OBJECTIVE/SOLUTION:
Light weighting of Army weapon systems require multiple classes of high performance, weight-efficient materials. Being the lightest metal, magnesium offers the greatest potential for weight reduction in Army weapon system structures. In order to expand the widest use of magnesium in Army structure applications, fully integrated magnesium manufacturing technology is being established to reduce the cost of non-flammable primary magnesium product, to improve the performance of wrought products, and to engineer the high fidelity magnesium lightweight structures for seamless integrations. The integrated magnesium manufacturing technology for lightweight structures (iMMT4LWS) solution enables agile Army Force Operating Capabilities (FOC).

Achievements:
- Established 3.3 ft² subscale nonflammable WE43 magnesium alloy direct chill cast model framework to improve the fidelity of the model in insuring crack-free rolling slab primary manufacturing
- Conducted a preliminary design review of the nonflammable WE43 magnesium alloy direct chill caster engineering
- Initiated non-flammable magnesium alloy thermomechanical process analysis for WE43 T5 rolled plate processing
- Demonstrating solid state stirring/joining technology for superior ballistic performance and robust assemblies of dissimilar metals

Benefits:
- Demonstrating 50% cost reduction through affordable nonflammable magnesium primary and secondary manufacturing products
- Equipping Soldiers with lightweight weapon systems for agile and extended force operating capability

Transition and Weapon Systems/Secondary Items Impacted:
- Stryker
- Future Fighting Vehicle

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