x710x2030	1420x710x2030	1020x1020x2040	2040x1020x2040

The operating pressure range is 1.5 to 5.0 bar, with a maximum allowable pressure drop of 0.5 bar. Backwash is controlled via a time clock or volume treated. Electrical rating 24v, 50Hz.

UNIT PROCESS CONFIGURATION



APU 007/010/020/050



APU 040/100



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