INWATECH
Környezetvédelmi Kft.

CONTISEQ™ TECHNOLOGY

ContiSeq™ is the latest generation of highly advanced SBR technologies, which has been streamlined by the following:

- Continuous acceptance of influent wastewater flows.
- Applying a constant water level Contactor tank at the inlet.
- Applying a plug flow principle Captor zone.
- Self-regulating intermittent air supply for the Contactor.
- Substrate-proportional aeration control system (SPAC) as part of the overall Process Control System (PCC) which regulates the aeration accordingly by usage of a computer based routine which computes loads of organic contaminants from the influent.

Various brand names exist for SBRs which have to be seen in a logical sequence of historical developments. ContiSeq™ deploys the latest generation of a series of technological developments of the past decades and is well proven to combine the experience collected in the past with the up to date requirements of modern plant control and operation. Compared to advanced SBR and continuous processes, main differences are the following.

- Continuous influent allows a well-functioning Contactor. As a result,activated sludge is continuously well conditioned and has outstanding settling capabilities. This results in a very robust operation highly resistant to inlet fluctuations, and a superb effluent quality (TSS: 3-8 mg/l)

- Lower investment costs through:
  - Less level fluctuations, smaller tanks, and higher MLSS (sludge concentration) is possible.
  - Compact footprint minimum piping needed.
  - No separate final clarifier, reduced equipment-, structural-, and piping costs.

- Low OPEX and Maintenance costs for substantial Life Cycle Cost saving through:
  - Minimal operator attention through automatic control and operation.
  - Unique low energy demand thanks to lack of mixers and the SPAC system. The SPAC system automatically reduces the aeration time to changes of the inlet loading.
  - Less mechanical and process equipment.
  - Excellent and stable sludge quality, very well settling sludge (low SVI: 60-90 ml/g).

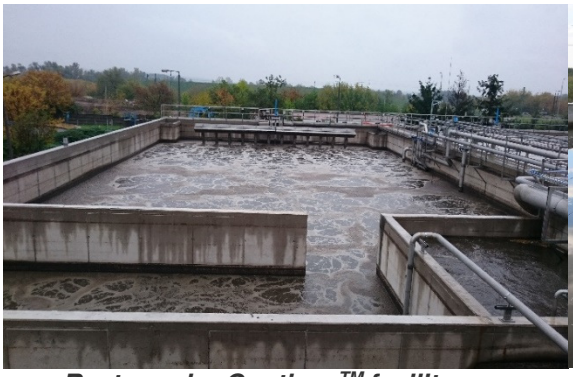
- High level of automation and a flexible, very sophisticated process control system, evolved to automatically handle emergency situations, eliminate human mistakes.

- Buffer basins for influent equalisation are not necessary for a **ContiSeq™** system, even not with only one-tank layout applied.

CONTISEQ™ PROCESS COMPONENTS

The facility is designed for continuous operation at the specified hydraulic and organic loading conditions. It is very simple for the operator to change the cyclic sequences in order to effect

operational savings, should different-to-design load conditions occur (for example, during startup, load variation etc.). The ContiSeq™ process has a large in-built operational turndown capacity and flexibility, which is often required for applications, where long term or seasonal variations in loads are received at the plant.



Rectangular Contiseq™ facility

Circular Contiseq™ facility

The essential features of the ContiSeq™ technology are the plug-flow initial reaction conditions and completely-mixed reactor basin. The ContiSeq™ basin is divided by baffle walls into three sections (Zone 1: Contactor, Zone 2: Captor, Zone 3: Main Reactor). Biomass is continuously recycled from Zone 3 to the Zone 1 Contactor, to remove the readily degradable soluble substrate and favors the growth of the floc-forming microorganisms.

The complete-mix nature of the main reactor provides flow and load balancing and a tolerance to shock-, or toxic loadings, and the process prevents solids washout during peak or wet weather hydraulic surges.

Influent wastewater is continuously fed through the Contactor (Zone 1) at the inlet end of the basin. The Contactor consists of a series of baffles, which ensure a controlled mixing of the influent wastewater with the biomass before entering the Captor (Zone 2). The Contactor provides a suitable reaction environment for the generation of a good settling biomass, an essential requirement for the stable operation of an activated sludge process.

PROCESS CYCLE OPERATION

ContiSeq™ utilizes a simple repeated time-based sequence (adjustable to actual loading conditions) which incorporates:

- **FILL – AERATION (FA)** for biological reactions
- **FILL – SETTLE (FS)** for solids-liquid separation
- **FILL – DECANT (FD)** to remove treated effluent

Completion of these three operations in the sequence described above constitutes a cycle, which is then repeated.

During the period of a cycle, the liquid level inside the reactor basin rises from a set bottom water level in response to a varying influent wastewater flow rate. Aeration ceases at a predetermined period of the cycle to allow the biomass to flocculate and settle under quiescent conditions. After a specific settling period, the treated effluent supernatant is removed (decanted), using a moving weir decanter. Surplus activated sludge is removed as required to maintain the biomass at the required level.