



# ALAR FLEX-O-STAR®

## AUTOMATIC INDUSTRIAL WASTEWATER TREATMENT SYSTEM WITH AUTO-VAC® FILTER TECHNOLOGY

THE FLEX-O-STAR® WATER POLLUTION CONTROL SYSTEM REMOVES SOLID CONTAMINANTS FROM INDUSTRIAL WASTEWATER THROUGH CHEMICAL TREATMENT AND FILTRATION.

ALAR designed the Flex-O-Star® for companies in need of an industrial wastewater treatment system that complies with environmental discharge limits. The PLC and pneumatic controlled Flex-O-Star® provides automatic chemical pretreatment followed by the Auto-Vac® dewatering filter.

Skid mounted, pre-piped and pre-wired for easy installation, the Flex-O-Star® offers a variety of chemical pretreatment options coupled with a self-cleaning microfiltration system. The universal design works with virtually any liquid waste and provides comprehensive industrial wastewater treatment for water-based effluents, slurries, and problem wash waters.



**ALAR**™

An Ovivo Company



### Contact Alar

Alar Water Treatment LLC.  
(708) 479-6100  
alarinfo@ovivowater.com

WASTEWATER TREATMENT EQUIPMENT MANUFACTURER

**AlarCorp.com**

## FLEX-O-STAR BENEFITS

ALAR designed the Flex-O-Star® for commercial production and manufacturing companies in need of a batch or continuous flow industrial wastewater pretreatment system. The Flex-O-Star® automatically delivers a measured amount of chemicals to separate the contaminants from the water, then pumps the treated wastewater to the Auto-Vac® filter. This process significantly reduces pollutants such as TSS, Oil & Grease [FOG], Heavy Metals and Insoluble BOD in one pass; typically without the need for a DAF, Clarifier, or large doses of polymer. The Flex-O-Star® handles a majority of wastewater applications with simple pH / ORP adjustment prior to filtration.

ALAR OFFERS SIXTEEN (16) FLEX-O-STAR® SIZES. THE INCOMING SOLIDS OR CONTAMINANT LOADING, VOLUME AND AMOUNT OF FILTRATION HOURS PER DAY WILL FACTOR INTO THE TREATMENT TANK AND FILTER SIZE NEEDED

The Flex-O-Star® is pre-piped, pre-wired and mounted on a structural epoxy painted carbon steel skid; available with carbon or stainless steel contact wetted parts and FRP tanks. The system operates via PLC and pneumatic valve controls with automatic control points mounted and programmed into the control panel.

Standard components include a dish bottom treatment tank with turbine mixer and conductivity level control probes, ground-access sampling port, filter feed pump, automatic chemical delivery, pH loop monitoring system, NEMA 12 control panel, Allen Bradley PLC, PanelView 7" color touch screen, and Auto-Vac® rotary vacuum drum precoat filter technology.

## HOW IT WORKS

### FLEX-O-STAR'S TWO-STEP LIQUID SOLID SEPARATION PROCESS

#### STEP 1

##### CHEMICAL SEPARATION

The first step utilizes a chemical batch treatment tank with turbine mixer, along with various combinations of automatic pH, ORP and polymer (coagulant, flocculent) feed systems.

Chemical pre-treatment increases the size and weight of the sub-micron particles in the wastewater. These particles are heavier than the liquid and fall "out of solution" in order to become filterable. However,

the solids remain in suspension through continuous mixing – no settling needed.

In most cases, the chemical separation step only requires a pH adjustment in order to precipitate the solids. The Auto-Vac® filter removes solids larger than one-micron (about half the size of a human red blood cell), and does not require a thick "oatmeal-sized" floc or concentrated settled sludge.

#### STEP 2

##### MECHANICAL SEPARATION

The second step utilizes the Auto-Vac® dewatering filter technology to physically remove the precipitated solid particles from the liquid.

The Auto-Vac is a self-cleaning rotary vacuum drum precoat filter; capable of producing one-micron quality [non potable] water and dewatered, dry, [landfill-ready] solids.

An Auto-Vac® utilizes a liquid ring vacuum pump that pulls water through a precoat drum filter while drawing out moisture from suspended solids. The inside of the drum is hollow; the outside consists of a wedge wire screen covered by a polypropylene cloth. The drum rotates in a trough [filter pan] with one-third submerged in liquid and two-thirds exposed to ambient air.

When activated, and before filtering the pretreated wastewater, the drum surface is precoat with a consumable filter aid media "cake". ALAR specializes in microfiltration grade Diatomaceous Earth [DE] and Perlite that captures particle sizes larger than one-micron [1-um] on the cake surface and allows

sub-micron quality effluent to pass through the filter media.

After completing the drum precoat cycle, wastewater pumps into the pan at a controlled rate. The vacuum pulls the filtered water [liquid] through the precoat drum and discharges it. Suspended solids; precipitated metals; or de-emulsified fat, oil and grease larger than one-micron will accumulate on the filter cake surface. These solids build with each revolution of the drum until the vacuum cannot draw any more water through. At this point, a stepping motor activates an adjustable speed Stellite blade that removes the top layer of blinding solids with lathe-like precision. The blade also shaves off a slight amount of filter aid cake as it advances toward the drum; leaving a clean layer of media to grab more solids with a consistent flow of filtered water.

The filtrate pumps to city sewer discharge or a non-potable clean water tank for reuse. The dewatered, dry solids fall into a dumpster or roll-off container for landfill disposal.



An Ovivo Company

#### Contact Alar

Alar Water Treatment LLC.  
(708) 479-6100  
alarinfo@ovivowater.com

WASTEWATER TREATMENT EQUIPMENT MANUFACTURER

**AlarCorp.com**