

Continuous Inactivation Systems



www.abc-actini.com

Continuous Technology

**Biowaste
Decontamination**

**Growth
Media Sterilization**

Biofacilities in these countries have chosen our systems:

- USA
- Germany
- Canada
- France
- China
- Switzerland



Bio-industries • Laboratories

Global Solutions for the Treatment of Liquids



- **Continuous Thermal Process**
- **Range**
*Flow-through capacity
200 to 30,000 lph
(50 to 8,000 Gall/hour)*
- **Available Heating Units**
 - *Actijoule®: patented electric heating unit*
 - *Actitube®: steam operated heat exchanger*

Biowaste Decontamination

ACTINI has designed a unique thermal and continuous process aimed at sterilizing the targeted organisms, which are present in the contaminated effluents

> Goals

Thermal decontamination of:

- *Laboratory wastes and effluents contaminated with viruses or bacteria (BSL1, 2, 3,4)*
- *Animal laboratory effluents*
- *Hospital waste water*

> Applications

- *Influenza*
- *Prions*
- *Avian flu*
- *API*
- *Cell strains*
- *Bacteria*



> Applied Lethality Rates

The biological germs lethality is a direct relation between the residence time of the effluents and the treatment temperature.

For thermal decontamination, we apply the sterilization rate $F_0=20$ at least.

Classically, a 30 F_0 is required in order to increase the safety margin.

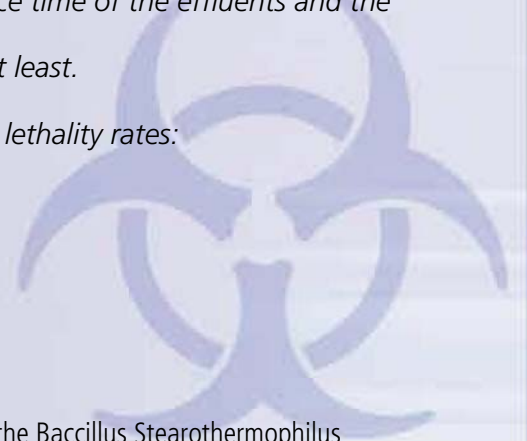
For thermal decontamination, we can apply different schemes for 30 lethality rates:

- 30 minutes at 121°C / 250°F
- 3,9 minutes at 130°C / 265°F
- 72 seconds at 135°C / 275°F
- 24 seconds at 140°C / 285°F
- 8 seconds at 145°C / 290°F

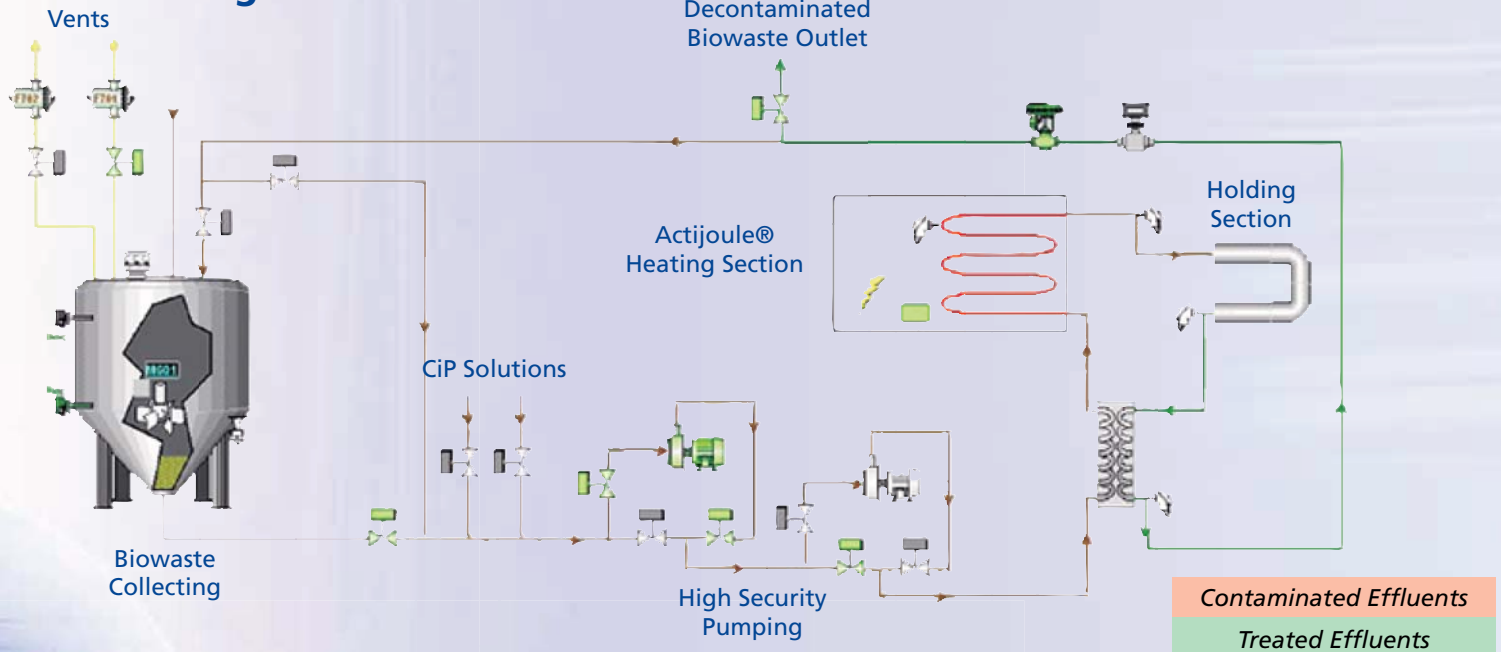
According to the formula $F_0 = t \times 10^{\exp((T - 121,1) / 10)}$

(t = treatment time in minutes and T = treatment temperature in °C)

with a liquid having the same features as water and based on a reference germ: the *Bacillus Stearothermophilus*



> Flow Diagram



> Decontamination Principle

- The effluents are continuously collected in the collecting tank
- As soon as the level set point is reached, the decontamination process begins
- When the treatment temperature is reached, the effluents are pumped, continuously treated and thrown away to the drain
- At the end of the cycle or in the event of power failure, the effluents flow back to the collecting tank
- After cycle end, the system is automatically cleaned and sanitized

> Main Features

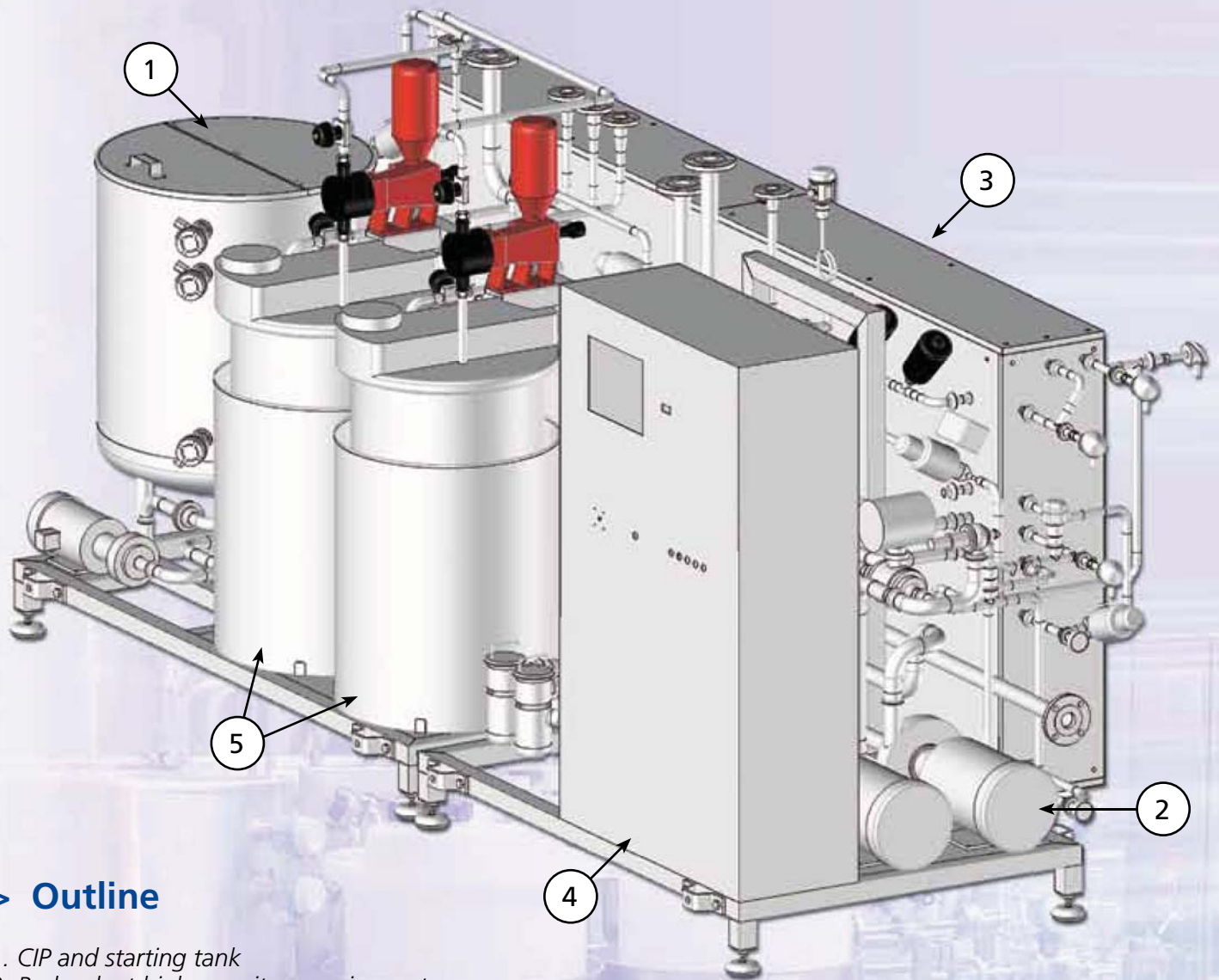
- *Level controlled (automatic) system start-up and shut down*
- *High security pumping of the effluents*
- *Vent sterilization during the filling cycles*
- *Energy system with energy recovery section*
- *Backup control of critical parameters*
- *Automatic PLC-controlled cleaning cycles*
- *Thermal or chemical system sanitization*



> Design Features

- *Adjustable thermal (temperature) set point - from 100°C / 210°F to 250°C / 480°F*
- *Materials of construction according to aggressiveness of agents present and with required thermal schemes*
- *"All-welded" tubular design to avoid any risk of cross-contamination when using a secondary heating fluid*
- *Process designed to meet containment requirements (contaminated zone / non contaminated zone)*
- *CGMP design, conformity with CFR and pharmaceutical guidelines*
- *Total tracking of the components (certificates supplied)*

> Self-Contained Monobloc Skid



> Outline

1. CIP and starting tank
2. Redundant high security pumping system
3. Thermal section (heating exchanger and holding section)
4. Power and control cabinet (including PLC and touch screen)
5. Cleaning solutions storage tanks

> Standard Capacities and Dimensions

Capacity	Standard Dimensions/Weights			
	Length	Width	Height	Weight
300 - 500 l/h 80 - 130 gal/h	3,300 mm 130.00 in	2,000 mm 78.75 in	2,500 mm 98.43 in	1,200 kg 3,645 lb
1,500 - 2,000 l/h 400 - 530 gal/h	4,400 mm 173.25 in	1,900 mm 74.80 in	1,900 mm 74.80 in	1,950 kg 4,300 lb
5,000 - 6,000 l/h 1,320 - 1,500 gal/h	4,500 mm 177.20 in	2,600 mm 102.40 in	2,400 mm 94.50 in	2,600 kg 5,730 lb
10,000 - 12,000 l/h 2,600 - 3,200 gal/h	3,700 mm 145.70 in	3,900 mm 153.54 in	2,600 mm 102.40 in	3,200 kg 7,055 lb
Other	Upon request			