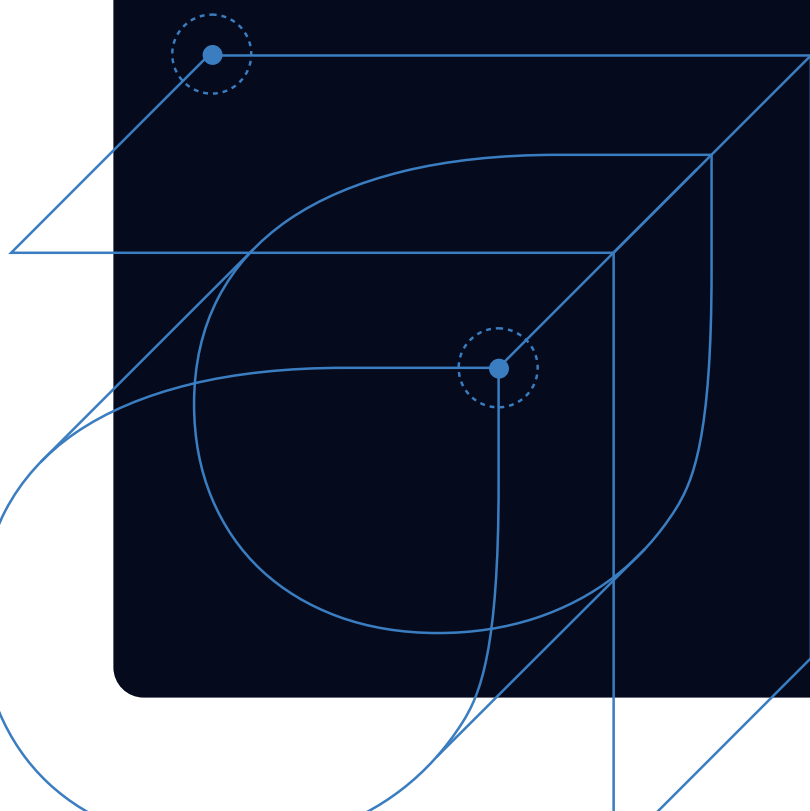




Decontamination & Sterilization

**A complete range of thermal
systems**

For labs & bioproduction sites



www.actini.com



Located in Evian, France, Actini has over **70 years** of experience and a superb reputation as a global leader in designing, manufacturing and commissioning of heat treatment solutions.

Expert in both liquid **sterilization** and effluent **decontamination**, ACTINI offers a **complete range** of **standard** and **custom-made** systems designed to meet the needs of contained laboratories, vaccines makers, biotechs and cosmetic facilities.

Design

- System design as per customer's needs
- Equipment specifications
- Process Flow Diagram
- System layout

Fabrication

- Manufacturing
- Assembly
- Automation
- Documentation
- Inspection & testing (FAT)

Field services

- Shipment
- Installation & Commissioning
- Testing (SAT)
- Training

Support

- Qualification
- Maintenance
- Troubleshooting
- Audit & upgrade

Over 600 units

An experience of more than 600 operational units installed in vaccine manufacturing facilities, biotechs sites, research centers and laboratories worldwide.

Decontamination Productline

BSL 1 - BSL 2 - BSL 3 - BSL 4



Standard systems with options

Produced in series with short delivery times



MODELS		DAILY CAPACITIES*	TECHNOLOGIES	ENERGY
KUBE (patented systems)		100 liters	Batch	Electricity
SINK (patented systems)		100 liters	Batch	Electricity
MICRO (patented systems)		300 liters	Batch	Electricity
MICROSTEAM (patented systems)		1.000 liters	Batch	Tangential steam injection
MICRO30 (patented systems)		1.500 or 3.000 liters	Batch	Electricity
ULTIBATCH (patented systems)	Single BATCH	1.800 liters	Batch	Tangential steam injection
	Double BATCH	3.600 liters	Batch	Tangential steam injection
ULTIMATE	ULT - 1000	5.000 to 16.000 liters	Continuous flow	Steam
ULTIMATE PLUS	ULT - 3000	10.000 to 48.000 liters	Continuous flow	Steam
	ULT - 3000 + EXT3000 (x1)	30.000 to 96.000 liters	Continuous flow	Steam
	ULT - 3000 + EXT3000 (x2)	50.000 to 144.000 liters	Continuous flow	Steam
	ULT - 3000 + EXT3000 (x3)	140.000 to 192.000 liters	Continuous flow	Steam

Pre-engineered solutions with customizations

Designed as per your specifications

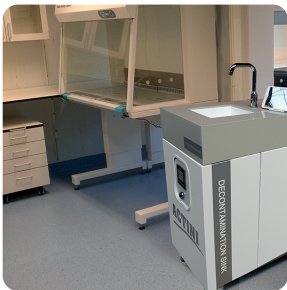







MODELS		DAILY CAPACITIES*	TECHNOLOGIES	ENERGY
CYCLOBATCH SYSTEMS (patented systems)	BDS - 30	100 to 1.000 liters	Batch	Tangential steam injection
	BDS - 300	1.000 to 3.500 liters	Batch	Tangential steam injection
	BDS - 750	3.500 to 7.500 liters	Batch	Tangential steam injection
	BDS - 1600	7.500 to 12.000 liters	Batch	Tangential steam injection
	BDS - 2200	12.000 to 16.000 liters	Batch	Tangential steam injection
CONTINUOUS SYSTEMS (patented systems)	FDS - 500	2.500 to 8.000 liters	Continuous flow	Electricity or steam
	FDS - 1000	5.000 to 16.000 liters	Continuous flow	Electricity or steam
	FDS - 3000	15.000 to 48.000 liters	Continuous flow	Electricity or steam
	FDS - 6000	30.000 to 96.000 liters	Continuous flow	Electricity or steam
	FDS - 9000	45.000 to 144.000 liters	Continuous flow	Steam
	FDS - 12000	60.000 to 192.000 liters	Continuous flow	Steam
	FDS PLUS	Over 190.000 liters	Continuous flow	Steam


- Continuous daily capacity: based on a 16-hours-a-day operation. Our continuous systems can operate up to 24-hours-a-day depending on operating conditions
- Cyclobatch daily capacity: based on a 20-hours-a-day operation
- [Specific design for BSL 4 containment, ATEX requirements and effluents containing chlorine](#)

Kube & Sink

up to 100 l/day



	Capacity	Up to 100 liters per day
	Effluents	Water-like
	Storage capacity	25 liters
	Energy	Electricity Single-phase 230 V-50-60 Hz 1.1 kW / 5 A
	Treatment program	135°C (275°F) for 2 minutes (adjustable)
	Decontamination	F0 50
	<ul style="list-style-type: none">Fully automatic operation with monitored cyclesRemote control availableBatch report	
	<ul style="list-style-type: none">No use of chemicalsSafe for the workers and for the environment	

	Kube model	
	Layout (mm)	600 x 800 (connections included)
	Height (mm)	820
	Model with Containment option	
	Layout (mm)	640 x 810 (connections included)
	Height (mm)	820
	Sink model	
	Layout (mm)	600 x 700
	Height (mm)	1.300

Stop autoclaving liquids, using bleach or paying for off-site treatment!

- Guaranteed decontamination
- Validation of the treatment efficiency by temperature sensors
- Automatic and monitored cycles

Kube model - connection to:

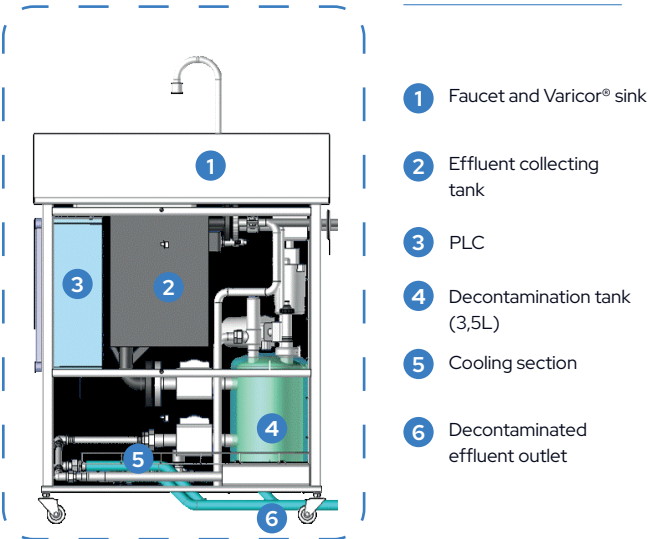
- Biosafety cabinets to collect & treat effluent directly
- Emergency showers
- Beneath existing sinks

Sink model - stand alone unit:

- Automatic water release
- Large Varicor® sink to discharge research materials or wash

Kube & Sink models





Patents : FR1355689 / EP14738747.6 / CA2915774




Micro

up to 300 l/day



	Capacity	Up to 300 liters per day
	Effluents	Water-like
	Storage capacity	250 liters 400 liters (option)
	Energy	Electricity Single-phase 230 V - 50-60 Hz 3 kW / 13 A with energy recovery section No chilled water required
	Treatment program	135°C (275°F) for 2 minutes (adjustable)
	Decontamination	F0 50
	<ul style="list-style-type: none">Does not require any manual interventionFully automated, the PLC controls and monitors all the cycles for a safe operation	

	Micro Tank model 250 liters	
	Layout (mm)	880 x 1.100
	Height (mm)	2.100
	Micro Tank model 400 liters	
	Layout (mm)	880 x 1.100
	Height (mm)	2.240

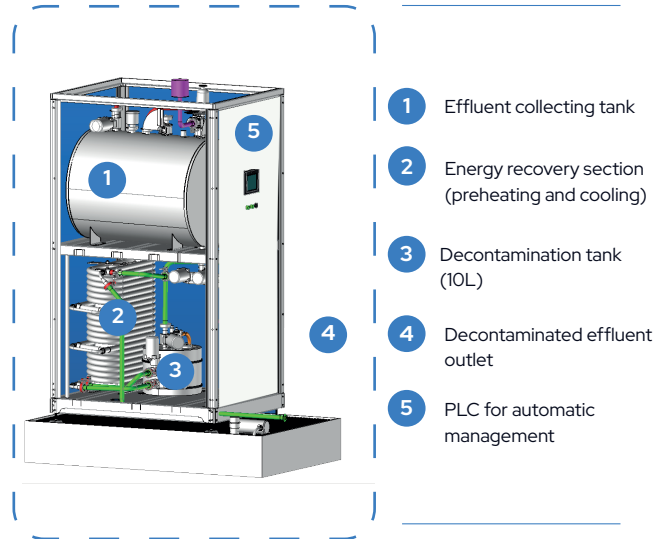
- Specifically designed for placement in very tight spaces
- «Plug and play» electricity-operated system with energy recovery section
- Tested in our workshops before shipment
- Fully operational as soon as plugged

Affordable solution

- Produced in series, this unit has been designed to fit in the budgets of research and university laboratories

Micro model

Patent: FR1355689 / EP14738747.6 / CA2915774



Microsteam

up to 1.000 l/day



- Specifically designed for placement in very tight spaces, this steam-operated system is very easy to install in existing rooms
- Tested in our workshops before shipment, it will be fully operational as soon as plugged
- If no steam available on site, a steam generator can be integrated with the skid as an option



Capacity	Up to 1000 liters per day
Effluents	Water-like
Storage capacity	700 liters 1.000 liters (option)



Energy	Steam Single-phase 230 V - 50 Hz (excluding steam generator) 2.2 kW / 9 A Steam : 4.5 bars - 24 kW - 30 kg/h With energy recovery section No chilled water required
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Treatment program	135°C (275°F) for 2 minutes (adjustable)
Decontamination	F0 50



- Fully automated, the PLC controls and monitors all the cycles for a safe operation



Model 700 liters (filter included)

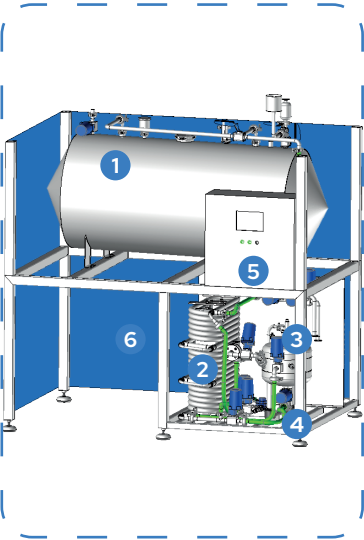
Layout (mm)	1.320 x 1.930
Height (mm)	2.220

Model 1.000 liters (filter included)

Layout (mm)	1.320 x 1.930
Height (mm)	2.360

Microsteam model

Patent : FR1363330



- 1 Effluent cooling tank
- 2 Energy recovery section (preheating and cooling)
- 3 Decontamination tank (10L)
- 4 Decontaminated effluent outlet
- 5 PLC for automatic management
- 6 Manual CIP

Micro30

up to 1.500 or 3.000 l/day



Capacity

- up to 1.500 liters per day with standard unit
- up to 3.000 liters per day with double batches option

Effluents

Water-like

Storage capacity

1.500 liters
+ external storage 1.000 liters (option)



Energy (standard unit)

Electricity
3 x 400 V - 50-60 Hz
11 kW / 16 A
with energy recovery section
No chilled water required



Treatment program

135°C (275°F) for 2 minutes
125°C (250°F) for 20min*
*will impact daily capacity

Decontamination

F0 50



- Reduced manual intervention
- Fully automated, the PLC controls and monitors all the cycles for a safe operation



Micro30 model

Layout (mm)	2.210 x 1.410
Height (mm)	2.210

- «Plug and play» electricity operated system with energy recovery section
- Designed for placement in very tight spaces
- Tested in our workshops before shipment
- Fully operational as soon as plugged

Upgradability

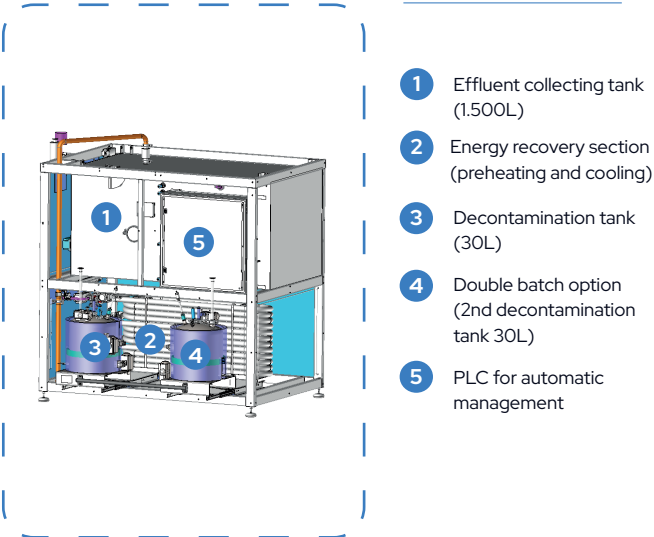
- Version #1 (standard): 1 decontamination tank
- Version #2 (option): 2 decontamination tanks
- Possibility to add an external storage tank

Easy maintenance

- The decontamination tank (or the 2 decontamination tanks if the option is selected) is built on racks that can be pulled out to carry out maintenance

Micro30 model

Patents: FR1355689 / EP14738747.6 / CA2915774



Ultibatch

up to 3.600 l/day



Capacity

Simple Batch: 1.800 liters per day

Double Batch: 3.600 liters per day

Effluents

Water-like / small particles



Energy

Steam
Chilled water required
Energy recovery section (option)



Treatment program

135°C (275°F) for 2 minutes
125°C (250°F) for 20min*
*will impact daily capacity

Decontamination

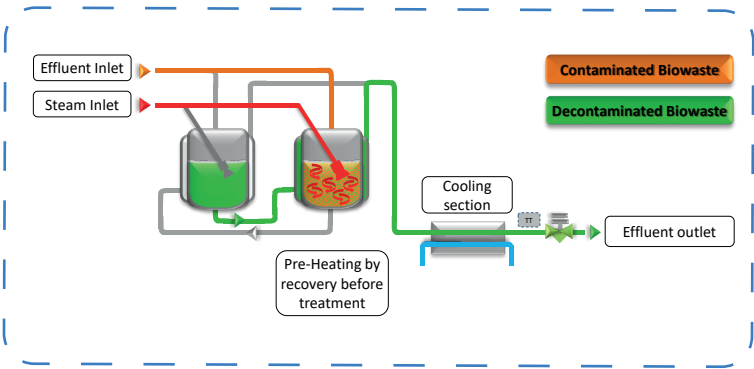
FO 50



Ultibatch model

Layout (mm) 2.120 x 920

Height (mm) 2.030



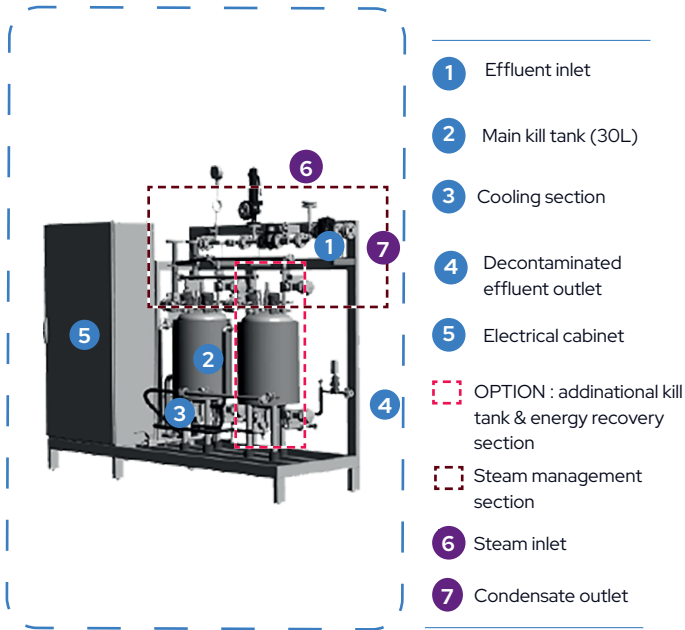
- The ULTIBATCH decontamination system has been designed to offer a standard batch solution configurable with options
- This compact and cost-effective model can be provided with one or two kill tanks

Main features

- Kill tank(s) with tangential system injection
- Treatment section with energy recovery system (only with double kill tanks model)
- Tubular cooling section
- Fully instrumented system for an automatic operation

Ultibatch model

Patent : FRI363330



Pre-engineered solutions with customizations

Cyclobatch

up to 16.000 l/day



- Tangential steam injection (core treatment)
- No vent filter on the kill tank
- Drained by the pressure generated during the heating cycle
- Reduced noise emission : 75 dBA (vs. 100 dBA for classic batch systems)
- Possible redundancy with 2 kill tanks
- Compact footprint
- No foaming

Reliability

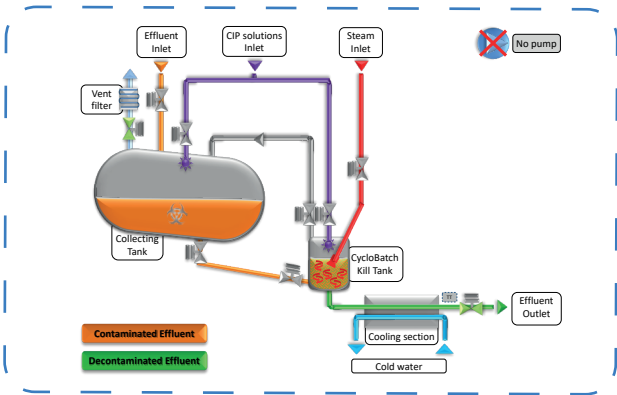
- No vent clogging
- No gaseous discharge
- No pump protecting against possible leakage

Cost optimization

- Lower capital investment
- Low maintenance

BDS model

Patent: FR1363330



Effluents

Particularly effective for solids and high viscosity product decontamination



Energy

Steam



Heating

Direct steam injection
Also available with an indirect heating technology (high containment option)

Technology

Patented batch system





Capacity


MODELS	TREATMENT CAPACITIES	TOTAL VOLUMES	AVERAGE DAILY CAPACITIES Depending on temperature / time / available steam and cooling water (based on a 20-hours-a-day operation)
BDS - 30	30 liters	60 liters	100 to 1.000 liters
BDS - 300	300 liters	510 liters	1.000 to 3.500 liters
BDS - 750	750 liters	1.250 liters	3.500 to 7.500 liters
BDS - 1600	1.600 liters	2.500 liters	7.500 to 12.000 liters
BDS - 2200	2.200 liters	3.500 liters	12.000 to 16.000 liters

Ultimate

up to 16.000 l/day



	Capacity	From 500 to 1.000 liters/hour
	Recommended daily operation	Up to 16-hours-a-day
<hr/>		
	Effluents	Water-like
<hr/>		
	Energy	Steam No chilled water required
<hr/>		
	Treatment program	80 °C to 135°C (275°F) for 1 minute
<hr/>		
	Decontamination	F0 25 (F0 50 as an option)

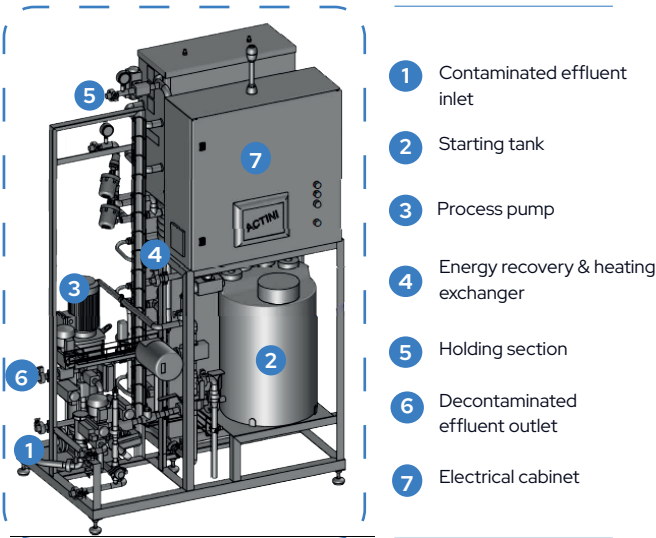
	Ultimate-1000 model	
	Layout (mm)	1.340 x 810
<hr/>		
	Height (mm)	2.100

Main features

The ULT-1000 decontamination system has been designed to meet the needs of both laboratories and production units. This very cost-effective model gathers all the important basic functions to decontaminate and release your effluent safely

- CIP: dedicated chemical solutions tank
- Pumping system secured by a filter
- Treatment section with energy recovery system
- Fully instrumented system for an automatic operation
- Possible fast-track delivery (including standard collectif tank 2.000 or 5.000 liters)

ULT - 1000 model



Standard decontamination systems with options


Ultimate Plus

up to 192.000 l/day




Main features

- Modular system
- Capacity upgrade easy to implement in connecting 3.000 lph modules
- Really compact add-ons
- Automatic operation controlled from the main skid
No automation engineering required when connecting add-ons
- Possibility to double the pumping system for redundancy

	Main skid capacity	3.000 liters/hour
	Extension capacity	Each add-on: 3.000 liters/hour Possibility to connect 3 add-ons of 3.000 lph Capacity up to 12.000 lph

	Effluents	Water-like
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	Energy	Steam No chilled water required
	Recommended daily operation	Up to 16 hours per day

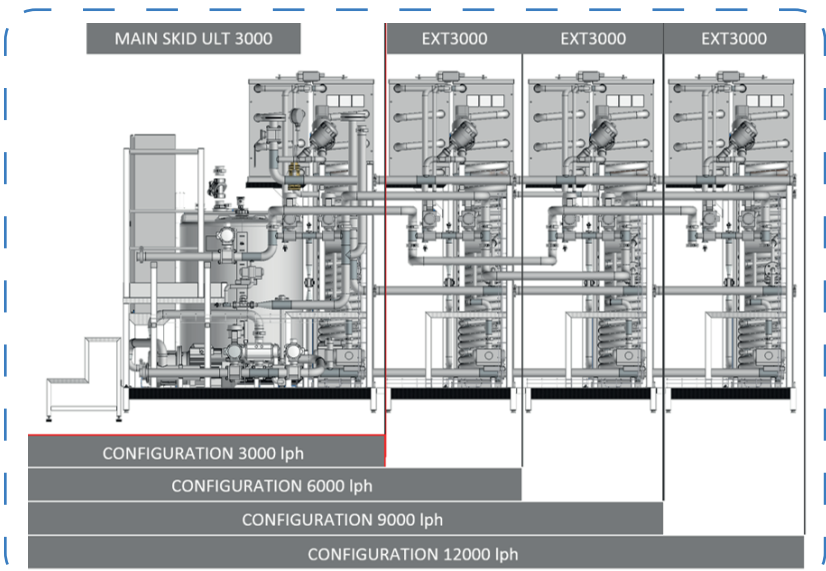
	Treatment program	80 °C to 135°C (275°F) for 1 minute (2 min. as an option)
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	Decontamination	F0 25 (F0 50 as an option)
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Ultimate Plus model

Layout (mm)	
Main Skid ULT3000:	1.700 x 2.480
Extension EXT3000:	940 x 2.530

ULT - 3000 model



Continuous (FDS)

up to 192.000 l/day... and more



Capacity From 250 to 192.000 liters/day

Recommended daily operation 16-hours-a-day

Effluents Water-like



Energy Electric or Steam
Integrated energy recovery system



Treatment program Adjustable to customer requirements

Decontamination Adjustable to customer requirements



Technology Continuous
All-welded tubular exchanger



Modèle FDS Very compact design (for example, less than 9 sqm to treat 100.000 lpd)

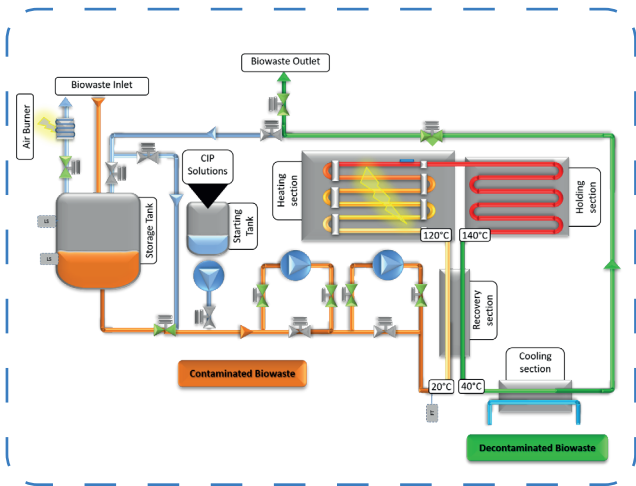
Design

- All-welded tubular design to avoid any risk of leakage and cross-contamination
- Choice of the construction materials based on the aggressiveness of the agents present in the effluent (high chloride resistant)

Operation

- Redundant control of the decontamination parameters
- PLC controlled cycles and records
- Automatic self sanitation cycles

FDS model



MODELS	HOURLY FLOW RATES	DAILY CAPACITIES	ENERGY*
FDS - 500	500 liters	2.500 to 8.000 liters	Electricity or Steam
FDS - 1000	1.000 liters	5.000 to 16.000 liters	Electricity or Steam
FDS - 3000	3.000 liters	15.000 to 48.000 liters	Electricity or Steam
FDS - 6000	6.000 liters	30.000 to 96.000 liters	Electricity or Steam
FDS - 9000	9.000 liters	45.000 to 144.000 liters	Steam
FDS - 12000	12.000 liters	60.000 to 192.000 liters	Steam
FDS PLUS	Designed as per needs	Over 190.000 liters	Steam

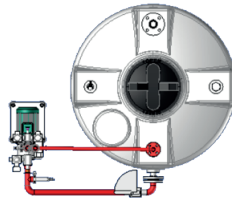
*For electrically operated unit: technology Actijoule®
*For steam operated unit: technology Actitube® (Tube in Tube)

Neutralization Productline

Batch & Continuous

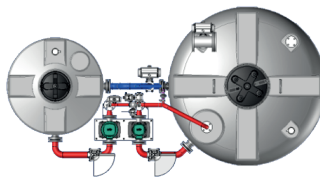


Batch Neutralization System (BNS)



MODELS	DAILY NEUTRALIZED VOLUME	NEUTRALIZATION TANK VOLUME	LENGTH (mm)	WIDTH (mm)	HEIGHT (mm)
BNS - 300	1.000 to 3.500 liters	530 liters	1.290	990	1.180
BNS - 750	3.500 to 7.500 liters	1.200 liters	1.500	1.200	1.690
BNS - 1600	7.500 to 12.000 liters	2.850 liters	1.920	1.470	2.040
BNS - 2200	12.000 to 16.000 liters	4.200 liters	2.120	1.820	2.390

Continuous Neutralization System (CNS)



MODELS	AVERAGE HOURLY FLOW ¹	HOURLY PEAK MAXIMUM FLOW ²	NEUTRALIZATION TANK VOLUME	CONTROL TANK VOLUME	LENGTH (mm)	WIDTH (mm)	HEIGHT (mm)
CNS - 1000	1.000 liters	1.500 liters	1.000 liters	115 liters	2.250	1.190	1.870
CNS - 3000	3.000 liters	5.000 liters	2.850 liters	310 liters	2.945	1.670	2.340
CNS - 6000	6.000 liters	10.000 liters	6.350 liters	810 liters	3.690	2.200	2.815
CNS - 9000	9.000 liters	12.000 liters	8.200 liters	1.000 liters	4.040	2.450	2.755
CNS - 12000	12.000 liters	18.000 liters	10.000 liters	1.320 liters	4.665	2.685	2.890

¹ Average flow rate for 60 minutes

² Peak flow rate for less than 10 minutes

Neutralization (BNS)

Batch systems



Capacity

From 1.000 to 16.000 liters/day

ACTINI neutralization Batch Systems (BNS) are specially designed to neutralize effluent from kill tanks.

With various options, these systems can be modulated into full flexible equipment able to handle process wastewaters from other sources.

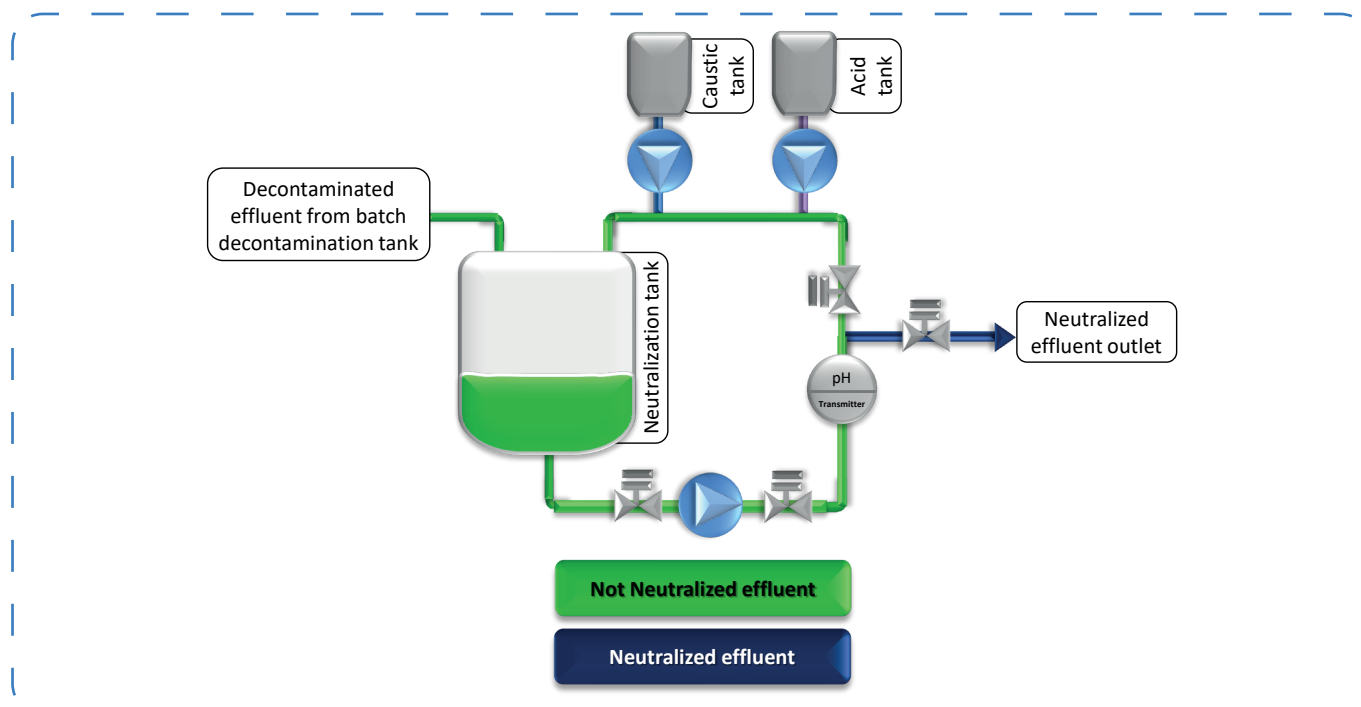
Standard features

- Fully automatic neutralization system
- Polyethylene (PE) tanks
- Pumping skid - centrifugal high flow pump

Optional features

- Neutralization tanks redundancy
- Cooling plate exchanger for effluent over 60°C
- Dedicated electrical cabinet with HMI
- Dedicated chemical drums

BNS model



Neutralization (CNS)

Continuous systems



ACTINI Continuous Neutralization Systems (CNS) are specially designed to neutralize effluent from continuous decontamination systems.

Our CNS are also able to handle wastes from various sources as washing and CIP drainage, cleaning drainage and other alkaline or acidic process wastewaters.

These cost-effective systems, able to neutralize high flow rates, are designed to fit in a minimum layout thanks to their small footprint.

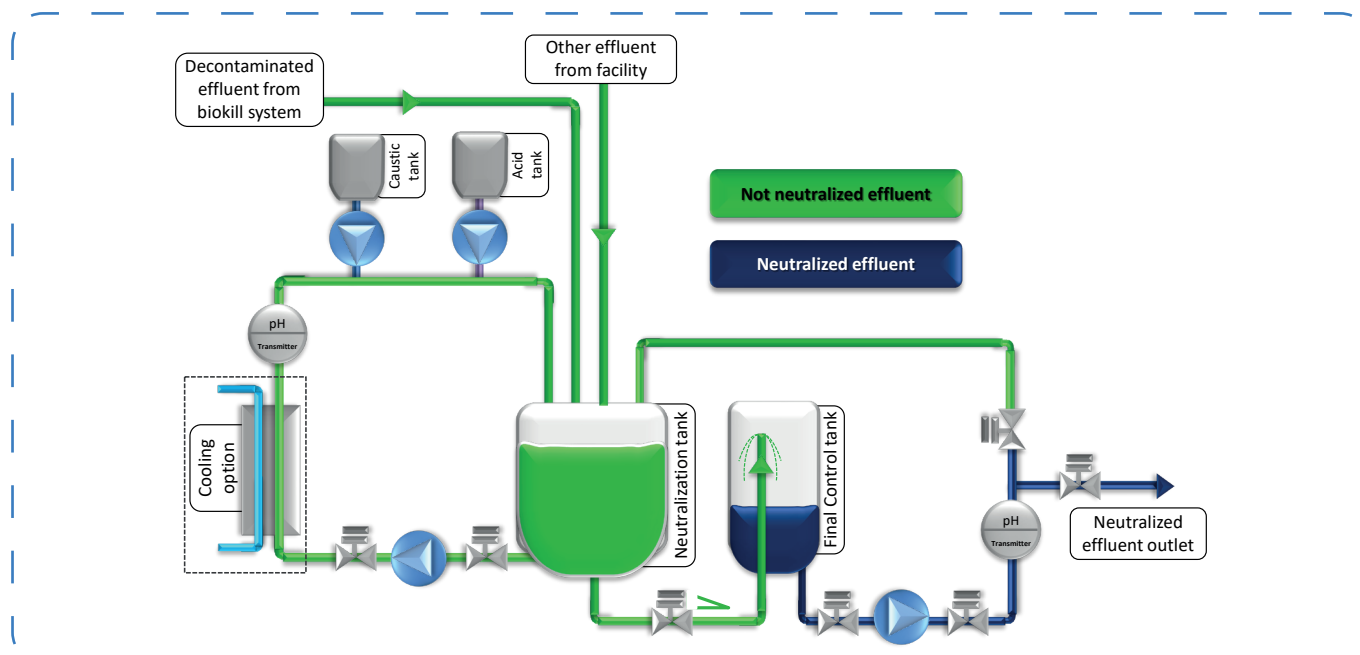
Standard features

- Fully automatic neutralization system
- Polyethylene (PE) tanks
- Pumping skid - Centrifugal high flow pump
- Single-stage neutralization: from an inlet pH between 2 & 12 to an outlet pH between 5.5 & 9.5

Optional features

- Cooling plate exchanger for effluent over 60°
- Dedicated electrical cabinet with HMI
- Two-stage neutralization: from an inlet pH between 0 & 14 to a more accurate outlet pH between 6.5 & 8
- Dedicated chemical drums

CNS model



Sterilization Productline



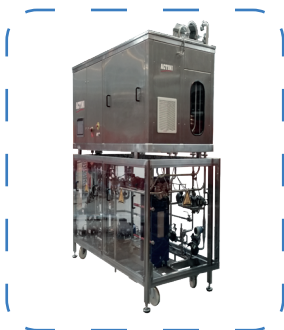
ACTINI designs and manufactures a whole range of sterilizers meeting the requirements of pharmaceutical, biotechnological and cosmetic industries as well the ones of subcontractors and CMOs from these same sectors.

Sterilizers range

Standard and customized treatment solutions



Pilote for Trials Range



Industrial Pilot Range



Production Range

MODELS	HOURLY CAPACITIES	TECHNOLOGIES	APPLICATIONS
PILOTE FOR TRIALS	20 to 500 liters	<ul style="list-style-type: none">• Electric heating• Actijoule® (single path)• Tubular aseptic design• Cooling exchanger• Pumping skeeds (centrifugal and volumetric)	<ul style="list-style-type: none">• Product tests• Product characterization• Validation of sterilization• Shelf life testing• Product launch• Small multi-products series <p>Possibility of short or long term rental</p>
INDUSTRIAL PILOT	500 to 1.000 liters	<ul style="list-style-type: none">• Electric or steam heating• 100% tubular designed or mixed Technology (tubular/ plate)	<ul style="list-style-type: none">• Production in small series• Subcontracting production• Product launch
PRODUCTION STERILIZER	2.000 liters 5.000 liters 10.000 liters 15.000 liters 20.000 liters 40.000 liters	<ul style="list-style-type: none">• Steam heating• Tubular designed for heating and holding, mixed tubular and plate for high efficient recovery and cooling sections	<ul style="list-style-type: none">• Industrial production applications

Sterilizers



Use

Sterilization, HTST and inactivation



Products

Variable viscosity 1 to 1.000 cP:
- Media (agar, glucose and salted solutions, proteins, yeast...)
- Fermentation yield
- Active ingredients (peptides, insulin...)
- Plant extracts, sugar-based solutions, flavors...



Design

Adjustable treatment temperature from 90°C to 150°C



Rental

Possibility of renting the pilot at ACTINI's facility or at Customer's facility for testing

Your product, center of the process

Aware of the challenges linked to the quality of the products sterilized by its equipment, ACTINI offers standard or customized solutions to fit with the features of the products and to meet customers requirements

Modularity and Flexibility

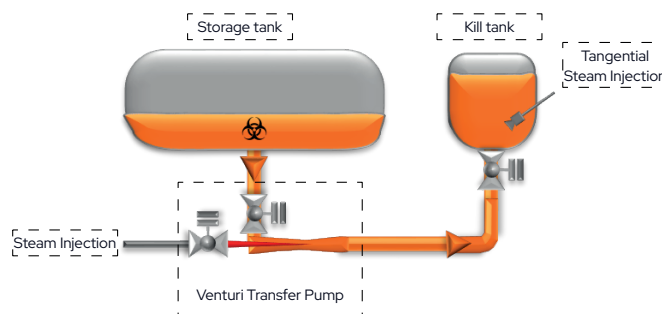
- Treatment temperature adjustable according to the products
- Holding time configurable with bridge board
- Possibility of simple or multi-product configuration
- Automatic management of production and cleaning cycles through PLC

Design features focused on the product

- Aseptic tubular exchanger
- Highly efficient recovery systems up to 95%
- Very accurate temperature regulation eliminating any risk of overheating and damage to the treated solution
- Guaranteed repeatability of recipes
- 100% automatic equipment for secured, monitored and recorded cycles management
- SIP / CIP cycles for perfect process asepsis
- Possibility of cGMP design, CFR compliance, pharmaceutical guidelines and BPE, traceability matrix

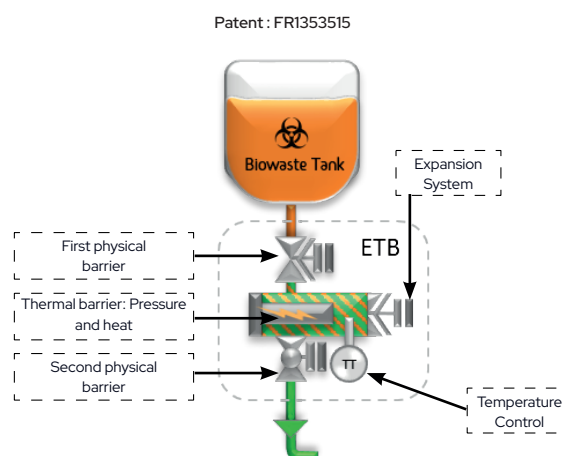
Venturi Transfer Pump

- Actini's Venturi Transfer Pump uses pressurized steam and Venturi effect to transfer the effluent from the storage tank to the kill tank.
- This fully welded component without any moving parts, eliminates any risk of leakage.
- This steam-powered solution, thanks to its flexibility, can use the same steam source as the kill tank and does not require any electrical power supply.
- The Venturi Transfer system is a very reliable and cost-effective solution for the transfer of hazardous liquids.



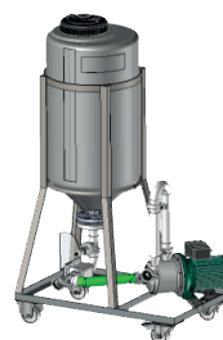
Electric Thermal Barrier (ETB[®])

- Designed to strengthen valves containment level, this innovative ETB[®] (Electric Thermal Barrier) is a patented system to ensure the biosafety containment at both inlet and outlet of the decontamination system.
- Powered with electrical supply only.
- As an alternative to usual Steam Barrier, the ETB[®] system is compact, easy to install and compliant with pharmaceutical requirements.
- Unlike steam-operated systems, the biohazardous waste is contained and inactivated at a configurable temperature setpoint.
- This high secured system ensures both hydraulic and bacteriological sealings.



Mobile CIP

- This system is designed to perform cleaning and cold chemical decontamination of tanks before annual maintenance.
- This manual equipment enables the recirculation of the chemical solutions through the spray balls of the tank.
- Easy to connect and disconnect thanks to flexible hose connection, the system can be mutualized between several equipments thanks to a light and mobile design.
- It can be easily plugged on electrical outlet.





SERVICES PACKAGES	DESCRIPTION
FAT & SAT	FAT and SAT based on our protocols. Qualifications can be made upon request
MAINTENANCE CONTRACT	For periodic maintenance and controls
PERFORMANCE AUDIT	Possibility to check the equipment for OPEX optimization
RETROFIT REVIEW	For capacity, BSL, automation upgrades or equipment replacement
QUALIFICATIONS	Our teams are at your disposal to define protocols with you and perform BI or thermal mapping qualification services

Spare parts

Emergency parts kit

This kit will allow you to have the minimum set of parts required for the most common curative maintenance operations in stock. Alone or with the support of our team, you can quickly replace wearing parts and avoid penalizing production shutdowns.

One-year operation kit

Particularly suitable for structures with a maintenance department, this package will allow your teams to have all the parts required for preventive maintenance operations in stock.

Critical part kit

Aware that some of our customers cannot afford a production shutdown in the event of a failure of critical components, we offer a breakdown box including a complete spare set for an immediate operational restart.

Maintenance contract

In order to keep your equipment in its optimal conditions of use, it is essential to perform regular preventive maintenance. You can outsource these services to our teams of experts.

The «PLUS» of our contract packages

- Regular services according to both rate and conditions of use of your machine
- A quality service provided by technicians specialized in hydraulic and thermal processes
- Planned maintenance operations to limit production stops
- Management of your restocking of parts by our technicians
- A free access to our hotline and priority processing of your requests
- Detailed maintenance reports for full traceability
- Possible monitoring or remote control

Training - audit

- Staff turnover, integration of new operators... We are at your disposal to study your training needs for the operation of your installation.
- Our Engineering and Services structure will work with you to develop training services adapted to your present and future needs.
- ACTINI also offers performance audits and retrofit solutions for your installations and equipment



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Actini... an international presence for a local support

