BAYSTAR

Case Study

Infrastructure

Baystar HDPE 4920N

A case study in the sustainable mobile production, joining, and installation of long lengths of HDPE pipes in a challenging mining application—offering a proven alternative to steel pipes.

Project Snapshot

Project Name	Mosaic Phosphate Mining
Location	Central Florida, USA
Owner	The Mosaic Company
Project Date	2025
Application	Active mining pipes for water and slurry across three chemical facilities spanning remote acreage in mining areas
Scope	Mobile extrusion of PE4710 pressure pipe ranging in size of 8-inch DR11 to 24-inch DR17
Solution	Baystar HDPE 4920N

Benefits

- Ability to produce long lengths of pipe close to the actual job site in remote mining areas
- Reduces the number of fusion welds and welding time
- Offers more flexibility than rigid steel - contours with the terrain and elevation changes, reducing corridor grading and improving tolerance during water hammers
- Creates less friction, resulting in energy savings
- Combined, these benefits can contribute to significant costs savings ranging from 20 to 50 percent

Project Details

The Mosaic Company (NYSE:MOS) is one of the world's leading producers and marketers of concentrated phosphate and potash crop nutrients. With more than 13,000 employees across six countries, the company provides a single-source supply of phosphate, potash, and biological products to support global agriculture. In 2019, Mosaic utilized modular mobile extrusion technology to produce black pipe for a large process water pumping project. Following its success, the company explored replacing steel pipe with HDPE pipe across the vast 300 miles of active pipeline. Testing continued with various material conveyance and pipe SDRs, and by 2024, multiple lines had been converted into hydraulic and tailings, with ongoing monitoring. Subsequently, plans were approved to substitute HDPE pipe in hydraulic, tailings and clay conveyance, achieving significant cost savings and operational benefits. All mobile extrusion plants are equipped with QC / QA labs to produce standard 50-foot sections that meet ASTM F714, F2619, or D3035 standards, and are set up with racking to produce 500-foot sections.

Challenges

Challenges in the mining process include:

- A large quantity of pipe required for phosphate mining
- Highly abrasive slurry transfer that shortens steel pipe lifespan
- Common practice of rolling steel pipe to extend service life
- Numerous pinch points during steel pipe assembly and maintenance
- Harsh, corrosive environment that accelerates steel pipe degradation

Extruded pipe entering cooling tank

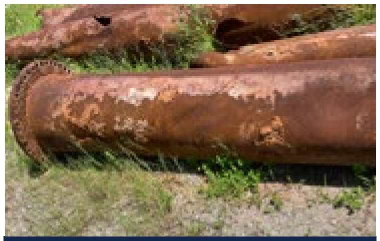
Solution

Producing long-length pipe using modular mobile extrusion technology proved to be a highly effective solution for Mosaics's central Florida mines. The project achieved a reduction of more than 1,280 fusion welds, saved over 3,200 hours of welding time, cut fusion machine rental by more than 400 days, and lowered overall pipe production costs by 20 percent. These results support the continued use of HDPE modular mobile extrusion technology in Mosaic's central Florida mines.

Pipe storage yard

HDPE 4920N pipe delivers long-term operational and economic savings through its flexibility compared to steel, better tolerance during water hammers, ability to contour with terrain and elevation changes, reduced corridor grading, and lower friction that leads to energy savings.

Mosaic is evaluating this technology and HDPE 4920N for additional plant sites and optimization opportunities, including:



Rusted steel pipe

- In-house fusion/welding
- Enhanced abrasion resistance
- Maximized regrind usage

Mining plant facility and modular pipe extrusion plant facility in central Florida

Learn more about HDPE 4920N

baystar.com

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