

Model 4583

High Solids Separations and Water Recovery System



Transform your industrial water processing operations with our Turnkey and Customizable Automatic High Solids Removal System that boosts efficiency and saves costs!



In the demanding world of industrial water processing, maintaining peak efficiency and reducing downtime are critical to your operation's success. We understand the challenges you face with heavily loaded water systems, and particularly, the difficulties in managing high solids content.

That's why Sigma Design Company engineered the **Model 4583 High Solids Separations and Water Recovery System**. The system filters and thickens high solids process water with Total Suspended Solids (TSS) between 300 ppm to 40,000 ppm/mg/l. The final discharge of the process and treated water contains significantly reduced TSS and BOD levels, making it suitable for permitted discharge to most wastewater facilities.

How It Works

Variable speed feed pumps send flow to a first cut drum screen where a bulk of the large particles are removed from the flow. The effluent of the drum screen is automatically monitored, and flow adjusted to maintain a balanced system. This is especially needed in applications that experience upset conditions or variable TSS loading. Collected solids are discharged through a spiral compactor where the system presses and dewateres solids to an approximate 35% dryness. In many systems, the collected solids/biomass can be used as a secondary revenue source as fertilizer, or other ingredients needed for food and pharmaceutical processes.

An integrated equalization tank collects separated process fluid and delivers it to an automatic filter skid to further reduce the TSS and BOD. The effluent from the automatic filter can be sent to local municipalities with reduced TSS and BOD, or it can be diverted and used for washdown in other plant processes.

Our Smart System Controls allow PLC/HMI controlled modulation and P&ID loops to control all process parameters. A freshwater hookup is available to run a cleaning loop through the system.

Our cutting-edge technology leverages the latest advancements in filtration and automation technology, delivering a system that is both robust and efficient.

Benefits

- **Unmatched Efficiency:** Our system ensures continuous, automatic removal of high solids, significantly reducing the burden on your primary processing equipment.
- **Cost Savings:** By automating the solids removal process, you can drastically cut down on labor costs and minimize the need for manual intervention, while extending the lifespan of your equipment.
- **Improved Water Quality:** Consistent and effective removal of solids leads to higher water quality and improved overall process performance.
- **Scalability and Flexibility:** Whether you're expanding or optimizing current processes, our solution adapts to your needs.
- **Environmental Concerns:** By enhancing the efficiency of your water treatment processes, our system supports your sustainability goals.

TURNING SMART IDEAS INTO PRODUCT SOLUTIONS

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A Turnkey Solution

The Model 4583 system is a comprehensive, ready-to-implement, turnkey solution that includes everything you need—from installation to ongoing support. This ensures a seamless transition and quick deployment, minimizing downtime and maximizing productivity.

Designed specifically for removal of TSS >15,000 ppm (1.5%) and < 40,000 ppm (4%), and for micron removal between 500 to 750 microns, it functions as an integral part of any water treatment system used to recover and reuse water that contains a high concentration of solids. These materials can clog filters, increase the frequency and cost of maintenance, reduce their operational life, and require frequent backwashing or replacement. This situation is common in an array of industries such as wastewater treatment, mining, food processing, and chemical manufacturing, where water might carry significant amounts of suspended solids, dissolved minerals, or other particulates.

Applications

- **Wastewater/Industrial Wastewater Treatment** including industries such as textiles, paper mills, and food processing that generate wastewater with high TSS, containing remnants of raw materials and processing agents.
- **Recycling and Reuse** of recovered water that can often be reused in the same process or utilized for other purposes.
- **Mining and Mineral Processing, Ore Extraction and Washing** due to processes such as the washing of mined ores that result in runoff heavily laden with fine rock particles and minerals that are removed by this system.
- **Food and Beverage Industry/Fruit and Vegetable Processing** by removing organic and inorganic particulates, thus enabling water reuse in a water-intensive industry.
- **Construction and Land Development/Site Preparation and Excavation** that produce runoff water with high levels of soil, clay, and organic matter, especially after rainfall.
- **Pharmaceutical Production** by reducing discharge process water that contains high TSS to below permitted levels.
- **Oil and Gas/Drilling Operations** by removing fine rock particles and drilling cuttings found in water and drilling fluids used in the extraction process.
- **Oil and Gas/Produced Water** by treating water extracted along with oil and gas containing high levels of suspended solids.

About Sigma Design Company

Sigma Design is a leading one-stop design, engineering, and manufacturing resource for the development of specialty equipment and engineered systems. Our mission is to provide clients with creative, affordable and easily manufactured designs and manufacturing assembly solutions that achieve their product, business and revenue goals. Our clients have included hundreds of leading global brands and manufacturing firms across a wide array of industries. Based in New Jersey for more than 20 years, we have transformed more than 1,000 design and design/build projects into successful products and specialty equipment in use across the world.

SERVICES INCLUDE:

- Design and engineering
- Testing
- Manufacturing

Your trusted one-stop resource for end-to-end product development and commercialization solutions, on time and on budget.

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