DynaSand® EcoWash™ Filter

– Reduces reject (backwash)

– Reduces operation and maintenance costs

– Improves energy efficiency

– Improves filtrate quality

A Breakthrough in Filtration

Why this product has been developed

Throughout the past three decades, the DynaSand® continuous backwashing filter has been successfully applied to thousands of installations, providing optimum performance and filtrate quality while offering minimal operator attention and maintenance requirements. A perception in the industry is that continuous filters like the DynaSand® Filter produce more total reject (backwash) than intermittent backwashing filters. Customers desire better quality to meet legislative and effluent requirements while minimizing total reject. The cost of reprocessing excess reject is a major concern as well. This product has been developed to:

– Reduce reject/backwash rate
– Reduce operation and maintenance costs
– Improve energy efficiency
– Improve filtrate quality

How the EcoWash™ works

The DynaSand® EcoWash™ Filter allows continuous operation while utilizing timed or programmable sand circulation and washing to reduce the volume of backwash water being produced. One factor that has made such an operation difficult in the past has been that continuous filters can suffer from a decrease in filtrate quality whenever the washing operation is restarted. The DynaSand® EcoWash™ Filter overcomes this phenomenon so that filtrate quality is stable and remains within guidelines, and on average, EcoWash™ produces better quality filtrate than the traditional continuous backwash method.

The DynaSand® EcoWash™ Filter uses a reliable sand movement detection that is tied to an alarm and monitored in the control room. Through modifications to the airlift design and operation, consistent sand movement is assured. When the system is not backwashing, the reject line is automatically closed, dramatically reducing reject water.

Backwashing is controlled by one of the two modes chosen by the operator. The frequency and length of time for the backwashing operation can be adjusted based on individual plant's influent conditions.

Differential Pressure Controlled Mode

– Inlet/outlet levels measured
– Airlift/reject starts at programmed point
– Operates until differential is reduced to either minimum point or for a set period of time
– Timer override to assure periodic sand washing

Timer Controlled Mode

– Operator programs timer
– Timer initiates sand washing
– Differential pressure overrides timer

CENTRAL CONTROL PANEL WITH H...

DIFFERENTIAL PRESSURE MONITORING

SAND MOVEMENT VERIFICATION SYSTEM

INFLUENT
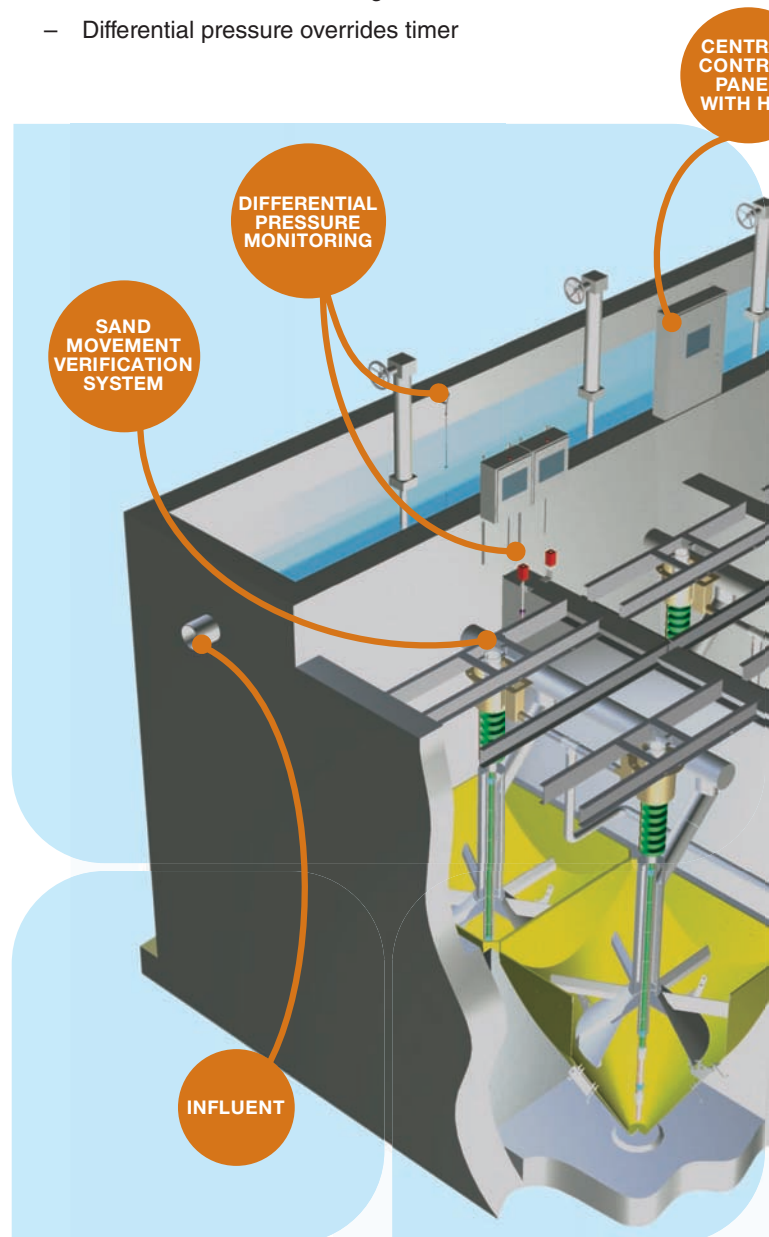
Benefits

- Reduces reject water production by 60% to 90%
- Savings from reduction in cost of reprocessing reject
- Reduces energy requirement by 60% to 90%
- Increases airlift life
- Reduces maintenance on air compressor system
- Reduces pretreatment chemical usage
- Minimal maintenance and operator attention

Features

Sand Movement Verification System

- Programmed dual airburst and normal operation
- No sand movement alarm
- Remote monitoring ability

Reject Water Reduction Process Control

- Automatic reject control valve
- Programmed differential pressure control
- Programmed time control

Central Control Panel

- PLC based electrical control panel equipped with a touch screen HMI
- Ethernet communication with plant SCADA system
- Ethernet TCP/IP to communicate with other plant PLCs over the network
- HMI equipped with data logger and remote monitoring capability
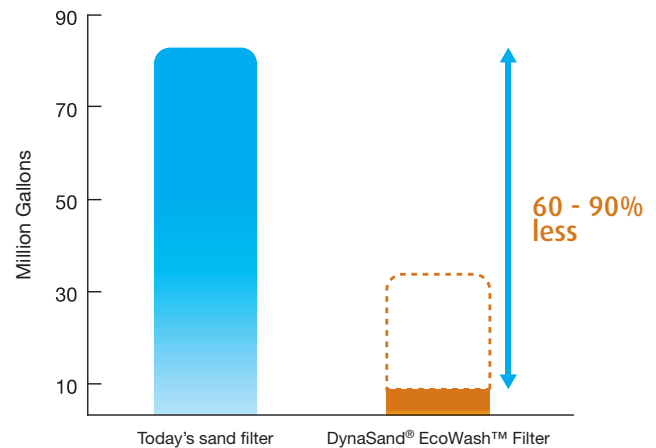
Cell Air Control Panel

- Solenoids to control dual airburst, and normal airlift operation
- Solenoid to control reject valve
- Air pressure regulator and pressure gauge
- Back pressure gauge and airflow meter

Sand Movement Verification System

CELL AIR CONTROL PANEL

REJECT WATER REDUCTION CONTROL VALVE

EFFLUENT
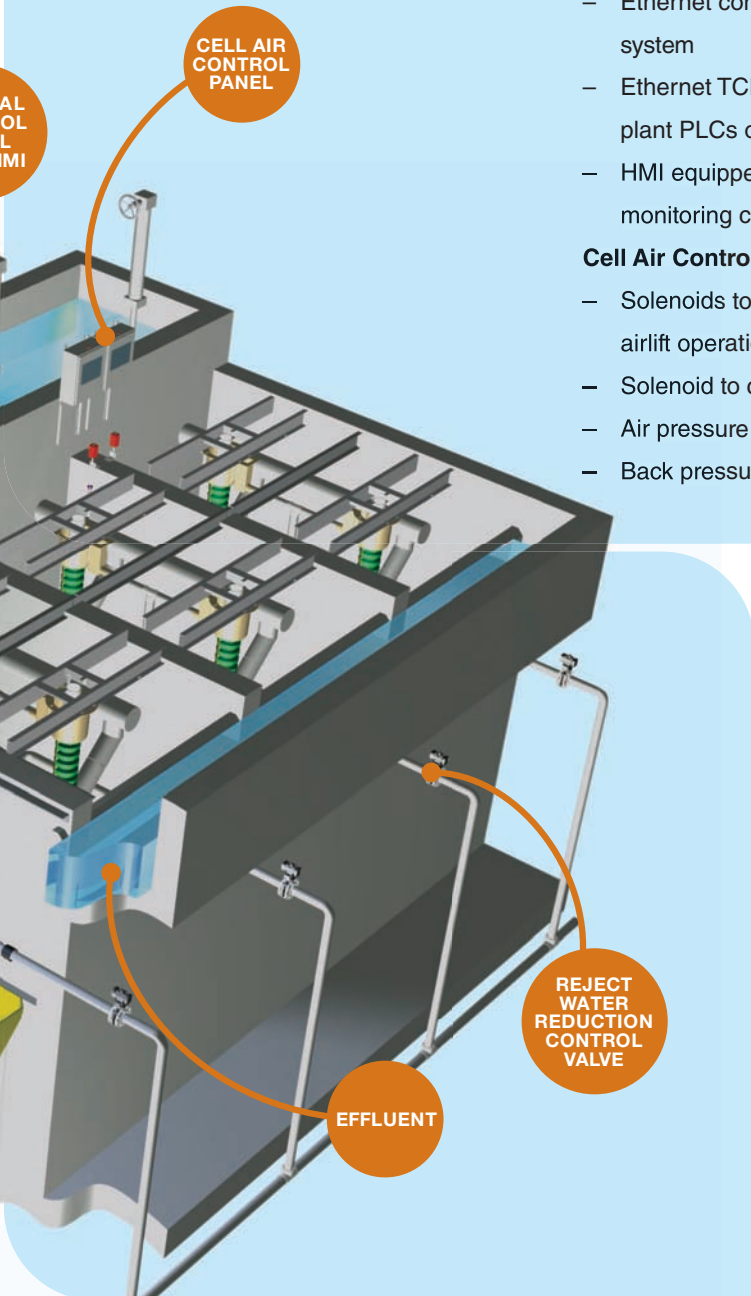
Annual Reject Water Production

Million Gallons

90

70

50

30

10

Today's sand filter

DynaSand® EcoWash™ Filter

60 - 90% less

16 Filters (50 SqFt), 5.76 MGD facility, typical reject 10 gpm/filter

What does this mean to the end user?

Most important to plant operations, The DynaSand® EcoWash™ Filter provides superior performance.

- – Reduces operator and maintenance personnel attention
- – No need to check sand movement during each shift
- – The filter signals when a check is required
- – Reduces the amount of reject (backwash) generated by 60-90%
- – Significantly reduces capacity loss and the costs associated with reprocessing backwash water
- – Energy requirement is 60-90% less than any continuous backwashing sand filter
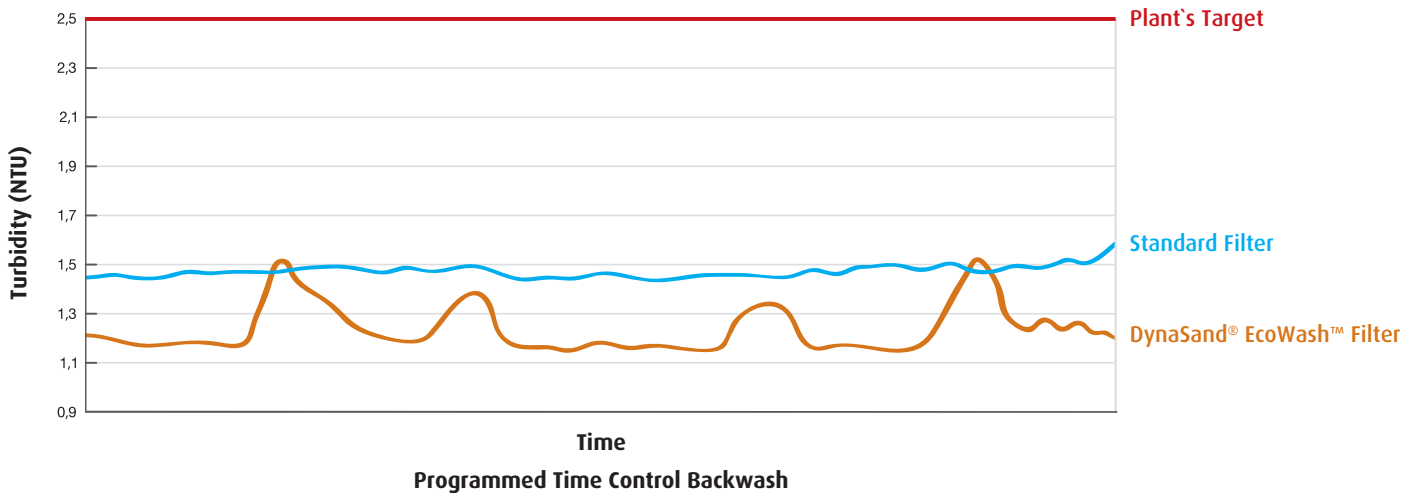
City of Pompano Beach OASIS Reuse Water Utilities DynaSand® EcoWash™ Filter Full Scale Testing – Operating Parameters

	DynaSand® EcoWash™ Filter Test Cell	Plant Filter's Standard Operation Cell
Flow Rate	3.5 gpm/SqFt	3.5 gpm/SqFt
Air Flow/Pressure	80 SCFH @ 8 psi	80 SCFH @ 8 psi
Typical Turbidity	1.29 NTU	1.50 NTU
Average Reject Flow	**1.8 gpm**/50 SqFt filter	**18.0 gpm**/50 SqFt filter
Annual Power Consumption	23,400 kWh*	234,000 kWh*
Annual Power Consumption Cost	$1,750**	$17,500**

*Based on plant's 75 HP Air Compressor
**Average Florida Industry Cost - $.075 per kWh

DynaSand® EcoWash™ Filter Full Scale Testing Results

Turbidity (NTU) vs Time — Programmed Time Control Backwash. Plant's Target, Standard Filter, DynaSand® EcoWash™ Filter

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