APPLICATIONS

WORLD-CLASS TREATMENT SOLUTIONS

Infisco provides high-performance water, wastewater, and sludge treatment solutions for any size population and virtually any influent condition. We are involved in every stage of a project, from process design to equipment supply to operations training and support.

Careful evaluation of each application means our customers receive the most efficient combination of technology and products at the lowest overall cost. Our design engineers look at the entire treatment process to find ways to improve water supply and control pollution economically.

We handle drinking water treatment and wastewater applications such as primary, secondary, wastewater reuse, and stormwater management for municipalities around the country. Industries, too, benefit from our diverse solutions, including physical-chemical treatment, packed-bed demineralization, ion exchange, reverse osmosis, and aerobic/anaerobic biological systems.

MUNICIPAL/DRINKING WATER SOLUTIONS

Infisco provides solutions for any size customer population and virtually any influent condition. Our proven water treatment technologies include high rate clarification, filtration, biological treatment, and disinfection for drinking water applications. Below are some of the products offerings:

- AquaDAF® Clarifier
- DenseDeg® Clarifier/Softener/Thickener
- Superpulsator® Clarifier
- Accelator® Clarifier-Softener
- Greenleaf Filter System
- ABW® Automatic Backwash Filter
- Pulsapak® Package Clarifier/Filter System
- AquaPAK - Package Clarifier/Filter System
- AccelaPAK® - Package Clarifier/Softener/Filter
- Ferazur®/Mangazur®/Nitrazur™

INDUSTRIAL

Infisco designs, engineers, manufactures, commissions, and services industrial process water and wastewater treatment systems. Key industries served include power generation, food and beverage, mining, petrochemical, pharmaceutical, pulp and paper, and refining.

Our solutions include both physical-chemical treatment and biological systems (aerobic and anaerobic). We remove nitrogen, phosphorus and carbonaceous pollution from wastewater, and treat the effluent for industrial reuse applications such as boiler feed water or cooling tower makeup.

WASTEWATER, STORMWATER AND SLUDGE MANAGEMENT SOLUTIONS

Infisco examines the entire treatment process and finds ways to control pollution efficiently and economically. We handle primary, secondary, wastewater reuse, and stormwater management applications. Our wastewater technologies include headworks, clarification, biological and biosolids solutions, some of which are listed below:

- Aerodredge Grit & Grease Removal System
- Climber® Screen
- Helico® Screenings Press
- Vortex® Grit Remover
- Biofor® BAF
- Cleargreen™
- Denifor® Denitrification System
- HYBACs Hybrid Activated Sludge Technology
- BLO® Biological Treatment System
- Metro® FAS/MBBR Process
- Ultragreen™
- 2PAD Anaerobic Digestion
- Cannon® Mixer
- Dehydris® Twist
- Heliantis® Solar Sludge Drying
- Innodry® 2E Thermal Dryer
- TACS - Thermylis® Advanced Control System
- Thermylis® Thermal Oxidation Incineration
- Tecon Membrane Covers

BIOSOLIDS SOLUTIONS
**PRODUCT RANGE**

**BIOSOLIDS SOLUTIONS OVERVIEW**

Inflico Degremont’s Biosolids solutions span a broad spectrum of applications. We offer a complete line of industry-leading technologies for biosolids digestion, dewatering, drying and thermal oxidation. Inflico understands the careful planning needed to design and construct this portion of the plant. Consult our specialists to find the most appropriate solution for your specific treatment requirement.

<table>
<thead>
<tr>
<th></th>
<th>DIGESTION</th>
<th>DEWATERING</th>
<th>DRYING</th>
<th>OXIDATION</th>
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<tbody>
<tr>
<td><strong>2PAD</strong></td>
<td>2 to 8</td>
<td>2 to 6</td>
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<td><strong>INNODRY® 2E</strong></td>
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<td><strong>THERMYLIS®</strong></td>
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<tr>
<td><strong>FEED SOLIDS (%TS)</strong></td>
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<tr>
<td><strong>END PRODUCT (%TS)</strong></td>
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<td><strong>VS DESTRUCTION (%)</strong></td>
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<td><strong>MASS REDUCTION (%)</strong></td>
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<tr>
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<td>Medium</td>
<td>High</td>
<td>Small</td>
</tr>
</tbody>
</table>
2 PHASE ANAEROBIC DIGESTION SYSTEM FOR CLASS A BIOSOLIDS

2PAD produces Class A Biosolids, which can be land-applied without restrictions in accordance with the EPA’s 40 CFR Part 503 regulations. IDI’s 2PAD process separates the acid and methane forming digestion phases (acidogenesis and methanogenesis), increasing the efficiency of both and, combined with the high temperature, destroys the pathogens to below detectable limits. A two year pilot study confirmed the effectiveness of the 2PAD System to meet EPA requirements for Class A Biosolids. The 2PAD System has been granted “PFRP Conditional National Equivalency” by the Environmental Protection Agency, as recommended by the Pathogen Equivalency Committee.

APPLICATIONS
• Class A Biosolids production by anaerobic digestion at shorter retention time
• Maximized biogas energy recovery

ADDITIONS:
• Produces Class A Biosolids
• Total digestion time (~12 days) greatly reduces footprint
• No foaming
• Integrated heat recovery system
• Automated system control
• 7 references worldwide

CANNON® MIXER

LARGE GAS BUBBLE COMPLETE DIGESTER MIXING SYSTEM

CANNON® MIXER uses large piston bubbles to agitate digester contents thoroughly and economically. Bubble generation every three to four seconds per mixer guarantees better than 90 percent active volume in the digester. Ideal for deep-tank mixing, the system is not only superior in performance but is also easy to install, operate, and maintain.

CANNON® MIXER fits well within a variety of applications, from retrofitting existing digesters to optimizing two-phase anaerobic digestion systems.

APPLICATIONS
• New or retrofit existing anaerobic digester mixing system
• Complete mixing for anaerobic digesters of any size
• Ideal for thermal hydrolyzed sludge mixing
• 90% or greater active volume guaranteed
• Optional internal heating for < 1°F variation in the digester
• Increased volatile organic removal
• Reduced sludge volumes
• Low operating costs
• Minimal in-tank maintenance
• Over 300 references worldwide
TECON pioneered double membrane gas holder system and has offered tank-mounted (1/2 balloon) or ground mounted (3/4 balloon) gas holders to the global market for decades. TECON’s technology guarantees the most durable double membrane gas holder in the market and the lowest maintenance requirement at a very competitive price.

**APPLICATIONS**
- New or retrofit existing anaerobic digester covers
- Landfills with biogas usage, industrial plants, etc.
- Gas holder system of any shape (e.g. rectangular, donut, etc) and size

**ADVANTAGES**
- Cost effective with lower capital costs than similar designs
- Integrated gas volume measurement
- Custom built for any size, shape and strength
- Most installations completed in 2 days
- Easy maintenance
- Over 1,700 references worldwide

**TECON**

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HELANTIS™

**SOLAR SLUDGE DRYING**

HELANTIS™ transforms any type of dewatered sludge (minimum dry content: 15%) into a dry, granulated product with a dry solids content that can be adjusted within a range of 35% to 85%. Using the sun as the main energy source, the sludge is dried in a greenhouse and a scarifier turns over and breaks up the sludge into stable and odorless granules for eventual agricultural reuse or thermal energy production using co-incineration. The simple design feature allows for dewatered sludge to be applied directly to the greenhouse. The sludge bed is heated by the sun, evaporating the water.

**APPLICATIONS**
- Applicable in most climates
- Treats any type of dewatered sludge
- Plants requiring stable, dry, carbon-neutral and odorless granulated biosolids

**ADVANTAGES**
- Patented design
- Design optimized to regional solar radiation
- 31 to 46 btu/lb H₂O evaporated
- Aerate sludge up to 3ft depth
- Continuous sludge drying
- Built-in winter storage
- Hundreds of references worldwide in industrial and municipal applications

INNODRY® 2E

**ADVANCED TWO-STAGE THERMAL DRYING**

INNODRY® 2E is an innovative and patented combination of proven technologies, allowing the advantages of both direct and indirect dryers, with unmatched energy-efficient performance in a dust free environment.

INNODRY® 2E is also designed to ensure the highest operational safety standards, with reduced volume and improved quality of wastewater biosolids.

**APPLICATIONS**
- Applicable anywhere thermal energy is available (e.g. Biogas, Natural Gas, Oil, Steam (130 psig), Electricity, Flue Gas)
- Treat any type of dewatered sludge of 18 - 35% DS
- Plant requiring stable, dry, carbon-neutral and odorless granulated Biosolids

**ADVANTAGES:**
- Two stage drying technology
- Capacities from 0.5 up to 6.5 t/h water evaporation
- Energy-efficient, with an integrated heat recovery system (<1100 btu/lb H₂O)
- Operational safety
- No dust
- Low exhaust air emission
- Over 45 references worldwide
**ADVANTAGES**
- Complete and final disposal with 93% sludge reduction
- Minimum use of auxiliary fuel
- Sustainable with maximum heat recovery
- Tolerant of sludge variation
- Small footprint
- Adaptable for continuous or intermittent operation
- Safe to operate
- Over 45 references worldwide

**APPLICATIONS**
- Municipal wastewater solids
- Chemical and paper mill waste
- Petrochemical waste

Air emissions meet the EPA’s most stringent requirements for 2016. This “Green” technology is proven, safe and environmental friendly.

**2016 EPA COMPLIANCE**
Maximum Achievable Control Technology (MACT129) regulation established by the United States Environmental Protection Agency (EPA) as part of Clean Air Act (CAA) was published in Federal Register (40 CFR part 60) on March 21, 2011. The new regulations affect all sewage sludge incinerators irrespective of the process involved. They are more much stringent than all previous regulations and require plants to determine compliance needs, design solutions, and complete all upgrades prior to March 20, 2016.

IDI brings substantial cost control and project experience from previous projects that include upgrades to Multiple Hearth incinerators and design/construction of Fluidized Bed incinerators. IDI can repair multiple hearths, offer state-of-the-art pollution control packages, and even design and install Fluid Bed systems as an alternate to Multiple Hearth rehabilitation.

IDI’s services include process evaluation and optimization using virtual simulation programs, modifying oxygen control within the incinerator, upgrading pollution control systems and replacement of all aging components required for safe and compliant operation of incinerators. IDI has the necessary expertise, experience and capability to bring existing plants into compliance in the fastest possible time frame.

**TACS: THERMYLIS ADVANCED CONTROL SYSTEM**
TACS is the first automatic control system developed for HTFB to regulate and optimize the combustion process. This innovation promotes steady operation, minimizes water spray, increases the incineration system’s capacity, lowers polymer and auxiliary fuel consumption, reduces air pollutant emissions, and ultimately yields an automatic and optimized incineration operation.
ADDITIONAL SKILLS AND EXPERTISE

INFILOCO

Infilco offers pilot systems and services for the equipment in this brochure as well as for many of our other product offerings. Pilot studies are a practical means of optimizing physical-chemical and biological process designs and offer the client several benefits, such as:

- Proof of system reliability
- Optimization of design conditions for the full-scale system
- Support for the regulatory approval process

DENARD

In North America, the Degremont Technologies North American Research & Development Center (DENARD) provides technical support services and research. In conjunction with Degremont’s central research center in Europe, DENARD scientists develop innovative technologies that comply with ever-changing environmental regulations and standards.

DENARD’s laboratory scientists develop essential data and information needed to solve problems connected with all types of waters. Laboratory analysis plays a major role in the development of Infilco process designs. Staff members assist with process start-up and troubleshooting in the field.

DENARD also serves as a liaison with federal, state, and university organizations addressing contemporary environmental issues. Research teams with years of expertise in their respective fields achieve practical, economical solutions to water and wastewater challenges in North America.

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