EFFLUENT DECONTAMINATION

THERMAL SYSTEMS BSL-1 TO BSL-4

A large range for Labs and Bio-Industries
Located in Evian, France, ACTINI has over 60 years experience and a superb reputation as a global leader in designing, manufacturing and commissioning heat treatment equipment.

Expert in the decontamination of liquid effluent, ACTINI offers a complete range of standard systems designed to meet the needs of contained laboratories and biofacilities using biological agents BSL-1 to BSL-4.

Its ability to innovate combined with technical skills and historical know-how have enabled ACTINI to provide its customers with very efficient and cost-effective solutions. Ensuring a safe disposal of effluent, they also meet current problematics such as productivity, profitability of facilities, compactness of the systems and sustainability.

Our Expertise: management of the decontamination of hazardous effluents.
Our Experience: 200 operational units installed in vaccine manufacturing facilities, biotech sites, research centers and laboratories.
Our commitment: to deliver safe and competitive solutions for the treatment of your waste.

**OUR STANDARD DECONTAMINATION PRODUCT LINE**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>DAILY CAPACITIES*</th>
<th>TECHNOLOGY</th>
<th>ENERGY</th>
<th>BSL</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAB PRODUCT LINE</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>KUBE</td>
<td>70 liters</td>
<td>Batch</td>
<td>Electricity / patented system</td>
<td>1 - 2 (; 3)</td>
</tr>
<tr>
<td>SINK</td>
<td>70 liters</td>
<td>Batch</td>
<td>Electricity / patented system</td>
<td>1 - 2 (; 3)</td>
</tr>
<tr>
<td>MICRO</td>
<td>300 liters</td>
<td>Batch</td>
<td>Electricity</td>
<td>1 - 2 - 3</td>
</tr>
<tr>
<td>ULTIMATE</td>
<td>5 to 16,000 liters</td>
<td>Continuous</td>
<td>Steam</td>
<td>1 - 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BIOFACILITY RANGE</th>
<th>MODEL</th>
<th>DAILY CAPACITIES*</th>
<th>TECHNOLOGY</th>
<th>ENERGY</th>
<th>BSL</th>
</tr>
</thead>
<tbody>
<tr>
<td>CYCLOBATCH SYSTEMS</td>
<td>BDS-300</td>
<td>1 to 1,800 liters</td>
<td>Batch</td>
<td>Steam tangential injection</td>
<td>1 - 2 - 3</td>
</tr>
<tr>
<td>BDS-750</td>
<td>2 to 4,500 liters</td>
<td>Batch</td>
<td>Steam tangential injection</td>
<td>1 - 2 - 3</td>
<td></td>
</tr>
<tr>
<td>BDS-1600</td>
<td>6 to 9,000 liters</td>
<td>Batch</td>
<td>Steam tangential injection</td>
<td>1 - 2 - 3</td>
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</tr>
<tr>
<td>BDS-2200</td>
<td>10 to 14,000 liters</td>
<td>Batch</td>
<td>Steam tangential injection</td>
<td>1 - 2 - 3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CONTINUOUS SYSTEMS</th>
<th>MODEL</th>
<th>DAILY CAPACITIES*</th>
<th>TECHNOLOGY</th>
<th>ENERGY</th>
<th>BSL</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDS-500</td>
<td>2 to 8,000 liters</td>
<td>Continuous</td>
<td>Electricity</td>
<td>1 - 2 - 3</td>
<td></td>
</tr>
<tr>
<td>FDS-1000</td>
<td>5 to 15,000 liters</td>
<td>Continuous</td>
<td>Steam</td>
<td>1 - 2 - 3</td>
<td></td>
</tr>
<tr>
<td>FDS-3000</td>
<td>10 to 45,000 liters</td>
<td>Continuous</td>
<td>Steam</td>
<td>1 - 2 - 3</td>
<td></td>
</tr>
<tr>
<td>FDS-6000</td>
<td>30 to 90,000 liters</td>
<td>Continuous</td>
<td>Steam</td>
<td>1 - 2 - 3</td>
<td></td>
</tr>
<tr>
<td>FDS-12000</td>
<td>50 to 180,000 liters</td>
<td>Continuous</td>
<td>Steam</td>
<td>1 - 2 - 3</td>
<td></td>
</tr>
</tbody>
</table>

BSL-4 CONTAINMENT: Specific design according to user's requirements
Custom-designed solutions up to 450,000 liters per day: Upon request
... DECONTAMINATION SYSTEMS
... FROM 10 TO 180,000 LITERS PER DAY

FEATURES OF OUR SYSTEMS

- Heat treatment with sterility rates (F0) from 25 to 50 depending on the required safety levels
- Electrically (patented technology) or steam operated units
- Made as per European and US standards
- Compliant with the highest containment requirements for BSL-3 - BSL-4 / SIL-3
- PLC-controlled operation
- Modular concept assembled and tested at our facilities
- Available 10-year Performance Warranty

> FIRST GOAL:
A SAFE DISPOSAL OF YOUR HAZARDOUS BIOLOGICAL WASTE

BENEFITS

- Pre-engineered units at competitive prices
- Lab range units available and in stock
- Delivery of biofacility systems within 3 to 4 months (fast-track delivery option upon request)
- Short installation and commissioning times
- Pre-validation for a short pre-licensing period (simple and fast qualifications, all the protocols and procedures included in our standard documentation)
- High energy efficiency
- Our expertise to design specific equipment according to URS

> SECOND GOAL:
PROVEN SOLUTIONS FOR AN OPTIMIZED PROJECT MANAGEMENT AND BUDGET CONTROL

COMPACT FOOTPRINT

- All our systems are self-contained process skids
- Very optimized footprint even for our largest capacity units
- Modular layout
- Designed to fit in very tight spaces and be installed without making any change to the building
- Ideal solutions for retrofit/replacement projects

> THIRD GOAL:
SAVING SPACE MEANS SAVING MONEY
**<strong>«PLUG AND PLAY» LAB UNITS</strong>**

**ELECTRICALLY OPERATED**

### KUBE & SINK

**UP TO 70 LITERS PER DAY**

**TECHNICAL DATA**

- Effluents: BSL-1-2-3
- Capacity: up to 70 liters per day
- Storage capacity: 25 liters
- Energy: Electricity / Single-phase 230 V - 50 Hz / 1.1 kW

**KUBE**
- Decontamination Unit
  - Layout (mm): 527 x 824
  - Height (mm): 831
  - Patent: FR1355689

**SINK**
- Decontamination Sink
  - Layout (mm): 527 x 747
  - Height (mm): 1,250

### MICRO

**UP TO 300 LITERS PER DAY**

**TECHNICAL DATA**

- Effluents: BSL-1-2-3
- Capacity: up to 300 liters per day
- Storage capacities:
  - 250 liters
  - 400 liters (option)
- Energy: Electricity
  - Single-phase 230 V - 50 Hz
  - 3 kW - 13 A
- Energy recovery section
- No chilled water required

**Layout (mm):**
- 880 x 1,100

**Height (mm):**
- 2,100

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**GUARANTEED DECONTAMINATION**

By utilizing our systems, you will be guaranteed that any kind of effluents coming from sinks, showers, washing machines, utilities of the process and any biocontained area of your facilities will be decontaminated.

Lethality rate: F0 50 - Treatment temperature: 135°C - Holding time: 2 minutes.

**COMPACT FOOT PRINT AND EASY SERVICING**

The layout of our «lab» units has been specifically designed for placement in very tight spaces. These «Plug and Play» systems do not require any commissioning.

Tested in our workshops before shipment, they will be fully operational as soon as plugged.

**AUTOMATIC OPERATION**

These systems do not require any manual intervention.

Fully automated, the PLC controls the cycles for a safe operation from the collection of the contaminated liquid to the disposal of the treated liquid with total monitoring.

**AFFORDABLE SOLUTION**

Produced in series, these units have been designed to fit in the budgets of research centers and university laboratories.
ULTIMATE
ULTRA COMPACT STEAM DECONTAMINATION SKID BSL-1 & BSL-2

The ULTIMATE decontamination system has been designed to meet the needs of laboratories as well as BSL-1 and BSL-2 production units. This very cost-effective basic model gathers all the important basic functions.

SKID DESCRIPTION
- CIP tanks for CIP solutions storage
- Pumping system secured by a filter
- Treatment section with energy recovery system
- Fully instrumented system (temperature sensor, flowmeter, pressure, level transmitters and valves) for an automatic operation from the inlet to the release of the decontaminated effluents.
«CYCLOBATCH» SYSTEMS
THE «BENEFITS» OF AN INNOVATIVE TECHNOLOGY

BATCH DECONTAMINATION UNIT
MODEL: CYCLOBATCH - FROM 1,000 TO 14,000 LITERS PER DAY

TECHNICAL DATA
Effluents: BSL-1-2-3-4
Particularly effective for small solids decontamination and high viscosity products
Energy: Steam
Patent: FR1363330

FEATURES OF A UNIQUE DESIGN
- Steam tangential injection
- Cooling outside treatment tank
- No vent filters
- Gravity draining
- Decontamination of effluent under pressure
- Silent operation

BENEFITS
Reliability
- Homogeneous treatment thanks to the spiral motion produced by the steam injection
- No vent clogging
- No pumps protects against possible leakage
- No risk of recontamination of the treated product by holding contaminated effluents under pressure

Budget
- Lower capital investment
- Short heating time
- Optimal energy efficiency (reduced energy consumption by 23%)
- Less maintenance

Comfort
- Less noise (reduced by 17 A decibels)
CONTINUOUS SYSTEMS
THE BEST APPROACH TO TREAT LARGE VOLUMES OF EFFLUENTS

CONTINUOUS DECONTAMINATION SYSTEM
MODEL: FDS - FROM 2,000 TO 180,000 LITERS PER DAY

OPERATION
- Redundant control of the decontamination parameters
- PLC-controlled cycles (level controlled automatic start-up and shut-down, CIP cycles) and records
- Automatic self-sanitization cycle

DESIGN
- Monotubular design enables continuous treatment of large volumes
- Energy efficiency: 80% of the used thermal energy is saved
- 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 effluents (high chloride resistant)

INSTALLATION
- Very compact design (for example, less than 9m² to treat 100,000 liters per day)

TECHNICAL DATA
Effluents: BSL-1-2-3-4
Energy: Electricity or Steam
Integrated energy recovery system
Technology: All-welded tubular exchanger
Recommended decontamination capacity: 15 hours per day
Patent: US6496649

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OUR COMMITMENT FOR SERVICING

PROXIMITY... REACTIVITY... EFFICIENCY... to provide you with equipment meeting your expectations that your operators will use with confidence for a long time.

To guarantee this high level of operational reliability and quality production, we offer you different « Services & Maintenance » options that allow optimum management of the maintenance of your installation during its lifecycle.