



Meltable Fuze Plug

PROBLEM

155mm projectiles are large caliber artillery munitions that require careful handling. During handling, the projectiles were hoisted by a legacy investment-cast, all-metal lifting plug. However, these lifting plugs would allow pressure inside the projectiles to build up to dangerous levels when the munition was exposed to elevated temperatures. This internal high pressure created the potential for unintended detonation, as well as for sympathetic detonation of neighboring munitions, putting personnel and material at risk.

SOLUTION

PTI Tech formulated a lifting plug comprised of a high-performance polymer with mechanical properties capable of handling 120-pound 155mm projectiles, but which softens enough at elevated temperatures to allow the excessive pressure within the projectile to dislodge the threaded plug. By passively venting the extra pressure, the potential for unintended detonation is mitigated. The finished product — incorporating the molded glass-filled ionomer, a machined washer, and multiple screws and gaskets — is assembled at PTI Tech's Clifton facility leveraging automation to ensure quality and conformance to pricing targets. PTI Tech has successfully manufactured and shipped more than 250,000 units — with zero reported failures — since being awarded the prime contract in 2013. Displaying exceptional performance on this effort, PTI Tech was awarded an "Eagle Note" from Picatinny Arsenal.



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PTI Tech (formerly Polymer Technologies Inc.) is an integrated precision injection molder of advanced polymers, metals (MIM), and ceramics (CIM) supporting the Aerospace, Medical, Defense, and Industrial sectors for over 30 years.