



CASE STUDY

CERALOOP FOR BRASS

BACKGROUND

Customer is a major manufacturer of products for water works, high pressure gas valves for utilities, water pumps, plumbing and industrial valves.

Metal grades melted

83600	Leaded brass (traditional leaded brass)
89833	No lead brass (bismuth containing)

Deterioration of refractory lining life

This campaign life of the inductors began to deteriorate when no-lead was introduced into production within the foundry. This operational change resulted in long periods of holding, followed by high volume melting. Zinc and zinc vapor penetration of the inductor lining resulted in severe saturation of the refractory, a rapid wear condition, and an overall decrease of lining life up to 90% on leaded brass alloys.

Multiple refractory grades were trialed to alleviate the decline in lining life - All products (listed below) experienced similar zinc penetration, metal saturation, and eventual wear. Refractory lining life remained low.

- Ultra-low cement, fused alumina based castable – worked in no-lead brass, not in leaded operation.
- Low cement mullite based castable – added for reduced porosity, did not improve performance.

EQUIPMENT

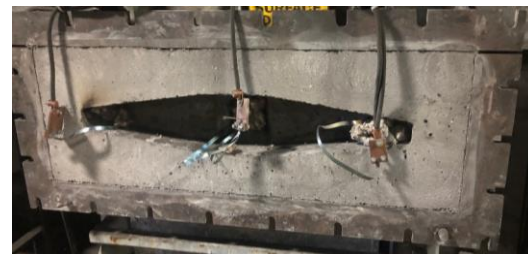
Melting equipment consists of (4) 10,000 lb. channel melting furnaces with 500 kW twin loop inductors.

PRODUCT

CeraLoop™ precast shape with DRI-VIBE® for the back-up lining

RESULTS

- The initial CeraLoop™ was installed in March 2019. The loop was installed utilizing a fused alumina-based DRI-VIBE backup. A standard start-up procedure was utilized, and the ceramic loop was operated until August 2019. Total lining campaign was approximately two times the total tonnage which was currently be experienced. The ceramic loop remained intact during inspection.
- The second ceramic loop was installed in October 2019 with a cast backup (the same material as is utilized in the uppercase). The loop remained in service for 300% of the campaign length. Additional loops have been manufactured to re-install in this inductor case and in other inductors in the foundry. The customer is pleased with the product durability, the increased performance, and the ease of installation.



Traditional Cast Inductor



Profile of the twin bushing CeraLoop™



CeraLoop™ installed with DRI-VIBE® back-up



First CeraLoop™ after inductor removal, remained intact during productions