



The Right Connection®

CASE STUDY:

Why Use a Dixon Ball-Joint Armored Hose for Water Supply & Return Lines on Electric Furnaces?

Facts

- Efficient movement of cooling water around an Electric Arc Furnace (EAF) is critical to the continuous steel making process. These crucibles often pour liquid steel every 40-50 minutes.
- The typical life of large bore metal and/or rubber furnace hoses utilized in this service can range from as little as 10 months to as long as 3 years.
- Root causes of premature hose failures in a typical mini-mill:
 - Stress cracks in the metal hose liner caused by frequent flexing and movement when the furnace roof opens for charging, melting, and tapping.
 - Metal hose liners rupture from impulse cycles created by vacuum pumps when pulling spent water throughout the cooling system.
 - Hot scrap, slag, and 'skulls' landing on water supply hoses during the charging process often burn through the metal braid and/or heat resistant hose coverings.
- When using metal hose or thin-wall rubber hose with swivel joints, severe hose twists can occur, restricting water and eventually causing shut-down to an EAF.
- Acquisition prices for EAF roof and crucible water hoses range from \$3K to \$15K each, depending on bore size (ID) and length.



End-User Feedback

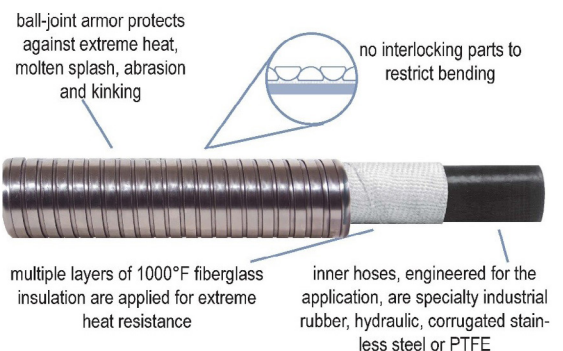
A mill's acquisition price is only a portion of the total cost to remove and replace large bore furnace hoses, and here are the related costs.

- Time required to move these large assemblies from storeroom to melt shop
- Stage the necessary lifting equipment
- Schedule the mechanical teams for the change out
- Review proper safety procedures, i.e. lock-out, tag-out, fall protection
- Ensure that all personnel have proper safety clothing and equipment
- Limit production downtime to a minimum
- Hose change time can range from ½ to 6 hours
- Unscheduled downtime at the EAF due to premature failure will far exceed the acquisition cost of a GSM Hose

Dixon Solution

Dixon has been fabricating and supplying ball-joint armored hose assemblies for water cooling transfer applications in steel mills for over 50 years. The unique half-round design not only prevents hose kinks, but also keeps the hose round for continuous and consistent flow of water around the furnace crucible and roof panels. Ball-joint armor can be applied to hose sizes ¼" through 12" ID.

Durable, efficient and safe, Dixon armored assemblies outperform and outlast alternatives. Most mills experience 3-5 times the hose life, and some hose assemblies are performing as much as 10 years of service!



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