INNOVATIONS IN WATER TREATMENT IN WASAC

WASAC
Water & Sanitation Corporation
Dignifying life

WASAC INNOVATIONS IN WATER TREATMENT

Innovative water treatment

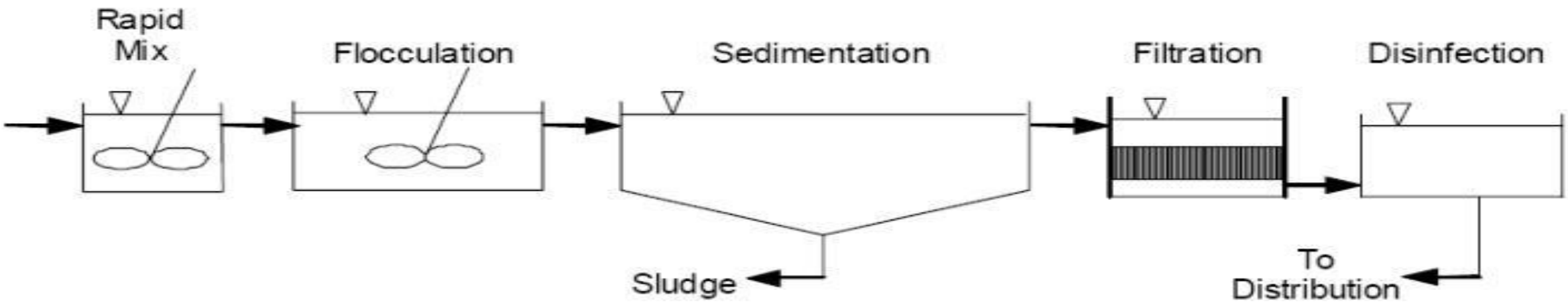
- Drinking water treatment is subject to many demands, while circumstances are becoming increasingly complex. Innovation in the field of water treatment technologies addresses a number of the questions confronting the water sector. This helps strengthen the innovativeness, efficiency and sustainability of drinking water or wastewater treatment.
- While the quality and availability of raw water are declining worldwide, treatment processes are still expected to supply healthy, safe and reliable drinking water, at acceptable cost and energy consumption levels, and with a minimum of waste and by-products. Comparable demands apply to wastewater treatment. In response to such rapidly changing circumstances, the current drinking water treatment technologies have to be adapted. The development and application of innovative processes and concepts for water treatment are needed, so that the water sector can continue supplying water of impeccable quality in a clean environment far into the future.

Innovation in water treatment for WASAC

- Innovation is not only about increased efficiency but also increased sustainability. It encompasses design optimization and operational management, data processing, soft sensing (simultaneous processing of multiple data) and improved process modelling.
- WASAC in the aim to achieve its vision to be the most sustainable Water and Sanitation Utility in Africa, exceeding stakeholders expectations and its Mission of Providing quality, reliable and affordable water and sewerage services through continuous innovations and detailed care to its customers' needs, made changes in the Drinking water treatment process which resulted to cost optimization.

Water Treatment Process

Conventional Surface Water Treatment for Drinking Water



WASAC Innovation in Water treatment Process

1. **Coagulation:**

WASAC is using Sudfloc a Polyaluminium Chloride chemical in replacement of a combination of Aluminium Sulfate, Lime and Polymers in more of its Water treatment Plant.

Advantages:

- Efficient for the coagulation of high turbid raw water
- Raise of treatment Efficiency (Volume of treated Water/ Volume of Raw Water)
- Cost efficiency

WASAC Innovation in Water treatment Process

2. Filtration:

Use of OFFSY Filters at Nzove WTP

Advantages:

- Reduction of Space
- No loss of treated water in Back wash process
- Removal of Iron and Manganese
- Low maintenance cost
- Long life cycle of the filters
- Reduction of Human Resource
- May use High turbid raw water
- Improvement of treated water quality

CULLIGAN PRESSURE TANK FILTER

Steel Tanks from 20” to 120”

Automatic control

Diaphragm valves

Flow control

Free-board

Multi-media bed of filtration

Under-bed

Distributor

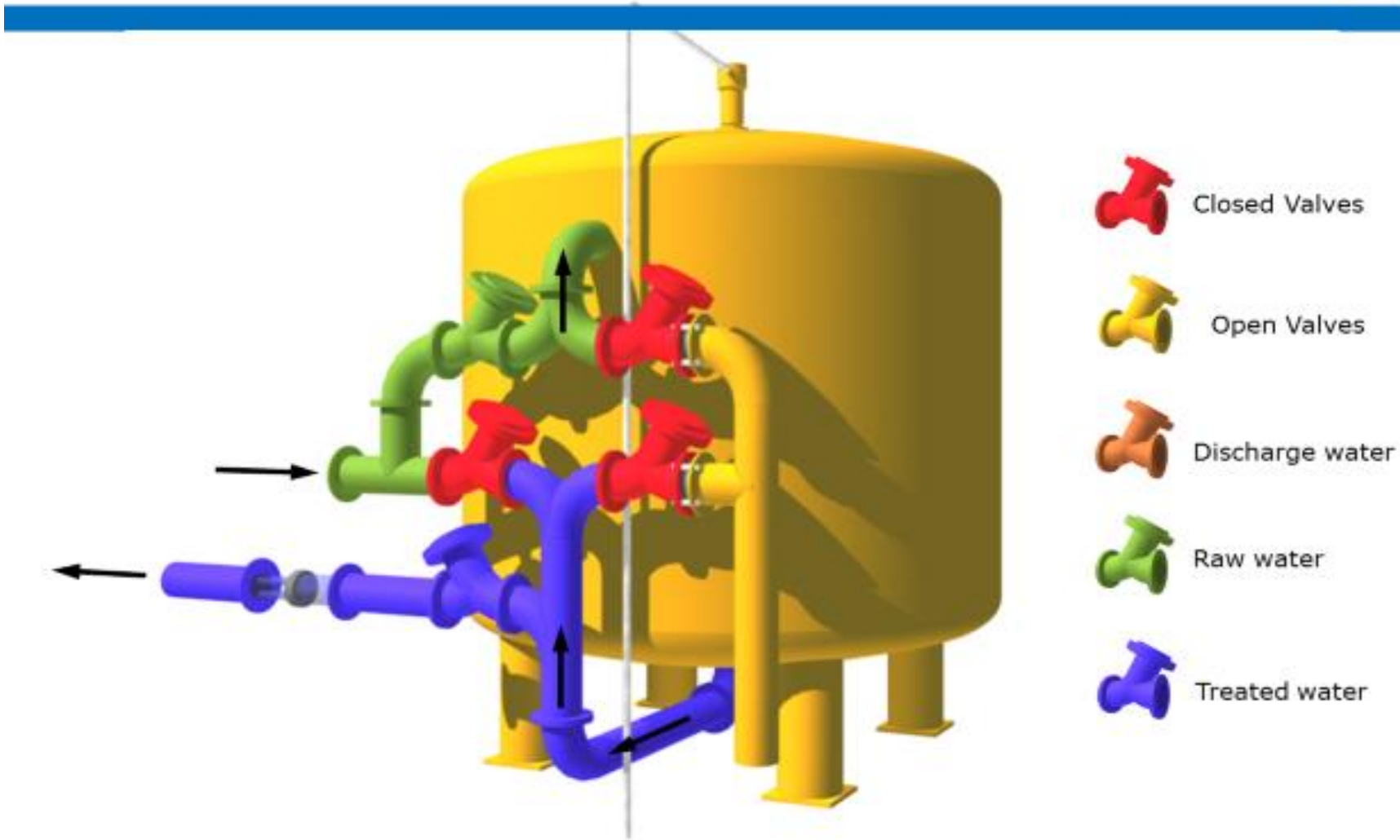
Pressure Tank Filtration

Culligan have a full range of filtration systems and technologically advanced media to deal with all water contaminant challenges.

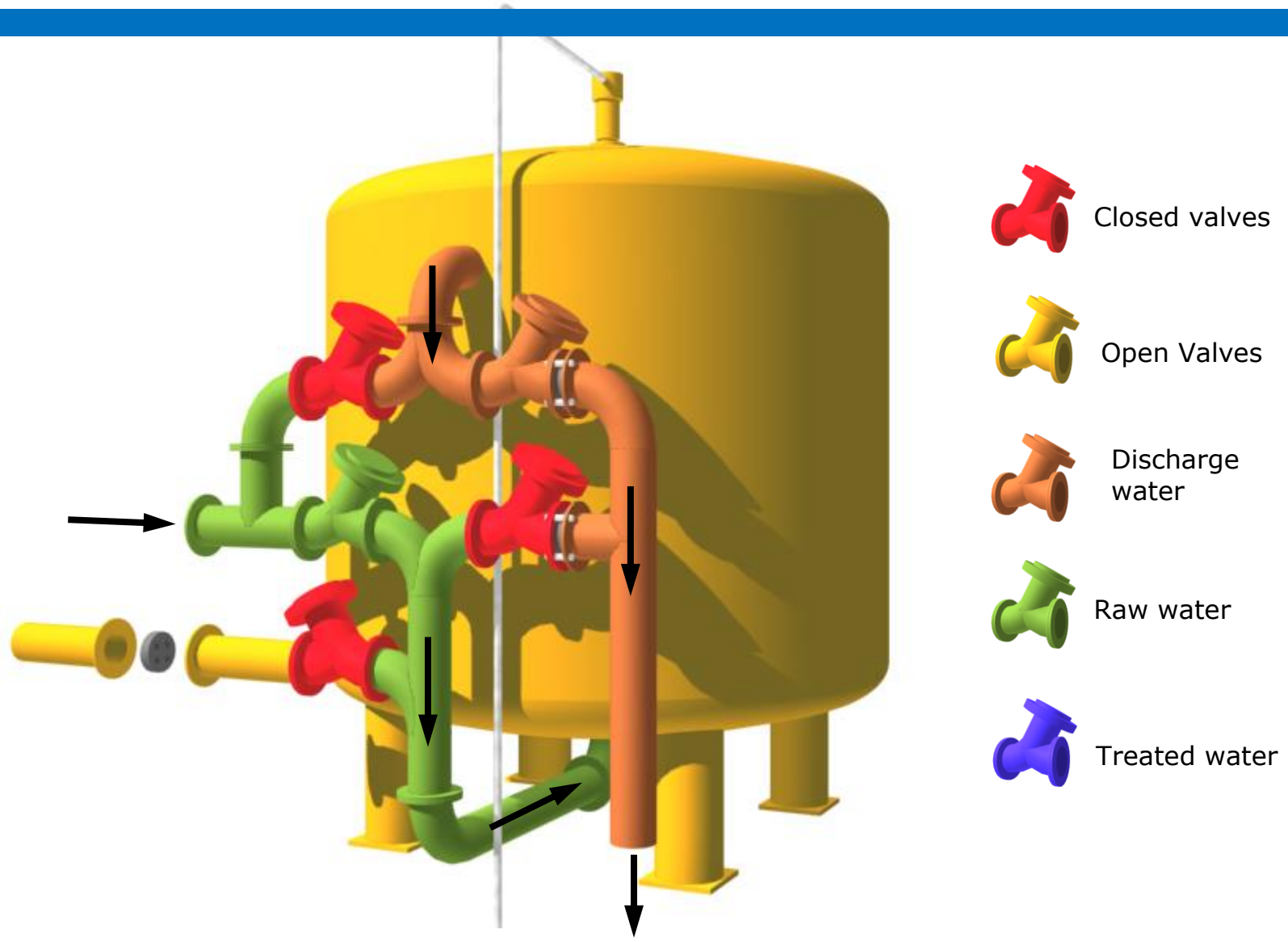
- Arsenic
- Iron
- Manganese
- Ammonia
- Suspended Solids / Turbidity

FILTER STAGE - SERVICE

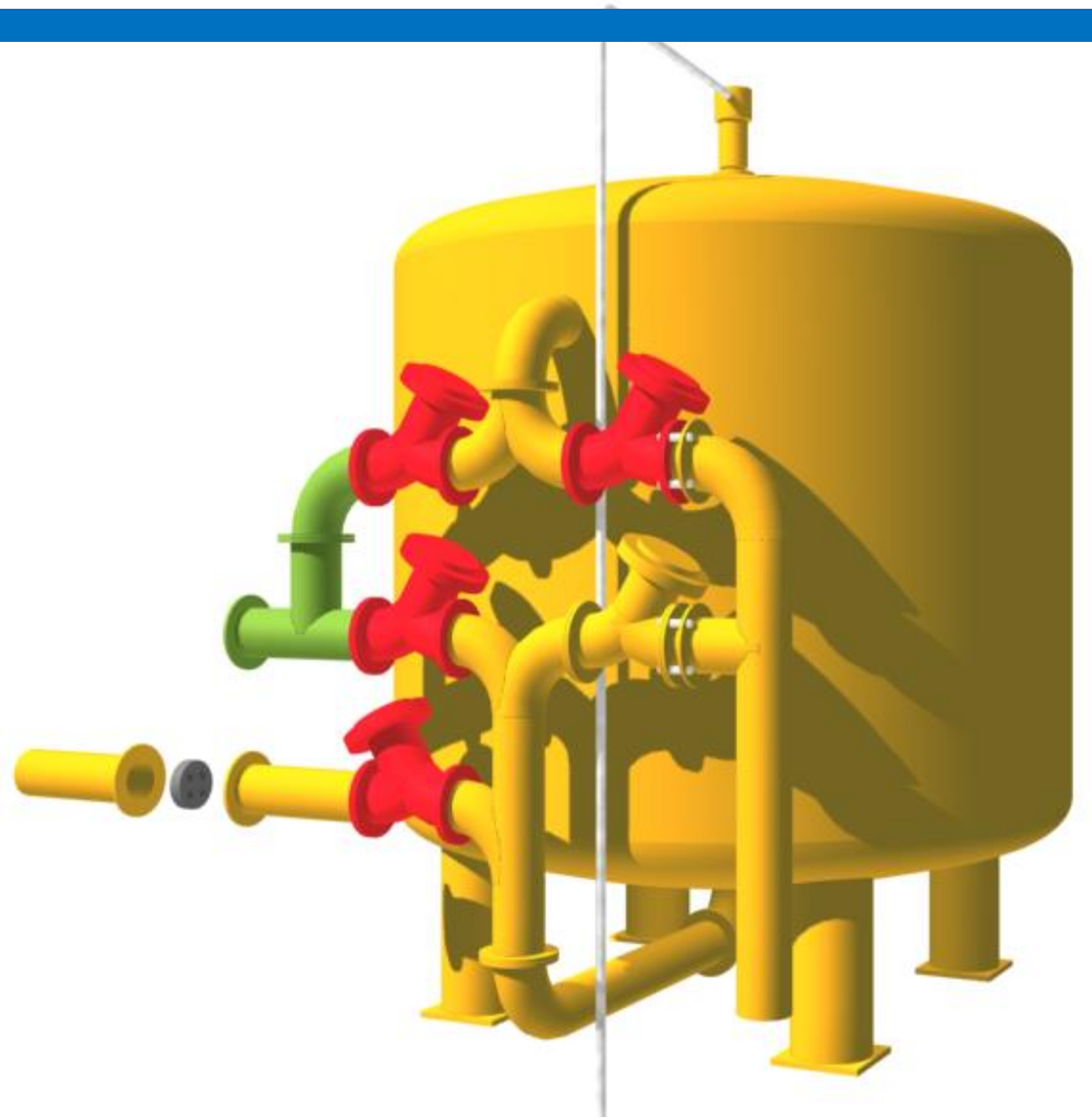
Culligan
nd simple.®



FILTER STAGE - BACKWASH



FILTER STAGE – WAITING



Closed Valves

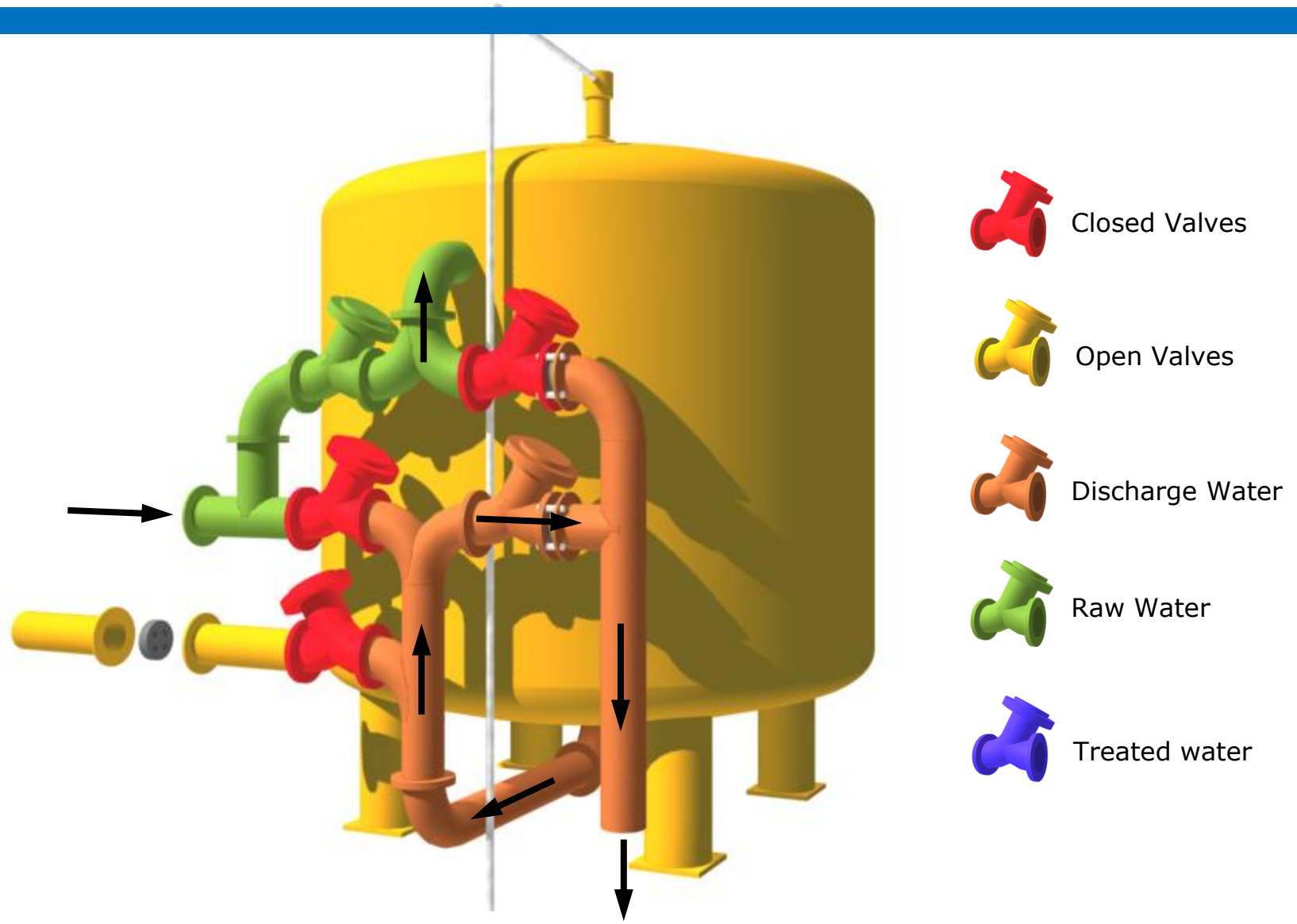
Open Valves

Discharge Water

Raw Water

Terated water

FILTER STAGE – PRE-SERVICE RINSE



OFSY - OMNI FILTRATION SYSTEM

HIGHEST FILTRATION LEVELS AND SERVICE LIFE

- Highest possible filtration levels across the widest range – >99% removal down to 5 ppm TSS, and up to 300 ppm TSS.
- Very high Fe and Mn (Iron and Manganese) removal capability – 95% removal down to <0,05 mg/l Mn and < 0,2 mg/l Fe (WHO limits), and up to 0,5 mg/l of Mn and 8 mg/l of Fe
- Best quality filtered water throughout the service period – fast ripening and longer service life
- Removal of Giardia and Cryptosporidium and other micro-organisms that are resistant to chlorine disinfection.
- Up to 60% smaller footprint. Higher filtration velocities vs conventional filtration (OFSY 20m/h v conventional 6m/hr) allows for smaller size of treatment plant.

FLEXIBILITY:

- The unit is capable of handling high turbidity's and low turbidity's equally well, allowing for the same unit to manage seasonal variations with ease.
- The OFSY is able to remove other contaminants such as arsenic, iron, manganese, colour etc in the water.
- Thanks to the 2 stage process, changes in inlet turbidity will be managed by the 2nd tank without the need to adjust flocculant dosage.

OFSY - OMNI FILTRATION SYSTEM

ADVANTAGES OF DIRECT-CONTACT FLOCCULATION

chemical injected at inlet of 1st stage tank

- Direct Flocculation occurs in the filter bed, means there is no need for an upstream clarifier (up to 300 ppm TSS).

- For over 300 ppm, up to 1200 ppm, of TSS a simple contact tank (30-40mins) is all that is required.

- 30-90% lower chemical usage - Direct flocculation requires 30-90% less flocculant than clari-flocculation (Typical 5-10 ppm of metallic flocculant for water with 150 ppm of suspended solid)

- Direct filtration dynamics (small size flocs /higher velocity) allow better use of multimedia filter bed increasing service life

WASAC Innovation in Water treatment Process

3 PUMPING STATIONS:

- Use of low speed pumps where it's applicable (1,500rpm instead of 3,000rpm)

- Starting the process of using improved energy efficient pumps (motors with class IE2 & IE3 instead of EFF)

Advantages:

- Reduction of Energy cost


Thank
You