## Capture deep process knowledge and deploy it to create value

#### **CONSTRUCT**



Equipment configuration



Catalyst information



Physical property data



Control information

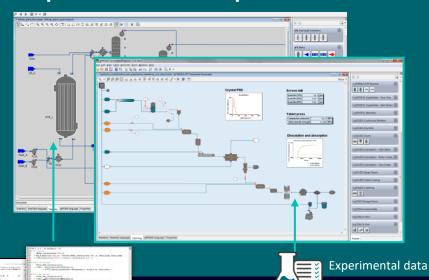


Operating procedures



Cost & price data

# Apply advanced analytic and optimization techniques



**CALIBRATE** 

**Equations & data** 

#### **ANALYZE**







#### **OPTIMIZE**

## **Digital Design**

Explore the process decision space rapidly & systematically

Lock in future value

Create value every day

#### **Digital Operations**

Simulate, optimize, operations decision support

#### Please follow this link:



### **SIEMENS**

## **Treatment Optimizer: Model-based Water Treatment Plant Optimization**

■ v 🚨 🖹 Search

Models

Tasks OTS GetModelloput OTS\_Interaction

> ■ aWaterDemoRatioControl V2 gWaterDemoRatioControl\_V2\_no\_IF

▶ gWaterDemo Ontimisation Global System Analysis

Saved Variable Sets

aproms\_gotsfpi.jsor input\_data.txt

aML Water Chemistry Model Ca-iC-iP aML Water Solids Formation Model - Non

gML Water activated sludge gML Water Biological Model ASM1

gWaterDemoRatioControl V2 OPC

@ gWaterDemoRatioControl V2 InitialGues

Project

environment

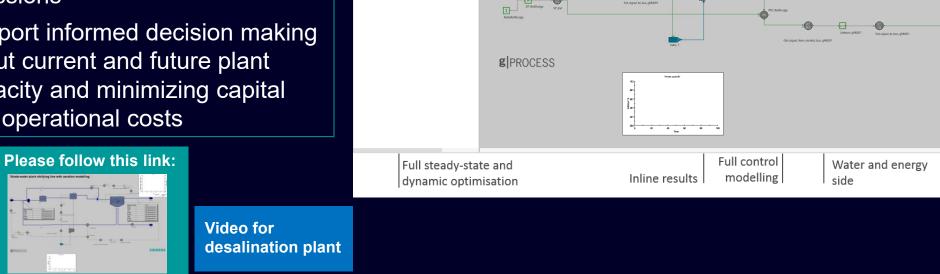
Steady-state and

Waste-water plant nitrifying line with aeration modelling

dynamic operation

#### **High-fidelity Predictive Models for Water Treatment Plants**

- Enable rapid exploration of the process decision space for optimizing the water treatment process design and operation
- Provide accurate information for reducing energy, chemical consumption and critical GHG emissions
- Support informed decision making about current and future plant capacity and minimizing capital and operational costs



Model libraries for all

typical water

processes

Annotations

gML Heat Exchange

gML Signal

SIEMENS

aML Connectivity

gML Separations - Fluid-Fluid

High-fidelity water

treatment models

Distributed models

Wastewater

▶ gWaterDemoRatioControl\_V2\_OPC × ⑤ gWaterDemo\_Optimisation × ▶ gWaterDemo\_Optimisation ×

stream structure

## **Benefits and Value**



Reduce time-to-market by creating more effective workflows in R&D and engineering and eliminate the need for multiple trial and error simulations



Improve process
economics with little or
no further capital
investment through offline
and online process
optimization



Increase yield and sustainability while reducing energy, emissions and pollutants, without compromising on process quality and efficiency



Determine best
achievable design
through rigorous
mathematically-based
process optimization
techniques



Quantify risk accurately by exploring the entire process design space rapidly and effectively