Louisiana Case Study

MEGA-Drain™ Stockpile Decant Solution for Industrial Sand Mining

Dredged sand is sent to a hydrocyclone washing and separation plant. The sand is washed, sized and then sent to dewatering cyclones at almost 600 tons per hour and stacked at roughly 75–79% solids on a ~99,400 square foot concrete decant pad with 75,000 production tons of capacity. After the sand sits on the pad for 3 days and the moisture content is reduced to 8% (or 7 days to drain to 5% moisture), the sand is sent to two rotary drum dryers each capable of drying 200 tons per hour at that moisture content feed.

The Bottleneck

The rotary dryers have a maximum heat transfer rate, so to increase plant throughput either:

1. Another rotary dryer needs to be added to add more BTU for drying of the sand (expensive)
2. More concrete decant pad area added (expensive and space constraints)
3. A MEGA-Drain™ replaces existing concrete pad(s) to increase the decant rates with potential increases of up to 10-20% above name-plate of rotary dryer output if the washed sand feed is in the 5% moisture range.

MEGA-Drain® Solutions < 5% Moisture in 9 Hours

Stockpile moisture contents were measured over time for a 50 x 140 mesh size washed sand product with a Stevens Hydra Probe. In 9 hours the sand was found to have drained from 17.4% moisture content by weight to 4.9%. This industrial sand plant is now able to feed washed sand to the dryer from the de-watering cyclones in as little as five hours at low moisture content, increasing production efficiency with natural gas savings.

Economics

MEGA-Drain™ economics are robust. For an investment in the range of $25 to $35 per square foot installation of MEGA-Drain™, plant capacity was increased by 23% by removing the moisture bottleneck on the drier feed. Assuming a conservative $7.5/ton EBITDA margin per additional ton of finished sand sold and an increase of 115 TPH process outputs equates to 856,000 additional tons sold per year with incremental EBITDA of $6.4 million annually on a $2.5 to $3,5 million investment.

Conclusion

MEGA-Drain™ water storage vault and collection systems have 95% pore space and is designed for maintenance and cleanout. This void space suddenly expands the hydraulic conductivity creating a vacuum effect drawing the stockpile moisture down to 5% (or less) moisture in under 12 hours The MEGA-Drain™ geocellular recovery system has a life expectancy of over 20+ years.

MEGA-DRAIN™
WATER IS AN ASSET, NOT A LIABILITY