Material Durability

"Lower maintenance and inspection costs by using the right materials in the right place"

Industry Challenge: The adverse impact of wear and corrosion on a wide range of mining equipment.

NRC Solution: Improved materials selection processes and development of new materials and novel technologies that address wear and corrosion challenges.

Material Durability suite of Technologies

Materials Performance Program (MPP™)

The NRC Materials Performance Program (MPP™) provides consulting services on materials selection, evaluates performance in mining operations, maintains a database of a wide range of materials performance for the selection of wear and corrosion resistant materials and analyzes component failures and field experiences then recommends corrective measures.

Currently MPP™ conducts technical service projects and provides services through HEM's Mining Materials Wear and Corrosion Consortium. This consortium of industrial partners has collaborated for the past twenty years, establishing itself as a center of excellence for providing operational intelligence for some of the biggest names in the industry. Members of Consortium have exclusive access to WMData™ a database designed by the NRC for identifying the best materials solutions for equipment durability challenges.

Additive Manufacturing (ADMan™)

Industrial 3-D Additive Manufacturing (ADMan™) allows the integration/addition of high performance materials on low cost components in required areas to address critical manufacturing concerns in extending component life. This NRC technique overcomes some of the barriers to conventional methods such as integrating metallurgically incompatible materials to the component, applying required amounts of special materials in various locations so that the best performing material can be reliably utilised to its full potential.

Advanced Weld Cladding and Surfacing (AWCS)

Cost-effective weld cladding technologies, such as cutting-edge Gas Metal Arc Welding (GMAW or MIG) and Gas Tungsten Arc Welding (GTAW or TIG) processes are employed to develop novel overlay materials and innovative weld cladding and repair processes. Special emphasis is placed on arc welding processes with low heat input, low dilution, and high productivity.

The NRC AWCS program works closely with end-users, original equipment manufacturers, and service providers, to develop practical solutions with respect to potential novel overlay materials and processes, specific repair processes and strategies, and economical local enhancements of components using arc welding processes to effectively combat mining wear and corrosion.

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