











WHO WE ARE

Biovista Bangladesh Ltd (BBL) was founded in 2009 by a group of enthusiastic young scientists or science graduates. For over 15 years we have designed and developed instrumentation and scientific methods that are being used by major pharmaceutical industries, diagnostic and hospitals, and food and beverage industries in Bangladesh.

We are a private biotechnology company with the main office in Dhaka, Bangladesh, along with overseas offices in the Netherlands, and Australia. Our multi-national team has diverse academic backgrounds, including analytical chemistry, clinical biochemistry, molecular biology, synthetic chemistry, biochemistry, immunology, bioinstrumentation, and nanotechnology, and is on a continuous hunt for new technologies for end users in Bangladesh.

We provide unique solutions for purifying water for industry, government building, hospital and household uses. To date, we have supplied and installed portable generation and water disinfection UV systems to the top pharmaceuticals, government building, hospital and private residences. We provide a successful and reliable growth platform for our customers, suppliers and team. Moreover, we ensure the best quality products complying WHO guidelines and give the best customer services throughout the country anytime our customers need assistance.

TEAM MEMBERS



Rakib Ahmed Chairman Biovista Bangladesh Ltd.

Mr. Ahmed is one of our directors who has a huge 12 years of experience in pharmaceutical industry. He is a Dhaka University graduate and the major of his B. Sc and M. Sc was Biochemistry. He also has an MBA degree majoring in Marketing. Mr. Ahmed knows mostly about pharmaceutical industries, their problems and solutions. He also has practical experience with diagnostic tools- reagents and equipment. He has unique skills to supervise and train fresh university graduates who start their careers in health sectors like pharmaceutical companies or diagnostic centers.

Mr. Ahmed has enormous knowledge of the development and quality control of drugs. He serves in various professional organizations. He is currently a General Secretary of Bangladesh Society for Pharmaceutical professionals; Chairman of Liberty Foundation; President of Badhan Foundation (A blood donors organization); and Joint Secretary of Dhaka University Biochemistry and Molecular biology Alumni Association. He previously served as a General Secretary of Graduate Biochemists Association (5 terms) and Joint Secretary of Bangladesh Society for Biochemistry and Molecular Biologists



Md. Aktar Hossain Managing Director Biovista Bangladesh Ltd.

Mr. Hossain graduated (B. Sc and M.Sc.) from the Department of Biochemistry and Molecular Biology, University of Dhaka. He was awarded M. Phil degree from the same department. He has got certificate in research methodology with SPSS Literacy, professional key account management & strategic alliances, and "supply chain management". His main role in Biovista Bangladesh Limited is to promote products and customer services. He has been working in large private organizations for about 6 years in the field of marketing and distribution of diagnostic and hospital equipment's, reagents, etc. Besides his theoretical and academic background, Hossain has acquired practical knowledge in immunology, biochemistry, Microbiology and hematology while he has been working as a biochemist in Bangladesh medical college hospital and as a consultant in Noor Medical Services in Dhaka.

He has extended knowledge on Marketing & Application of equipment & reagents of Beckman Coulter, USA; BioMerieux, France and Instrumentation Laboratory, Italy while he was working as Manager in a renowned private organization. He also has gained working experience on equipment & reagents of Abbott Diagnostic, USA; DPC, USA; Roche Diagnostic, Germany. Sysmex, Japan, Olympus, Japan and Ortho Diagnostic, Germany etc.



Dr. M. Nahidul Hasan Advisor Biovista Bangladesh Ltd.

Dr. M. Nahidul Hasan, an expatriate living in the Netherlands, is running his own business in the name of Business Connection BV and Biovista BD Limited. Dr Hasan obtained his BSc degree (majoring in Biochemistry) from the Department of Biochemistry & Molecular Biology, University of Dhaka, Bangladesh and MSc degree (majoring in Medical Molecular Biology) from the University of Westminster in collaboration with University College London (University of London), UK.

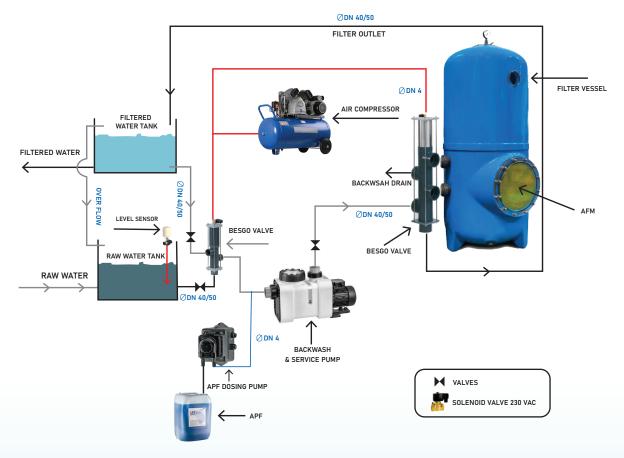
Dr. Hasan obtained his PhD in Biotechnology from Delft University of Technology (TUDELFT). He is the first auther of a patent for bio-nano filtration of liquids. Dr. Hasan is responsible for the overseas business development of Biovista Bangladesh Ltd.



Professor Akhter Hossain is one of the most renowned peptide scientists in the world. He obtained PhD in Bioengineering from Tokyo Institute of Technology, Japan. He holds a B. Sc & M. Sc in Biochemistry from the University of Dhaka, Bangladesh. He has published over 170 international articles and is co-inventor of seven patent applications, which have been filed by Florey, Australia. These patents are related to the design and development of peptide-based drugs and technologies.

Prof. Mohammed Akhter Hossain Specialist Advisor, Biovista Bangladesh Ltd.

SCHEMATIC DIAGRAM OF BIOVISTA WATER FILTRATION UNIT (BWFU)



ACTIVATED FILTER MEDIA (AFM®)

Product Information

Name

Activated Filter Media (AFM®)

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)



Arrangement of Different grade of AFM° in the filter unit (AFM0, AFM°1, AFM°2, and AFM°3 from top)



RECOMMENDED APPLICATIONS FOR DRYDEN AQUA AFM

Application Type

Drinking water To remove ron, Manganese Description: Manganese Description: Manganese Organic pollutants & Company of the company of th

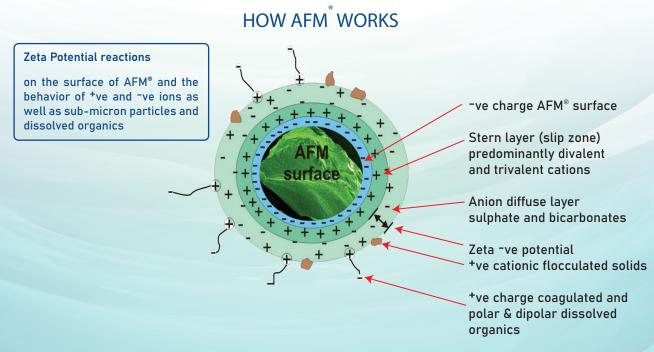
Manganese,
Arsenate, some
priority chemicals
and micro organisms.

Phosphorous & Bacteria, BOD, COD & TOC Organic pollutants &
Oils, TSS &
Particles< 1 micron

Colours and fine fibers, Residual mineral oils.

Activated Filter Media (AFM®) is at the heart of Biovista Water Filtration Unit (BWFU). It is clasified into four grades (grade 0, grade 1, grade 2 & grade 3)

AFM® is an activated amorphous Aluminio Silicate with a high negative zeta potential and will therefore attract positively charged organics, the activated hydrophilic surface has cation bridging, hydrogen bonding and entropic interactions with organics in water.



- The AFM® activation process creates a mesoporous structure with huge catalytic surface area. Activated AFM® has a surface area of over 1000000 m² per m³ which is over 300 times greater surface area for adsorption and catalytic reactions.
- OH⁻groups on the surface give AFM[®] a strong negative charge known as Zeta potential that attracts heavy metals and organic molecules.
- The surface has metal oxide catalysts. In the presence of O_2 or oxidizing agents the catalytic surface generates free redicals and thus high redox potential. Free redicals oxidize pollutants and disinfects the surface of AFM $^{\circ}$. Therefore AFM $^{\circ}$ is self-disinfecting.

- AFM® prevents bacteria from settling to make it a unique, bio-resistant filter media. No bio-film is formed in filter bed.
- The activated surface of AFM® prevents bacteria mud-balling, coagulation and channeling of unfiltered water through the filter bed.
- Similar to activated carbon, the surface nano-structure adsorbs pollutants from the water. But unlike carbon AFM® is recharged by just back washing with water.

Key Features

- Electro-mechanical filtration media
- Does not bio-foul and is not subjected to worm-hole channeling.
- Certified for drinking water under UK, European and International regulations
- 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

Advantages

- Crystal clear water
- No bacterial contamination of filter material => less inorganic chloramine
- No chlorine odor due to almost no presence of Trichloramine
- Healthy air due to minimized production of volatile chlorine disinfection by-products
- Low need for disinfectants

Certifications



- O 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).
- International certification for drinking water under NSFS0 and NSF61 by the WQA Water Quality Association of the USA;
- O Quality control systems ISO 9001-2008;
- O HACCP food safety certification by TUV in Germany;
- O IFTS independent product Environmental Technology Verification.

FILTER VESSEL WITH BOTTOM NOZZLE

Product Information



Name

Compositions

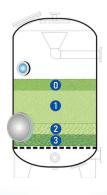
Usage

Calplas Filter

Fiber Glass, Polyester, Polypropylene, and Methacrylate

Vessels for AFM® and Sand media





This vesel is filled with AFM® as per following arrangements

Grade 0 : 20% Grade 1 : 30% Grade 2 : 15% Grade 3 : 15%



Technical Description of Calplas Filter

Materials

Body

Top Distribution

Inlet/Outlet

Bottom Distribution

Top Lid

Bottom Lid

Manufacturing & Design Code

Laminated Polyester

Design Code

Laminated polyester reinforced with fiber glass

Acrylonitrile Butadiene Styrene (ABS)

Laminated polyester reinforced with fiberglass GAS threads

Polypropylene

Methacrylate

According to model

Manually oriented fiber glass according to maximum strengths

AD Merkblatter & British Standard

BESGO AUTOMATIC VALVES



Besgo Valve

Calplas filter is fitted with Besgo automatic valve for the automatic filtration and cleaning of the filter media by self triggered back wash. The filtration and cleaning of BWFU is controlled by this Besgo valve.

Besgo valves are available in 3-way or 5-way options with single solenoid controls, which make the filtration and cleaning of the filters system easy and less energy consuming. It can be operated by water or air pressure. With a higher backwash velocity and a lower pressure drop, the Besgo valve achieves a particularly good backwash result. It allows switch over without switching the pump off. It is simple to install and secure in operation.

CONTROL PANEL



AS Control is an innovative, micro-processor operated switchbox which can efficiently control water generation, with ease of use and energy savings as focal points.

The AS Control has the functionality of ingeniously using 24 hour filtration, whereby various filter pump speeds can be programmed using the clock. The pump speed can also be automatically adjusted by activating and deactivating certain components which need a different pump speed at any given moment. In addition the controller can control all of the other components of the system.

Control Panel

Key Features

- Display of water & air temperature + various operating conditions
- Complete filtration management + electronic circuit breaker / protector
- Operation and Backwash controlled automatically by 2 & 3-way besgo valve and its in-built VFD with programming of this control unit
- Level control for buffer tank
- Heating control with frost protection, priority switching and delay timer
- Balance tank control (backwashes directly from the pool or the balance tank)
- Energy efficiency control: normal or economy mode with besgo 3-way valve
- Connection for pool cover
- Connection for external switch (main drain, buffer tank, auto)
- Connection for chemical measurement and dosing system (230v and potential-free).

SPECK BADU ECO TOUCH PUMP



Speck Badu Eco Touch Pro self-priming circulation pump is a superb choice for low speed filtration system. It guarantees the most effective use and maximum energy saving in all performance ranges. Operation is intuitive.



Service & Back Wash Pump

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.
- **(a)** 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.

ZETA POTENTIAL MIXER

Product Information

Materials Unique Features Name Usage Aggressive mixing and Mechanical coagulation cavitation of the water, can and oxidation reactions Zeta Potential Mixer increase redox potential and and as injection point for Stainless steel 316 drop Zeta Potential, stresses (ZPM) coagulants, flocculants, oocysts and parasites such as oxidising agents or gas sporidians, rendering them (CO_2, O_3, O_2) more susceptible to oxidation.

ZPM is the fitted in pipeline before the filler unit to achieve maximum coagulation & flocculation with the help of minimum use of chemicals.



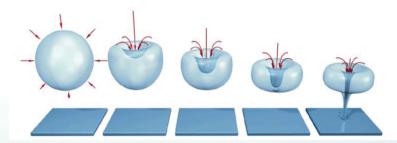
- ZPM amplifies coagulation and flocculation reactions to make the suspended solids larger and easier to remove by the filters.
- ZPM amplifies coagulation and flocculation reactions for the conversion and precipitation of dissolved components into small particles larger.
- TPM neutralize the electrical charges (Zeta Potential) on dissolved particles to make some positively and some negatively charged. The opposite charge attracts and causes coagulation & flocculation.
- Most particles in water including bacteria and dissolved organics have a negative charge. On passing through the ZPM some of the electrons giving the negative charge will be rubbed off and sent to ground via the earth. This reaction will cause coagulation and flocculation to occur without the use of chemicals and can greatly improve the performance of AFM®.



Mechanical Disinfection and Barrier Against Micro-organisms

- On passes of water through ZPM, the water is made to cavitate and spin at high speed which helps to kill parasites. The Zeta potential (electrical potential) of the water is shifted into the lower zeta potential, this increases the redox potential and surface tension. As the electrical potential drops to neutral, the redox oxidation potential for the water increases by up to 100 mV which makes it difficult to effectively the water is beginning to disinfect itself without any chemical.
- The nano-bubbles created by cavitation that are attracted to the surface of solid particles such as viruses, bacteria, fungal spores and protozoa or the surface of organic molecules. When the nano-bubbles collapses on an solid surface the energy release directly onto the cell membranes. The localized pressure is 2000 bar and temperatures up to 3000°c are generated which help disinfect the water without use of any chemical.
- ZPM module also causes a controlled cavitation of the water that will shatter large organisms such as protozoa including giardia and cryptosporidium oocysts. The cavitation reactions can also provide a log2 reduction in bacterial levels.

Nano-bubble implosion process while dosing chemicals through ZPM





Main Benefits

- lncrease oxidation potential by up to 100 mv, therefore initiating disinfection without chemical
- 💧 🛮 Improves coagulation/flocculation by at least 30%
- Flanges directly into the pipe work

DOSING PUMP



Key Features

- Manually adjustable flow rate
- Enclosed housing
- Self-priming, (does not lose prime or vapor lock)
- Pumps off-gassing solutions and can run dry
- 3-point roller design assists with anti-siphon
- Tube replacement without tools
- Output reproducibility
- Tube lubrication not required
- Continuous dosing for better performance.

ALL POLY FLOC (APF)

Product Information

Unique Features Usage Name **Compositions** APF is a multi-spectrum Poly Aluminium coagulant and flocculant that Coagulation and Chloride (PAC), 6 can remove pollutants from All Poly Floc (APF) flocculation reactions, different electrolytes, solution and flocculate fine phosphate reduction poly electrolytes and suspended solids into large NoPhos particles that are easily removed by AFM®.



Key Features

- Focused coagulation and flocculation
- \delta APF® contains NoPhos which 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 to prevent by-products such as Trichloramine & THM makes the water safer.

All Poly Floc (APF)

Dose: Minimum 1ml/m³ of APF should be injected through ZPM located between the pump and AFM® fillers.

How Does APF Work

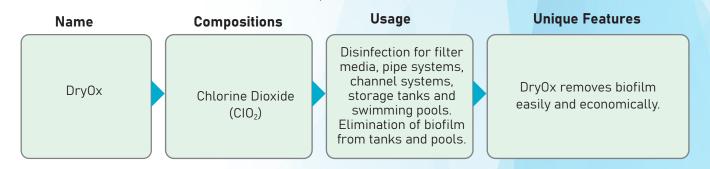
APF Focused coagulation and flocculation

- © Coagulation: the process of dragging chemicals out of solution to form a colloidal suspension of small particles. APF must be mixed instantly and aggressively with water through ZPM. If ZPM is not used, the coagulation stage is missed and APF jumps to flocculation.
- Flocculation: the process of bringing the colloidal suspensions of small particles (skin cells, bacteria and parasites) together to form large particles or floc that can be easily removed by AFM[®].



DRYOX OPTIMIZE THE COAGULATION AND FLOCCULATION

Product Information





DryOx Tablets

Each tablet of DryOx dissolved in water generates 2g of chlorine dioxide (CIO,). This soluble gas can penetrate the cell membrane of biofilm and kill the pathogens (bacteria, viruses). It works very well in less accessible areas such as **filter media**, **pipe systems, channel systems and overflow storage tanks** as it can penetrates biofilm to kill parasites, bacteria and fungus. DryOx is used primarily for filter disinfection and for elimination of biofilm. It is less oxidative than chlorine, but it is 100-times more effective in killing pathogens protected by biofilm.

Dosage:

For Deep Clean: Should be added 2 DryOx tablets per 10m³ of water and backwash after 30 minutes. The concentration of chlorine dioxide cannot exceed 0.4 mg/l.

Disinfection of filter media: Should be added the balance tank the 2 DryOx tablets per 10m³ of water in the balance tank/feed reservoir. Dissolve the tablet and stop the pumps for 5 minutes. Turn the pumps on for 5 minutes and then turn off again for 1 hour.



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 just of them 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.		

FLOWVIS FLOW METER

Key Features

- Flowvis® allows to set pump's speeds correctly to optimise filtration performance, backwash water consumption and guarantee maximal energy savings
- Easy to read (clear, stable reading in m³/hr)
- Accurate & the most reliable flow measurement
- Innovative & unique patented design (2 in 1 : flowmeter plus non return) valve.



FINE BUBBLE AIR DIFFUSERS FOR WATER AERATION, OXIDATION & MIXING

Key Features

- Semi-flexible, tubular construction
- Self ballasted
- Available in 9 lengths from 0.3 3 m.
- in the Air handling capacity from 1 10 m³/hr
- 💧 Less than 0.2 bar (3 psi) pressure differential
- Oxygen transfer efficiency up to 5 kg/kwhr
- Resistant to calcification
- Seasy to clean and maintainance
- Robust and long-lasting (typical lifespan in chemically aggressive
- Landfill leachate plants is more than 10 yrs)
- Simple, efficient and sustainable water treatment without chemicals.



PRODUCT SPECIFICATION OF SKID MOUNTED FILTRATION SYSTEM:

Mode/No.	Compositions of skid	Filtering Area	Filtering Velocity Flow Rate
AFM®-640 mm	Calplas Filter AFM®-640 mm, Speck Badu 90 ECO VS 1.10 kW 230V Besgo DN50/d63 & Air compressor Filtration control panel APF® dosing pump Dimensions Lx W x H: 1500 x 780 x 1800 mm	0.3 m ²	5 to 15 m/hr: 1.5 to 4.5 m³/hr
AFM®-720 mm	Calplas Filter AFM®-720 mm, Speck Badu 90 ECO VS 1.10 kW 230V Besgo DN50/d63 & Air compressor Filtration control panel APF® dosing pump Dimensions Lx W x H: 1500 x 780 x 1800 mm	0.4 m ²	5 to 15 m/hr: 2.0 to 6.0 m3/hr
AFM®-960 mm	Calplas Filter AFM®-960 mm, Speck Badu ECO Motion 2.20 kW 230V Besgo DN65/d75 & Air compressor Filtration control panel APF® dosing pump. Dimensions Lx W x H: 1850 x 1120 x 1800 mm	0.7 m ²	5 to 15 m/hr: 3.5 to 10.5 m3/hr

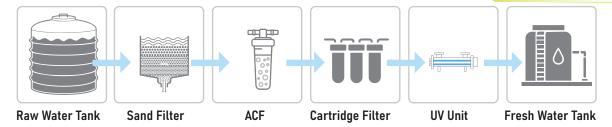


Skid mounted AFM® filter unit



Multi Step of Sand Based Water Filtering System

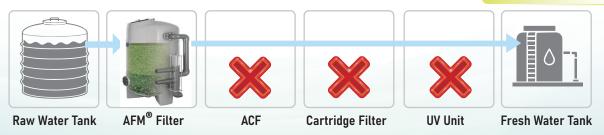
Sand Based Filtration System





One Step of AFM® Based Water Filtering System

AFM® Based Filtration System



Items	Our system (AFM based)	Traditional system (Sand based)	Remarks	
Process	One step	Multi step	AFM needs less maintenance and less operating cost	
Solids removal	++	+	Performance in terms of solids removed 25% to 50% better than sand.	
Micro-organism elemination level	+++	+	AFM remove 100% more bacteria from the water than sand	
Iron	++++	+	AFM is very good at removing iron and manganese due to surface —ve charge	
Manganese	++++	+		
Arsenic	+	+	AFM is good at removing Arsenic	
Particle size	5 um	10-15 um	AFM remove most particles down to 5 micron, but also many sub-micron and dissolved components by surface adsorption	
Bio infection	_	+	AFM does not become a biofilter, not subjected bio-me chanical coagulation and worm-hole channelling	
Life Time	>20 years	2-3 years	More money save than sand	
Monthly Cost	+	++	About 50% less than Sand	
Operation procedure	Automatic	Manual	More authentic	
Space requirement	Compact in size	More space is required	Comparatively less space is required	

OUR MAJOR REFERENCES



Gazipur, Bangladesh



Cumilla, Bangladesh



Barishal, Bangladesh



Mymensingh, Bangladesh



Gazipur, Bangladesh



Mymensingh, Bangladesh



Gazipur, Bangladesh



Dhaka, Bangladesh



Gazipur, Bangladesh



Hobigang, Bangladesh



Dhaka, Bangladesh





Dhaka, Bangladesh



Gazipur, Bangladesh



Narayanganj, Bangladesh



Gazipur, Bangladesh



Gazipur, Bangladesh



A Japan Bangladesh Company

Cumilla, Bangladesh

OUR MAJOR REFERENCES



Gazipur, Bangladesh



Gazipur, Bangladesh

































FEW OF OUR COMPLETED PROJECTS

Installation of Potable Water Plant & Softening Unit

Capacity of WTP: 1,440 m³/day

Capacity of Softening: 600 m³/day

Type: AFM® Filtration with Coagulation, Flocculation, Softener and UV System.



Capacity of WTP: 1,440 m³/day

Capacity of Softening: 360 m³/day

Type: AFM® Filtration with Coagulation, Flocculation, Softener and UV System.



Capacity of WTP: 1,440 m³/day

Capacity of Softening: 600 m³/day

Type: AFM® Filtration with Coagulation, Flocculation, Softener and UV System.



FEW OF OUR COMPLETED PROJECTS

Installation of Potable Water Plant & Softening Unit

Capacity of WTP: 7,200 m³/day

Capacity of Softening: 7,200 m³/day

Type: AFM® Filtration with Coagulation, Flocculation, Softener and UV System.



Installation of a Tertiary Waste Water Treatment Plant

Capacity of WTP: 6,240 m³/day

Type: AFM® Filtration with Coagulation, Flocculation.



Installation of a Potable Water Plant & Distribution Unit

Capacity of WTP: 3,840 m³/day

Type: AFM® Filtration with Coagulation, Flocculation, and UV System.







biovista Bangladesh Ltd.



Bangladesh Office: **SHELTECH RUBYNUR**

House No. 115 (9th Floor), Senpara Parbata,

Mirpur, Dhaka-1216, Bangladesh Email: info@biovistabd.com Web: www.biovistabd.com

Phone: +88 02 550 253 78



Kalfjeslaan 68, 2623 AJ, Delft,

The Netherlands

Email: biovistabd@biovistabd.com

Web.: www.biovistabd.com Mob.: +31 614 689 546,

Tel. : +31 15262 2241, Fax. : 0031152688036