

CASE STUDY

Challenge: Tight quarters, uneven floor with slopes, high traffic areas, high magnetic field, water puddles, and caustic acidic operating conditions.

Solution: A shielded and sealed stainless steel AC servo driven Wheelift AGV fleet of 5-vehicles, each with enclosed self-loading capability for 80,000 lb payload and guided by inertial navigation technology

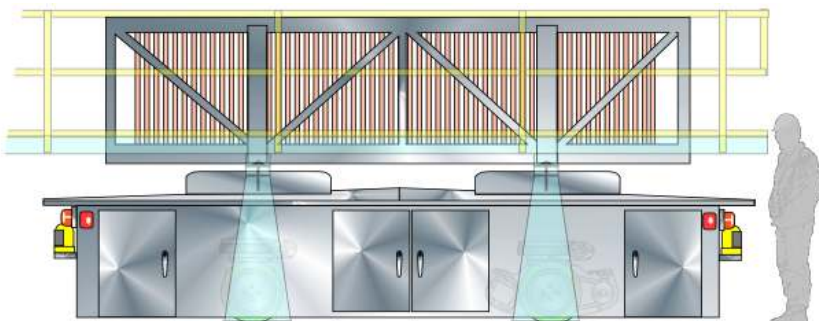
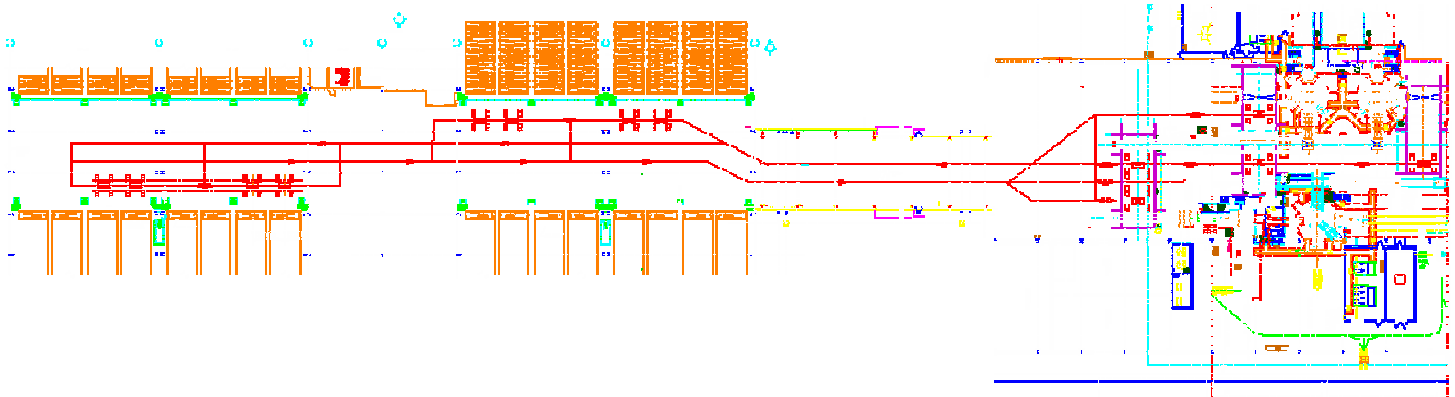
Benefit:

- Process equipment accessibility
- Reliability with built in redundancy
- Integral design for protection and safety



A leading international mining group uncovers Doerfer's Wheelift technology for material movement to/from the acid

tanks for the migration of copper ions from anodes to interleaved stainless steel cathodes forming plates of 99.99% pure copper.





A Doerfer Companies' Technology

A consistent and repeatable manufacturing process traditionally calls for a hard automation solution, however long distances, contamination with caustic acid dripping, parallel processing, close positioning, heavy loads, process equipment accessibility, and process disengagement lead one manufacturer to evaluate the flexibility and responsiveness that an AGV solution would offer.

Racks of anodes are lowered into an acid solution, interleaved with stainless steel cathodes. For 10 days, an electric current is sent between the anode and the cathode, causing the copper ions to migrate from the anode to the cathode. The other impurities, including gold and silver, drop off into the solution. This process forms a plate of 99.99% pure copper. An anode will produce two cathodes, each weighing about 280 pounds. The copper cathodes are the finished product.

Continuous material movement made this a very active system. The AGVs were required to handle all loaded and unloaded racks to and from the acid process interfacing to overhead cranes, gantries, and load perches.

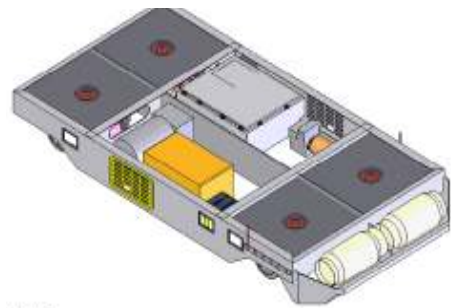


Each of the Transporters has four on-center rotation axle assemblies allowing crab steering throughout the manufacturing process, providing close adjacent line of travels and minimizing load blocking zones. With their 3-point fluid equalizing suspension, the axles have interconnecting fluid lines that divide them into load sharing groups to assure that every wheel carries only its specific share of the load, regardless of variations, slopes, and irregularities in the floor surfaces.



Navigation is accomplished with Siemens' non-invasive inertial guidance technology provided through Savant Automation driving system flexibility, reliability, and

supports plant maintenance's requirements for an open architecture control system with real-time system monitoring and diagnostics capability.



The **Modular Wheelift Chassis** provides a degree of flexibility not obtainable with other technologies. Worldwide niche markets drive manufacturing flexibility for product customization and configurable work processes. Wheelift Transporters and AGVs facilitate this requirement.

Manufactured in Iowa, **Wheelift** Transporters and AGVs are custom developed to each application including close positioning die loading, roll transfers, assembly, and general material handling. Load deck and fixturing is built to suit with load capacities to 500+ tons and deck heights as low as 18". Power options include LP gas, diesel, battery, or on-board generator. Electric or hydraulic drives are standard. For more information on our Wheelift Transporter and inertial/wire guidance AGV systems, please visit us at www.wheelift.com

Headquartered in Iowa, **Doerfer** develops application specific, custom manufacturing systems and machinery - many which revolutionize the way our customers manufacture, assemble, move, package, and test their products. We thrive on your toughest process challenges for manufacturing. For more information on our capabilities, please visit us at www.doerfer.com

