



te-saf™

Water and Wastewater Treatment

The te-saf™ is capable of providing a high quality of treated effluent, typically BOD₅ of 30mg/l and NH₃-N of 10mg/l



te-saf™

The te-saf™ is a Submerged Aerated Filter fully designed and manufactured by Te-Tech Process Solutions.

Designed to treat municipal wastewater up to 1150PE (Population Equivalent) and ready to use in only 4 weeks.

The te-saf™ is fully automated and requires limited maintenance operations. The desludging is required approximately once every 3 months which makes these units ideal as a temporary treatment solution. A standard unit can treat the pollution of up to 1150PE and multiple units can be configured to meet your requirements. The te-saf™ is very adaptable and can be connected to existing assets or other Te-Tech modular treatment processes to ensure compliance with even the tightest permits. The small footprint of te-saf™ allow its use in almost all sites whilst meeting environmental compliance.

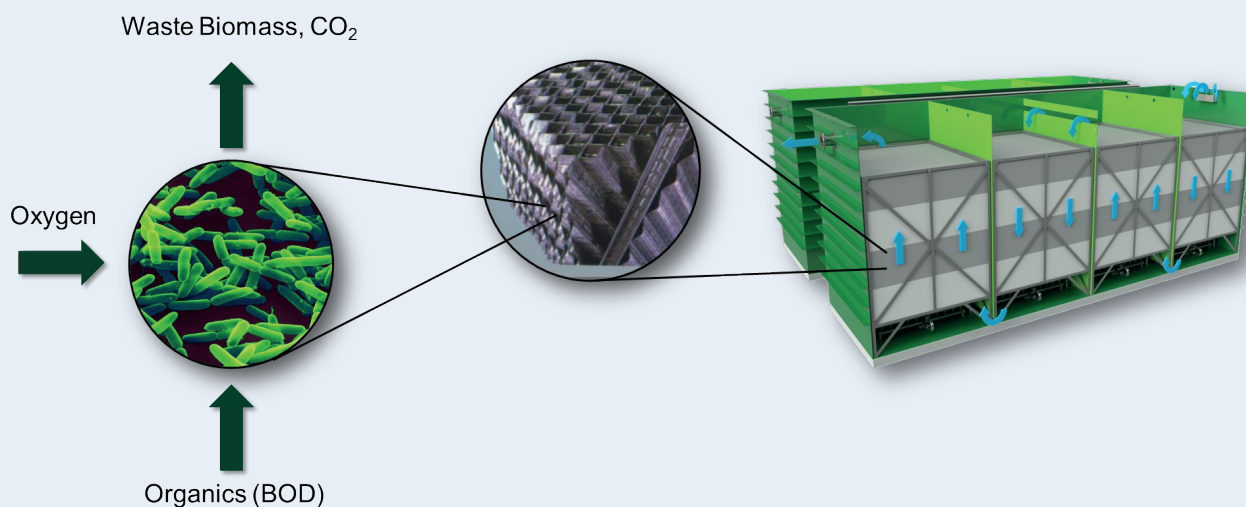


The te-saf™ unit

Features

One of the features of the te-saf™ is the ability to conduct maintenance operations without disturbing the process. The media can be cleaned or replaced extremely easily through the top of the tank while the air diffuser can be maintained through dedicated hatches, without full system drainage or media removal.

Science Behind the Technology



The te-saf™ is a biological treatment process where specific microorganisms, in a managed aerobic environment, consume biodegradable soluble organic contaminants. An adequate distribution of the organic pollution within the bioreactor increases the probability of contact between colloidal compounds and microorganisms.

The te-saf™ is a compartmentalised system, each plant consists of several cells with encased media

separated by dividing walls. The screened and settled influent travels downward through the first cell, upward through the second and so on. A blower sends air from the bottom of the reactor bed to promote the growth of the biomass which consumes dissolved and suspended organic compounds. The mixing pattern created ensures an adequate distribution of the organic pollution within the bio-reactor and increases the probability of contact between pollutant and biomass.

Stay compliant with the Regulation

With more than 60 years' experience with the main UK process and water companies we understand the regulatory challenges faced by our clients to remain compliant.

The te-saf™ is the ideal mitigation measure for secondary treatment upgrades. It can be used as a backup for failing or reseeded processes or as temporary treatment during routine maintenance shutdowns.

We will work with your operation and process teams to compose an adequate site operation plan prior the installation on site.

The integrated telemetry can be programmed with trigger values to keep your teams informed, allowing corrective actions to be put in place rapidly. Callouts can be sent to any dedicated personnel.

Quality Guarantee

- Modular units
- Sensitive or restricted locations
- BOD:SS:Ammonia 15:30:5 discharge standard (or better)
- Steel or GRP tanks
- Fully enclosed cells
- Robust construction
- No moving parts
- Easy operation and maintenance
- Full Te-Tech build
- 20 year design life

Te-Tech will warranty the process performance and quality of the plant and equipment supplied. This warranty is valid for 18 months from the date of delivery.



Dedicated hatch for air diffuser maintenance

Key Numbers

The te-saf™ units comes in 4 sizes: T1, T2, T3 and T4.

The population equivalent treated is dependent on the effluent quality required:

SAF	20:30:30	20:30:10	15:30:05
T1	400PE	225PE	185PE
T2	650PE	375PE	300PE
T3	900PE	500PE	400PE
T4	1150PE	650PE	525PE

(BOD:SS:Ammonia).

Approximate scour air flow required and energy consumption:

SAF	Cells	Air	Blower (kW)
T1	2	116	3
T2	3	174	5.5
T3	4	232	5.5
T4	5	290	7.5

te-saf™ tank dimensions:

SAF	Length	Width	Height
T1	4.48m	2.56m	4.00m
T2	7.10m	2.56m	4.00m
T3	8.84m	2.56m	4.00m
T4	11.38m	2.56m	4.00m

Height (including covers).

Equipment (Air Blowers & Control Panel) Skid
Dimensions : 2.5m long x 2.0m wide x 2.2m high.

The Air Diffusers

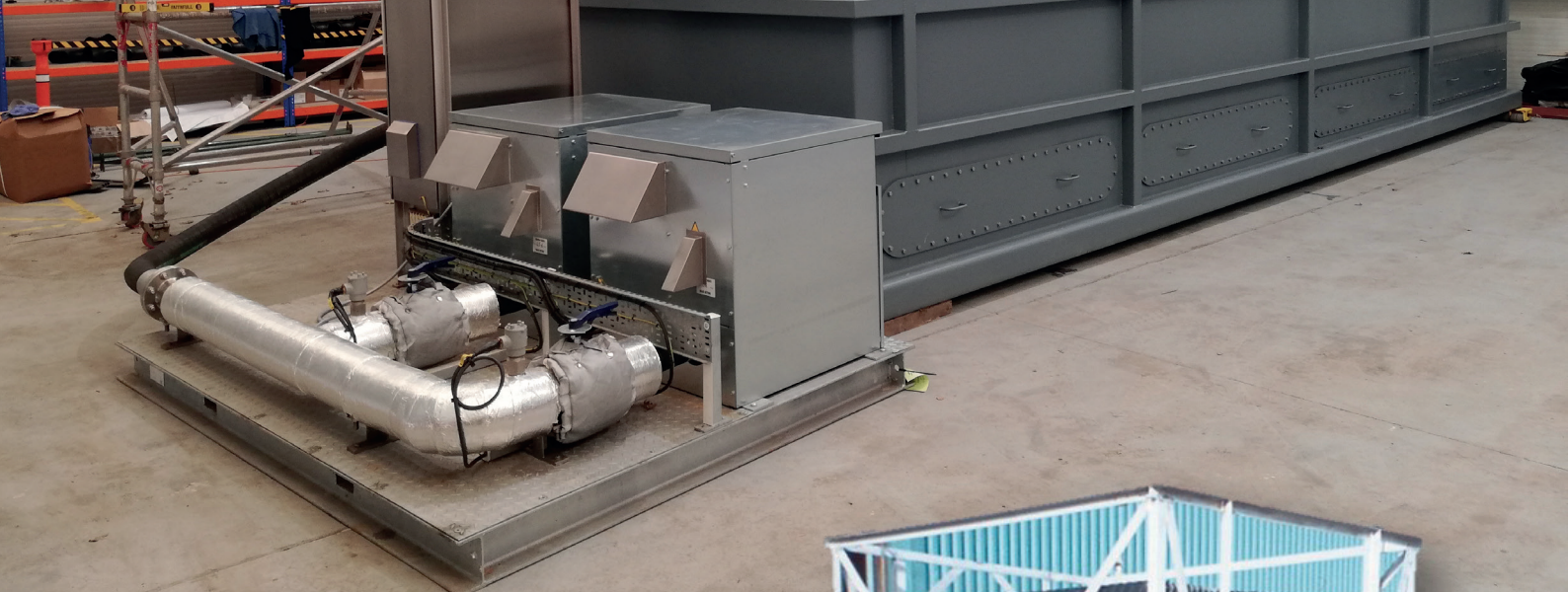
FlexAir T-Series tube diffuser offers maximum performance at minimum cost.

The diffusers are covered with a flexible fine pore membrane and are capable of providing a high level of oxygen transfer efficiency with maximum operating flexibility.

The high quality EPDM rubber membrane sleeve is specifically perforated for high volumetric air handling capacity and headloss efficiency. The perforation pattern maximises the oxygen transfer efficiency and provide a uniform air release and a low operating pressure.

The diffusers can be operated over a wide range of airflows and require minimum maintenance for long-term performance.

The external triple check valve system prevents fouling by minimizing the intrusion of water and solids into the diffuser unit and air supply piping under normal operation conditions.



The media

The structured plastic media used in Te-Tech SAF system provides an excellent mass transfer and a high mixing turbulence due to its crossfluted structure. This chemical, bacterial and UV resistant material coupled with a double folded Polyvinyl chloride (PVC) edges or reinforced poly-propylene (PP) edges structure makes it highly resistant to erosion.

The first cell of the te-saf™ has a surface area to volume ratio of $150\text{m}^2/\text{m}^3$ and all subsequent cells have a surface area of $240\text{m}^2/\text{m}^3$ of PP structured media. This size distribution offers ample voidage and reduces the risk of blockages from biomass accumulation.



We will provide a package to suit your needs, with full training and remote support.

Why choose te-saf™?

Designed, manufactured and installed (if required) by Te-Tech, a company providing high quality services to the water industry in the UK and across the globe.

The te-saf™ packages offer a robust, flexible process, that will require far less operator interventions than conventional activated sludge plants and traditional percolating filters which make it an ideal temporary treatment plant.

This process has been designed with simplicity and ease of maintenance in mind to minimise operational costs and provide a sustainable solution.

The te-saf™ is the cost-effective, high quality option for your wastewater treatment.

Hire Options

te-saf™ can be shipped to your location with:

- GSM telemetry
- flow splitter tank
- rigid manifold
- valves
- flexible influent hoses
- flexible effluent hoses
- flow meter.

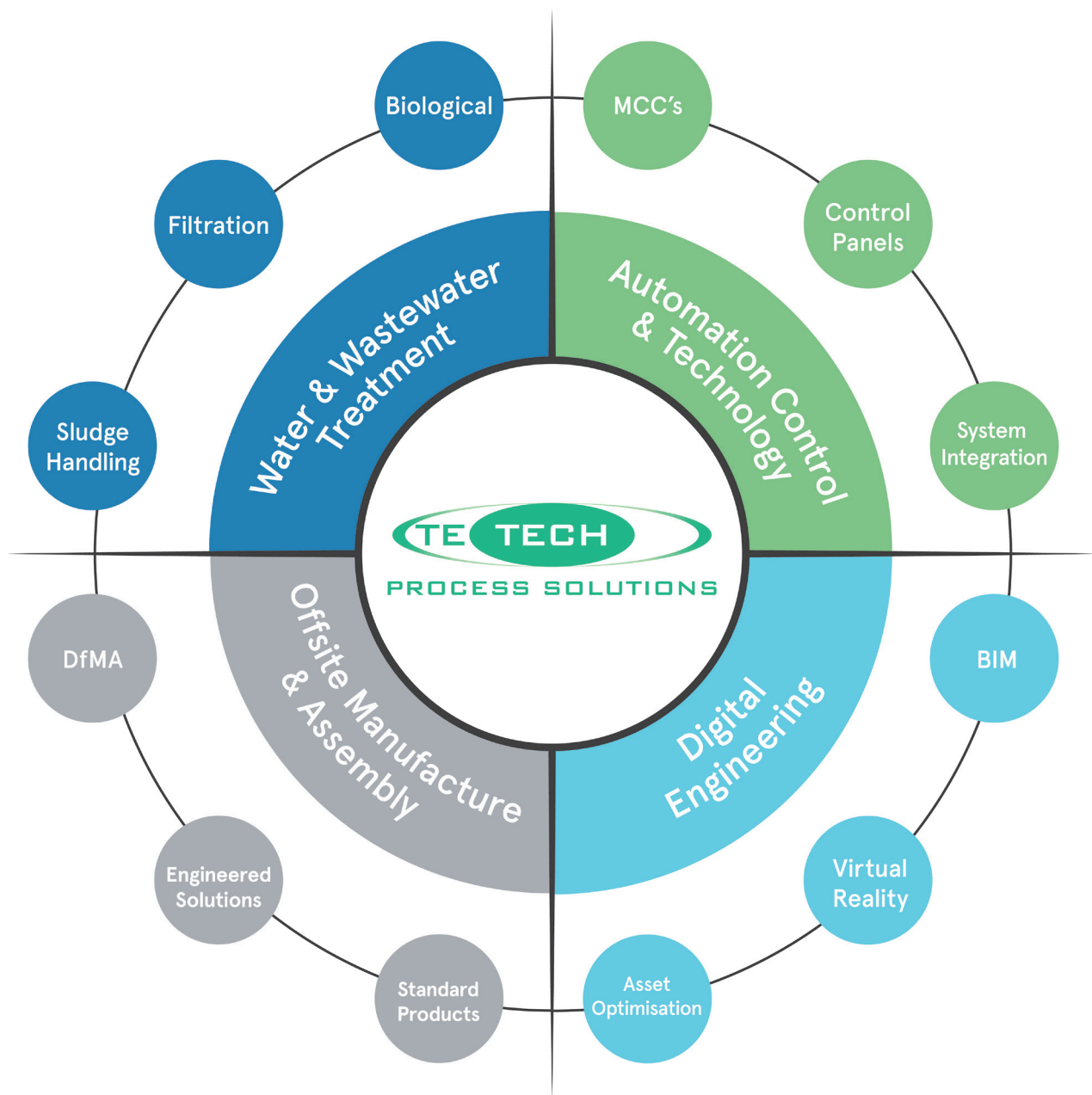
We will provide the packaged plant to suit your needs.

**WATER &
WASTEWATER
TREATMENT**

**AUTOMATION
CONTROL &
TECHNOLOGY**

**DIGITAL
ENGINEERING**

**OFFSITE
MANUFACTURE
& ASSEMBLY**



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