

NEXT REVOLUTION
DynaLOX – Filter

PREMIUM QUALITY
MADE IN GERMANY

WATCH[®]
ER
WATCH WATER
a Water Company

We make a difference.

DynaLOX-Filter

Continuous filters - proven technology with the latest innovations

INTRODUCTION

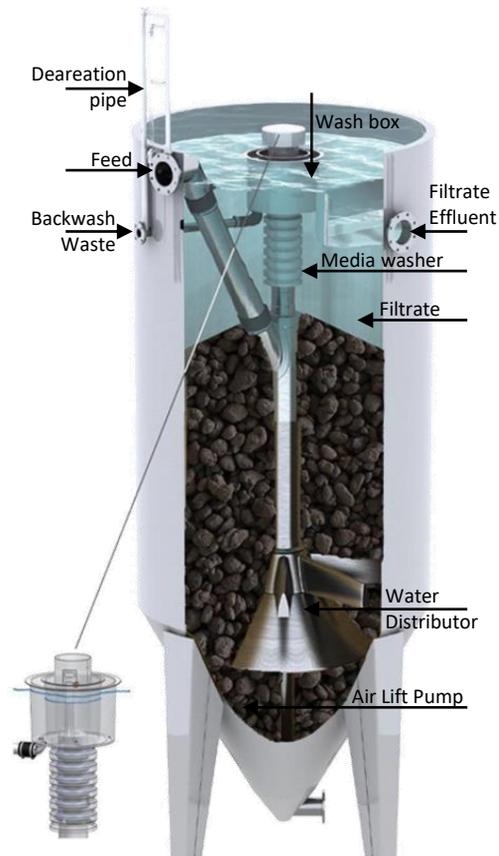
DynaLOX – Filter is **dynamic, powerful, energetic** and a **continuous** filtration process method used to manufacture clean and fresh water without any interruption or backwash and rinse. The word continuous means **operating 24 hours a day, 7 days a week** and can operate for more than one or two years without a shut down. Shutting down and backwashing, rinsing, processes results in high amount of waste water and unwanted chemical demand. **DynaLOX – Filter** is a process which is based on Fluidization. In this process water is passed upflow through the **Katalox Light** media.

HIGH FLOW
&
NO BACKWASH

CHEMISTRY, WATER CHALLENGES
AND
SOLUTIONS

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“A KATALOX-PROCESS DISCOVERED BY
WATCH-WATER TO CLEAN WATER AND
REMOVE IRON, MANGANESE AND
HYDROGEN SULFIDE FROM WATER
MORE EFFICIENTLY”



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Wash water and energy reduction

The amount of wash water used can be significantly reduced by running the Katalox Light pump intermittently. This is achieved by the use of an optional wash water valve, and a solenoid in the pneumatic cabinet. This is especially valuable in ground water treatment, but has proven equally effective also in other applications such as in waste water applications, e.g. tertiary treatment. When running the Katalox Light pump in cycles the energy cost is also reduced due to the decrease of the air consumption, and letting the Katalox Light bed rest intermittently can result in a higher quality filtrate.

PROVEN PROCESS

The **DynaLOX** is an up-flow, moving bed filter that is constructed with highly advanced media depths for different applications and configurations. Raw water enters near the top and is led to the bottom of the tank by means of a water distributor. **Iron, Manganese, Hydrogen sulfide, Arsenic and other heavy metals** are filtered out as the raw water flows up through the media bed. As the water reaches the top of the filter, it passes over the effluent weir as filtrate and is discharged. A small portion of the filtrate is diverted through the media washer and used for cleaning and transferring the waste solids.

The **DynaLOX** filter employs a backwash rinse that is performed continually while the tank is processing water. An air lift pump, located at the centre of the module draws the media from the bottom of the filter up into the wash box. As the media is released into the wash box, it falls into the media washer where the filtered solids are separated from the Katalox Light. From there, the filtrate carries the solids out as waste (backwash). The washed Katalox Light falls down onto the media bed for continued use.

Each air lift pump is adjusted and regulated by the pneumatic cabinet supplied with the installation.

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DynaLOX – Filter *process design and applications*

DynaLOX is used to solve purification problems in drinking water treatment, industrial water supply, recovery and reuse of water and treatment of wastewater before discharge. Customers are public utilities, pulp and paper industry, iron and steel industry, chemical process industry, pharmaceutical industry, mining and mineral industry, food industry, power plants, incineration plants, metal finishing and electroplating industry and others who use and process water.

Continuous Contact Filtration is used to produce process water and drinking water from river or lake water and for certain wastewater applications. The flocculation chemicals are mixed into the feed stream of the **DynaLOX – Filter**(s). The first part of the filter bed provides excellent conditions for fast floc formation and serves as flocculation reactor. No flocculation tanks are required. Presetting can be eliminated because of **DynaLOX**'s ability to handle high concentrations of solids.

Process Water Recycling reduces water consumption and permits full control of the water quality. After screening or primary settling, spent process water is pumped to the **DynaLOX – Filter**. The filtered water is recycled. Wash water is flocculated and thickened. The overflow from the thickener goes back to the filters.

Tertiary Filtration is used for final treatment of wastewater before discharge. **Contact filtration with aluminum or iron salts as flocculation agents may be employed, as required, to precipitate phosphorous and enhance suspended solids removal.** The end product meets the highest environmental standards applicable to municipal wastewaters and industrial effluents. The final filtration process can be combined with biological denitrification. Nitrates are converted to nitrogen gas by a thin film of active bacteria on the filter granules.

Treatment of Metal-Bearing Industrial Effluents includes precipitation of the metallic ions, followed by flocculation, sedimentation, and final filtration in a **DynaLOX – Filter**. The process produces low residual metal contents and meets strict environmental standards.

KATALOX
LIGHT™

In most applications the filter media is by Watch Water manufactured highly advanced Katalox Light.

Normally the Katalox Light in the filter does not need replacing, but a small amount of refill may be needed on a yearly basis (abt. 0.3% of the volume). Particular material is used in bio activated filters.

DynaLOX Carbon is a special version with catalytic carbon as media.



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PROCESS APPLICATIONS

The requirements for water treatment are being increasingly regulated by new laws and regulations. This means that more powerful and efficient equipment is needed. The **DynaLOX – Filters** by **Watch Water** provide an economic and energy saving method.

The **DynaLOX** continuous contact filter can be applied in both municipal wastewater and industrial water treatment processes. Whether you need reuse of quality water, nutrient removal, industrial water treatment, or raw water treatment, **DynaLOX** by **Watch Water** opens up for new process solutions and delivers unparalleled effluent quality, meeting the highest of environmental standards:

- **Removal of Iron, Manganese, Hydrogen sulfide, Arsenic and other heavy metals**
- **Suspended solids reduction**
- Two stage Continuous Contact Filtration
- Nitrogen removal (denitrification and nitrification)
- Phosphorous removal
- BOD/CO D removal
- Activated Carbon treatment
- Treatment of metal-bearing effluents
- Pretreatment to other processes

Advantages - DynaLOX

... improves the process

- **No first filtrate – always clean effluent of a high quality**
- **High suspended solids, gases, metals / heavy metals without need for pre-treatment**
- No shock loads on the wash water treatment system
- Low head loss
- Low energy consumption
- Low supervision and maintenance costs
- No interruption of the operation for backwashing
- Small footprint

... simplifies the system

- **No need for backwash pumps**
- No wash water storage tanks
- No wash water collecting tanks
- No need for backwash automation
- No air scour blower
- No clogging filter bottom nozzles
- Single media filter bed
- The system is easy to construct and easy to maintain
- Easy retrofitting for biological treatment

... examples of Industrial Applications

- **Metal finishing**
- Backwash water recovery
- Process water
- Cooling tower blowdown/side stream filtration
- Steel mill scale
- Chemical processing
- Ideal for pretreatment in lieu of gravity filters



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Katalox Light specifications

KATALOX LIGHT [®] is a new brand of revolutionary advanced filtration media completely developed in Germany. It's composition simply makes it outstanding against the contemporary filter media available in water treatment industries, like sand, BIRM, Greensand Plus, Manganese Greensand etc. **KATALOX LIGHT** [®] is manufactured in Germany.

KATALOX LIGHT [®] is engineered with unique MnO₂ coating technique on **ZEOSORB** [®], providing it light weight, higher filtration surface, more service life and more reliable performance (filtration down to 3 µm) than any other existing granular filter media.

KATALOX LIGHT [®] is being used in numerous system for residential, commercial, industrial and municipal applications worldwide, for High level filtration, color and odor removal, Iron, Manganese, Hydrogen sulfide removal, efficient reduction of Arsenic, Zinc, Copper, Lead, Radium, Uranium and other radionuclides and heavy metals.

KATALOX LIGHT [®] is WQA Certified to meet ANSI/NSF 61 standard for drinking water applications and has met the ANSI/ NSF 372 Lead free compliance.

Physical Properties

Appearance		Granular black beads
Odor		none
Mesh size	US SI	14 x 30 0.6 – 1.4 mm
Uniformity Coefficient		≤ 1.75
Bulk density	US SI	66 lb. / ft ³ 1060 kg / m ³
Moisture Content		< 0.5 % as shipped
Filtration		< 3 micron

Advanced use

High concentration coating of MnO₂ on **the KATALOX LIGHT** [®] surface (10%) is the biggest advantage compared to any similar product available in the market. This makes the oxidation and co-precipitation of contaminants much more effective. For removal of very high concentration of contaminant it's recommended to use H₂O₂ as an oxidizer, which provides accelerated catalytic oxidation on the surface of the media. Conventional oxidizing agents like chlorine or potassium permanganate also could be used if required.

KATALOX LIGHT [®] can be used for Arsenic, Radium, Uranium removal but in these cases there is requirement of Iron in the water. **KATALOX LIGHT** [®] system is designed with special iron dosing technology which has many advantages over Adsorbent media used for Heavy Metal removal.

The Future

The future of water treatment, as we see it, is going to give us more difficult challenges and we all need more advanced and robust products.

In Watch Water[®]'s vision, **KATALOX LIGHT** [®] can be addressed for advanced concepts like Water Reuse, Controlled Adsorption of Arsenic and Heavy Metals, advanced Membrane pre-treatment, Zero-Discharge Cooling tower etc.

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For more information please check our **KATALOX LIGHT** [®] homepage and brochure.

www.watchwater.de