

Section 1 Wastewater Plant Commissioning

There are a number of key factors to be evaluated in the successful start-up of a wastewater process. Essentially, the correct microbes, growth medium and bacterial retention times are required to allow the plant to reach its optimum operating efficiency.

There are a number of types of wastewater plant available and each poses its own set of difficulties. In activated sludge systems, care must be given that filaments are not allowed to thrive in the initial low food: micro-organism environment. In trickling filters and bio-towers, preventing the washout of seeding bacteria is of primary concern.

In municipal plant situations, a standard seeding of heterotrophic bacteria is quite straightforward, for industrial applications, specific bacterial cocktails are introduced based on feedback from pilot-plant results. It is usual to seed a plant with activated sludge from a similar wastewater site in the vicinity, however it is often supplemented with a purchased bacterial seed.

The sludge provides biomass, higher life forms and solids that are beneficial for settlement, while the specific bacteria purchased optimise the overall treatment process. Occasionally, sludge is not utilised for fear of introducing non desirable micro-organisms to a new installation.

Feeding bacteria the correct nutrient mix at early stages is crucial. In a fully operational plant, the incoming wastewater provides the basis for nutrient extraction by microbes. However, this requires a certain amount of bacteria processing to “mineralise” the locked in nutrients. This can be offset by adding in pre-mineralised and partially oxidised nutrients.

In order to ensure a sufficient retention time, settlement aids and thickeners can be employed to achieve the desired effect.