MAJOR COMPONENTS OF WATER TREATMENT SYSTEM

CALPLAS TANK:

The following points briefly describe the difference between CALPLAS and any other manufacturer

Calplas filters are unique worldwide and its advantages are based on three steps: Best manufacturing materials, complete liability and internal hydraulics.

Materials

CALPLAS have been using polyester for filter manufacturing for more than 50 years. No matter how the environment is Calplas filters do not have corrosion or welding failures (like steel tanks).

Polyester Type

Calplas uses hand layup technology. This means that the fiberglass reinforcement is just working in the principal stress directions: vertical and horizontal. Other technologies which are mixed in other manufacturers not only do not have these fiberglass properties, but they have parts where the fiberglass orientation is in all directions. From the technical point of view this implies some random behavior of the material.

This technology is also key to have precise and unique mechanical properties this is the reason why a Calplas filter under pressure do not expand while all others do it. This "expansion" due to the reasons mentioned above, is dangerous in the long term and causes undesirable stress and fatigue after some years.

Fiberglass view. It is key that the fiberglass is vertially and horizontally oriented

Steel Inside

Steel is obviously a good material for structures and industrial parts which are under certain mechanical stress. However, because of corrosion it is not the best choice whenever water is around, and pressure vessels are internally full of water. So, why do not combine a noncorrosive material such as GRP taking its non-corrosive properties as an advantage and use steel internal parts that will never be in contact with water as reinforcements in the vessel critical points?

CALPLAS is unique in having steel reinforcements in key and critical parts. The nozzle plate is internally reinforced by a steel grid specially designed for each diameter. Manholes and emptying holes have also steel reinforcements. This use of steel and the way to use it in critical points of the vessels, allows CALPLAS to have a big market in water treatment with high pressures where no other manufacturer can compete. Water treatment field does not allow a single mistake (a factory cannot be stopped). As a result, Calplas tanks are as strong as steel tanks avoiding the common steel tanks problems such as welding failures, corrosion and so on.

Steel must not be in contact with water. Different steel parts are used in a calplas tanks. All embedded inside polyester.

Complete liability

There are two parameters for good liability. The first is a proper design. For example, the tank thickness must be according to the forces created by the internal pressure, another example is that a wall must be reinforced when a manhole or a sight glass is added.

But there is a second issue: leakages. No matter how strong a filter is built but if there is a path the water will find it and come out of the filter. In Calplas we build strong filters according to international standards, but we also take special care about finishing. Our vast experience in filter manufacturing is the key for the lack of failures of our products. In steel filters leakages can be found in connections and welding areas. A good design and manufacturing must take into account.

Hydraulics

This is the key parameter of a good filtration unit. There are two steps in the filtration cycle. One is filtration, the other is backwashing.

During filtration, the top distributor and the bottom collector system must allow an even flow through the filtration media. The top diffuser must distribute the water through the complete filtering surface.

During the backwash process, the water flow goes upwards. The flow rate must be strong enough so that it can remove particles from the filtering media. On the other hand, the internal bottom distributor must distribute the water in such a way that it goes through the complete filtering surface. If any of the previous fails, the actual filtering surface will be reduced and so the performance in the filter.

In Calplas we consider the hydraulics inside the filter a key factor. We strongly recommend in our tanks (and in any other tank) a sight glass, in order to check a proper media expansion and particle removal during the backwash cycle.

Sanitization

Usually hot water sanitization is not suitable for both AFM and Calplas filter. Repated hot water sanitizations can eventually reduce the activity of AFM. AFM is bio-resistance materials to protect bio-fouling. Hence, physico-chemical Sanitization; regular back wash as recommanded followed by periodic cleaning with slghtly acidified water is suffciient to keep Calplas with AFM clean to achieve máximum filtering efficiency.

CALPLAS & AFM

Calplas filters have been using AFM for more than 15 years. Since water quality is the target for both Calplas and AFM customers, many projects include today a CALPLAS-AFM filtration system. As explained previously, Calplas filters design allows the complete use of the filtration surface. On the other hand, Calplas filters assure optimal backwash process even for backwash velocities of 50m/h. As a result, AFM filtration media very efficient, and is able to remove particles, heavy metals and so on. Calplas design has proven to Help AFM to do it, job, compared to other filters where the lacks of internal calculations do not allow a good performance of the AFM.

Activated Filtration Media (AFM): Used as filtration media of the potable water generation, drinking water generation and industrial process water generation in different industrious.

Product Information

Compositions:	Green & amber up-cycled glass. Optimized mechanical filtration performance with activated mesoporous surface
Usage:	Replaces sand in all media filtration applications
Unique features:	Bio-resistant, self-sterilising, predictable performance, filtration down to 1 micron (Grade 0), 4 microns (Grade 1)
Application	Removal of Iron, Manganese, Arsenate and some priority chemicals, Organic pollutants & oils, Colours and fine fibers, Residual mineral oils and microorganisms
Manufacturer	Dryden Aqua Ltd., UK

Key features of AFM:

- Electro-mechanical filtration media
- Does not bio-foul and is not subject to worm-hole channeling.
- At least 50% better performance than sand, confirmed by nation government organizations
- Will help reduce THM precursors in drinking water systems.
- High performance removal of crypto oocysts, especially when combined with ZPM
- Should never need to be changed, will last for the life of the filter
- Lower running cost and better performance

Certifications:

- AFM® is certified under Regulation 31 of the UK Drinking Water inspectorate
- AFM® is compliance with European Water Directive (98/83/EC) & (80/778/EEC).
- NSF/ANSI/CAN 61 certified by WQA for use in drinking water treatment
- ISO9001:2015, ISO 14001:2015 and 45001:2018;
- HACCP food safety certification by TUV in Germany;
- IFTS independent product Environmental Technology Verification.
- EN-12902 and EN-12904 compliant

Activated Filter Media (AFM)

Zeta Potential mixer (ZPM): Cavitates the water and increases oxidation potential as well as amplifies the coagulation & flocculation reaction.

Product Information:

Materials	Stainless steel 316
Usage:	Mechanical coagulation and oxidation reactions and as injection point for coagulants, flocculants, oxidizing agents or gas (CO2, O3, O2)
Unique features:	Aggressive mixing and cavitation of the water, can increase redox potential and drop Zeta Potential, stresses oocysts and parasites such as sporidians, rendering them more susceptible to oxidation
Manufacturer:	Dryden Aqua, UK

Zeta Potential Mixture (ZPM)

Main Benefits:

- Increase oxidation potential by up to 100 mv, therefore initiating disinfection without chemical
- Improves coagulation/flocculation by at least 30%
- Flanges directly into the pipework

All Poly Floc (APF): APF is a multi-spectrum coagulant and flocculant that can remove pollutants from solution and flocculate fine suspended solids into large particles that are easily removed by AFM® (Activated Filter Media).

Product Information

Compositions:	Poly Aluminum Chloride (PAC), 6 different electrolytes, poly electrolytes and NoPhos
Usage:	Coagulation and flocculation reactions, phosphate reduction
Manufacturer:	Dryden Aqua, UK

All Poly Floc (APF)

Key features of APF:

- Focused coagulation and flocculation
- APF® contains NoPhos and will actively prevent bacteria and algae from growing
- Remove cryptosporidium oocysts when combined with ZPM and AFM®
- Chlorine consumption and the production of unwanted chlorine by-products are reduced by up to 80 %.
- Helps prevent by-products such as Trichloramine & THM makes the water safer

DryOx: It is an effective solution against biofilm and pathogens

Name:	DryOx
Compositions:	Chlorine Dioxide (ClO_2)
Usage:	Disinfection for filter media, pipe systems, channel systems, storage tanks and swimming pools. Elimination of biofilm from tanks and pools.
Unique features:	DryOx removes biofilm easily and economically

Disease under Control with DryOx

Microorganisms	Diseases
Norovirus	infection usually start 12 to 48 hours after exposure. The first symptom is a sudden onset of nausea followed by projectile vomiting and diarrhoea.
E. Coli	an indicator bacteria that there is faecal or sewage contamination of the water and insufficient chlorine. Check water supply, balance tank overflow and back-wash line. Can cause gastroenteritis and is sometime fatal
Legionella	Legionella disease is very serious and fatal in up to 15% of cases. There are around 75 different Legionella species, most of them just cause a nasty flu. Present in around 30% of all pools.
Pseudomonas	can cause skin, ear and eye infections when present in large numbers. Probably in 100% of pools.
Staphylococcus	MRSA multi drug resistant Staphylococcus aureus, a common bacteria can cause minor skin infection through to life threatening and fatal disease. 30% of pools
Mycobacteria	chronic skin disease, tuberculosis infection levels seems to be increasing rapidly
Vibrio	can cause gastroenteritis and septicaemia, now being found in some pools. Cholera is a Vibrio bacteria species.
Cryptosporidium & Giradia	Very debilitating parasitic disease casing vomiting and diarrhoea. 3500 cases every year attributed to public pools in the UK, fatality rate approx. 1 in 400. Found in approx. 10% of pools.
Algae	any staining of a surface green, brown or even pink may be due to algae and bacteria, it is an indicator of serious biofouling and represents a Legionella and disease risk.

Activated Catalytic Oxidation (ACO): Protect chlorine from sunlight without reducing its effectiveness. It is ideal for swimming pool.

Compositions:	Consists of a mixture of poly silicate and metal oxides
Unique features:	ACO protect chlorine from sunlight
Applications:	For the Private swimming pools, Public swimming pools, Aquatic features, fountains and displays and Public aquaria & aquaculture
Manufacturer:	Dryden Aqua, UK

Key Benefits

1. Protects chlorine from sunlight and UV light and reduces the chlorine consumption
2. Amplifies oxidation reactions by creating free radicals in presence of UV light. Helps to replace chlorine in private pools
3. Coagulates dissolved organics and helps to remove ammonia & urea

Active catalytic Oxidation (ACO)

Air Diffuser: Fine bubble air diffuser used for water aeration, oxidation and mixing action

Name:	Dryden Aqua Air Diffusers
Usage:	Water aeration, oxidation and mixing action
Unique features:	Fine bubble air diffusers, semi-flexible, self-ballast
Applications:	• Landfill leachate SBR Biological treatment • Agriculture Waste Water treatment • Destratification of lakes, lagoons and reservoirs • Reduction of THM's in lagoons and reservoirs • Aquaculture aeration • Extended diffused aeration of lagoon, lakes and wetlands
Manufacturer:	Dryden Aqua, UK

Main Benefits:

• Tubular diffuser, up to 3 m in length

• Semi flexible construction allows variations in design and implementation

• Perfect aeration and mixing of wastewater in reservoirs, lakes and lagoons, for example, for algae minimization

• Very efficient aeration of plastic lined excavated lagoons biological processes for example - Sequential Batch Reactors

• Less than 3 psi pressure differential

• Oxygen transfer up to 5 kg/kwhr

• Very easy to clean and maintain

Dryden Aqua Air Diffuser

SPECK BADU ECO TPUCH PUMP

Product Information

Name:	Speck Badu Eco Touch
Usage:	Service & Backwash pump
Unique features:	Self-priming, low energy consumption and low speed motor

The Speck Badu Eco Touch Pro self-priming circulation pump is revolutionizing energy consumption, operating costs and water quality proves to be a superb choice for low speed filtration system. Every pump has three motor speed fields that can be set individually. This guarantees the most effective use and maximum energy saving in all performance ranges. Operation is intuitive.

Product Key Features:

• Corrosion-resistant due to the high-quality plastics used which is also 100%recyclable.

• Self-priming which gives a steady circulation and uncomplicated installation.

• Electrically safe, because of the total electrical separation between the water and the pump shaft.

• Temperature stability up to 60°C.

• German design mechanical seal using carbon to ceramic sealing surfaces.

• Stainless Steel shaft.

Service & Backwash Pump