



Evaporative Reduction and Solidification System



Industrial Water Solutions Intevras Products

Innovative solutions for industrial water purification, remediation and process improvement.

EVRAS™ Features

- Thermally driven evaporative process uses low grade waste heat
- No scaling or fouling of heat transfer surfaces
- Process occurs at low temperature and atmospheric pressure
- No exotic metals or alloys required
- Evaporation is insensitive to elevated or varying TDS
- Portable & permanent installations
- Instrumented for unmanned operation
- Capable of full crystallization (zero liquid discharge)
- Concentrates waste streams upwards of 90% by volume
- Modular design
- Green process puts only fresh water into the atmosphere

EVRAS™ Patented Evaporation System

The EVRAS™ evaporative reduction and solidification system is a patented technology which utilizes low grade waste heat to concentrate and/or crystallize wastewater streams without TDS induced corrosion and/or scaling.

The EVRAS™ evaporative reduction and solidification system was developed as an outgrowth of volumetric reduction in several industries:

- Oil & Gas Industry
- Power Generation
- Chemical Production
- Landfill Leachate
- Food Processing
- De-icing Fluid Recycling

The EVRAS™ system can be employed in many other industries or applications needing to minimize liquid wastes and/or convert to a zero liquid discharge system.

Similar in process to cooling tower blowdown, this unique system eliminates problems associated with conventional volumetric reduction technologies while offering many distinct benefits.

EVRAS™ technology results in no scaling or fouling of heat transfer surfaces, no corrosion within the system and no high reject volumes. EVRAS™ does not require gas, fuel or steam use, exotic construction materials or excessive chemical treatment.

By employing natural evaporation - which is a function of water temperature, surface area and air flow - and utilizing low-grade waste heat, EVRAS™ puts only clean water vapor in the atmosphere.

This makes EVRAS™ cost-effective, Green, breakthrough technology, without parallel in the marketplace.



Innovative solutions for water purification, remediation and process improvement

Office 512.772.3722 Fax 512.772.3622
www.intevras.com
www.laynewater.com

Layne Industrial Water Solutions Group
Intevras Products

We reserve the right to modify the characteristics of our products and/or change specified parameters without prior notice.

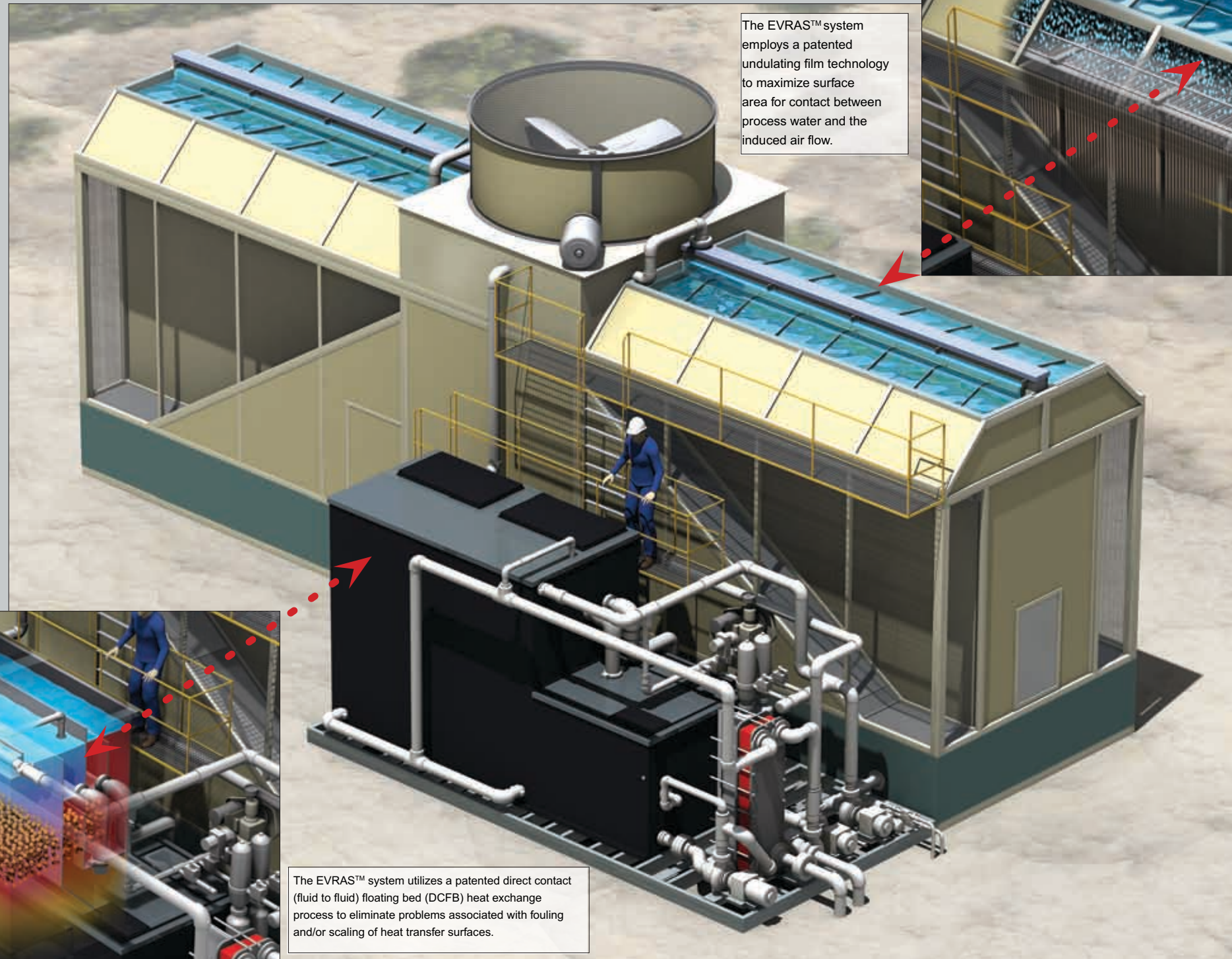
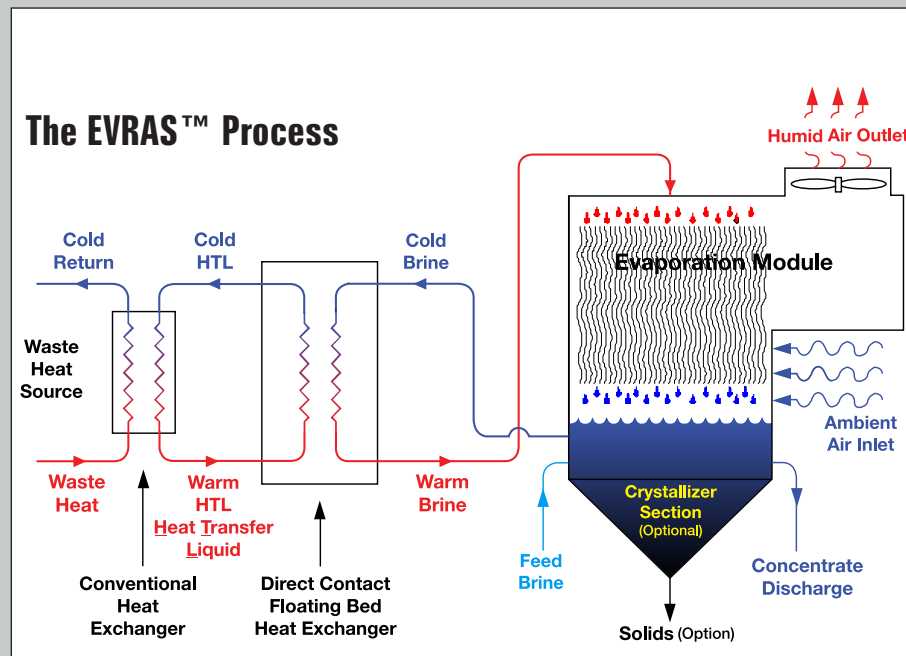
Committed to Green Industry!

512.772.3722
www.intevras.com
www.laynewater.com

Layne Christensen Company

Water Infrastructure:
Design
Develop
Deliver

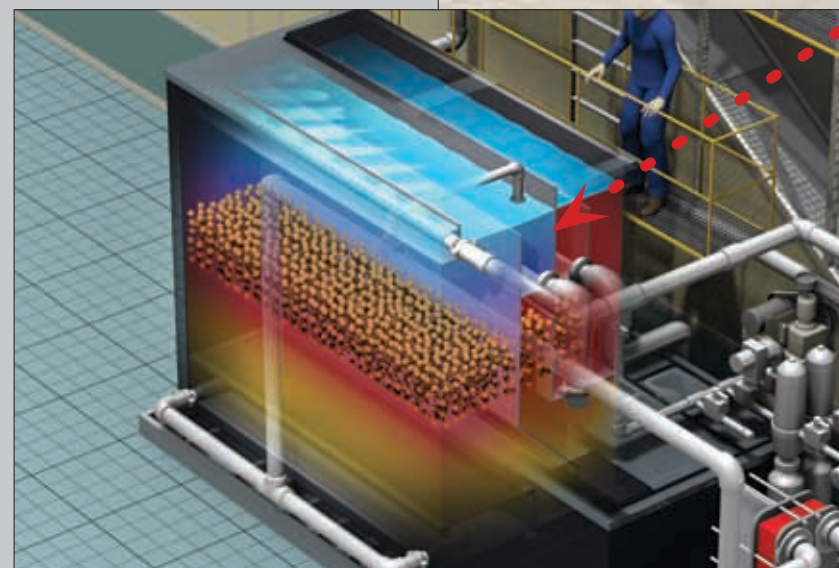
EVRAS™ Evaporative Reduction and Solidification System



The EVRAS™ system employs a patented undulating film technology to maximize surface area for contact between process water and the induced air flow.

EVRAS™ System Features

- Employs natural evaporation which is a function of water temperature, surface area and air flow.
- Recovers low grade heat from any waste heat source in order to accelerate the natural evaporation process. Examples include: Natural Gas Compressors, Cooling Towers, Fired Heaters, Furnaces, and more.
- Provides cooling benefits to current equipment and process through heat recovery in addition to eliminating waste water.
- Reduces current disposal and logistics requirements through reduced trucking volumes.
- A recycling technology that returns clean water vapor the hydrologic cycle.
- Can provide increased “Green” revenues for natural gas producers and boost “Green Image”.



The EVRAS™ system utilizes a patented direct contact (fluid to fluid) floating bed (DCFB) heat exchange process to eliminate problems associated with fouling and/or scaling of heat transfer surfaces.

EVRAS™ Quality

Each EVRAS™ system is manufactured from lightweight, non-exotic, corrosion-resistant materials of construction. Each unit is subjected to rigorous QA/QC during the manufacturing process so as to ensure a high level of quality and functional integrity. Moreover, EVRAS™ units are warranted to be free of design and manufacturing defects.

The EVRAS™ process evaporates and concentrates water at low temperatures. Evaporation occurs at the direct contact point between air and warmed waste water. The ambient air and warmed waste water pass concurrently across a patented undulating film to enhance the evaporation process.

A highly differentiated feature of the EVRAS™ system is the patented Direct Contact (fluid to fluid) Floating Bed (DCFB) heat exchange process which eliminates problems associated with fouling/scaling of heat transfer surfaces. A proprietary non-toxic heat transfer fluid is used in the DCFB heat exchanger which has no solubility for scale-forming minerals. The liquid-to-liquid heat exchange process employs no solid surfaces to foul or scale. Polymer spheres in the DCFB tank maximize the heat exchange by increasing surface area.

