What's new in Sumo19©

This document is an update of the new features and improvements found in Sumo19 compared to Sumo16.

New process model features

Sumo19 contains whole-plant **biokinetic models** with major improvements:

- Calibrated for carbon capture in high rate processes (A-stages as low as 3-hour SRT)
- New bio-P model for much wider application range (S2EBPR, deep ORP conditions)
- Detailed sulfur reactions and sulfur-iron interactions in whole plant models
- Aluminium, iron and polymer addition

Aeration calculations were significantly extended to include several types of fine and course bubble equipment as well as mechanical aeration. Surface DO intrusion in taken into account in all (e.g. anoxic) reactors.

New process units

Trickling filters, Aerobic granular sludge, MABR, BOD influent, Sand filter, DAF, Grease trap

Plug-flow reactors with unlimited number of zones, feed, recycle and internal recycle options

Extended chemicals for pH control and flocculation

A number of new **examples** are provided

New utilities

The **steady-state** solver has been corrected and finalized (Never-To-Fail© Dynamita exclusive)

Controllers are now included in the Sumo19 base package: Timer based on-off, ratio feed-forward, deadband, P, PI, PID, cascade, SRT and DO controllers

New **tools** are included: Scenarios (save several operating conditions in the same file), moving average, aeration tool

SBRs calculate reactor **SRT** automatically

Extended Sumo **FAQ, Manual, Quick Tutorial**, The Book of SumoSlang and Technical Reference

ExcelIO – Customizable operator interface – Your own plant model for operational scenarios

New interface features

Scenarios can be created within one simulation – i.e. winter and summer conditions both can be saved in the same configuration and run by selecting the required condition. There is no need to create copies of the same configuration containing different sets of parameters, therefore updating the plant model becomes centralized and much easier to manage.

Saving state variables: Any simulation condition can be named, saved, and reloaded later. Concentrations can be copied from one effluent to an influent (i.e. sidestream model to mainstream model) or to a reactor content

Sumo19 is **compatible** with Sumo16 configurations in most cases (depending on the level of customization)

Sumo continues to be open process source based, but from Sumo19 can be delivered **with encrypted process library** (i.e. in case a user provides a proprietary model to clients)

Sumo19 will be available in the Korean, Chinese, Japanese, Spanish and Turkish languages.

There are several usability improvements and fixes.

Add-ons available for this release

(please write to support@dynamita.com):

1) Realistic simulation of carrier movement in an MBBR plug-flow zone (mobile carrier) and the Wanner-Reichert biofilm model

2) Sewer trunk and odor model (iron and nitrate addition for odour control)

3) Sensitivity analysis (using Python scripts – Python knowledge required)