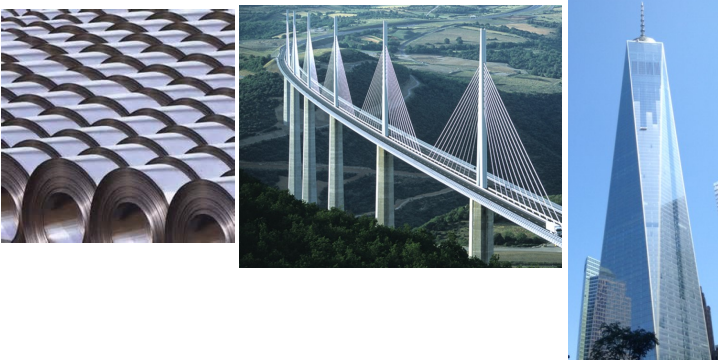


ArMOR™

CLEAN STEEL SAMPLING

The Highest Quality requires the most representative sample



With the increasing strictness of customer specifications and new emerging techniques for inclusion analysis by enhanced OES or SEMs, a sample must be the best possible representation of the metal bath. The new Heraeus Electro-Nite ArMOR system is an economical way of combining controls, technology and proven solutions to achieve the potential for the best available sample collected from a liquid metal medium.

Features

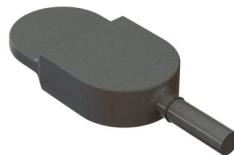
- Easy to use, operator friendly
- Flexible and economical, open and closed sampler design capable
- Economical immersion lance design
- Slag free, representative samples with the cleanest available surfaces
- Compatible with all Heraeus Electro-Nite molten metal sampler types
- Shortest possible immersion time, five seconds
- Most representative %Carbon and % Manganese OES Analysis regardless of grinding depth
- Best solution from LMF to Caster for *in-situ* immersion molten metal sampler chemical analysis
- No preparation potential
- Easily interfaces with manipulators
- PLC remote start capable
- External trigger capable
- Remote start capable

Traditional immersion samplers may entrap slag, absorb capping material and react with atmospheric air within the sampler chamber. Along with occasional insufficient filling, these are all common problems that can result in samples that are not reliable enough when you are aiming for the most representative sample of your steel. Heraeus Electro-Nite's innovative ArMOR system is a flexible and economical solution for today's steelmakers to obtain the cleanest steel samples that are not affected by the variability's that are characteristic to traditional immersion sampling.

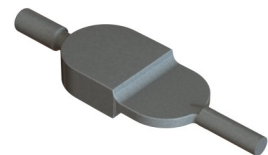
Intended Applications:

This technology has primary application in the Caster Mold, Casting Tundish, Process Ladles and AOD.

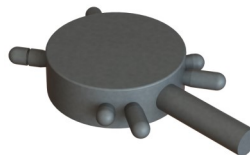
The ArMOR is available in various sample geometries to fulfill the needs, requirements and desires of the steelmaker and chem lab.



Double Thickness



Reverse fill
Double Thickness



Star Mold Six Pin



Single Thickness



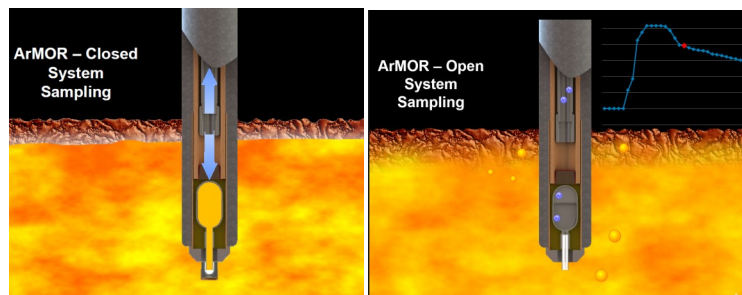
Electro-Nite

ArMOR Clean Sampling System

Heraeus

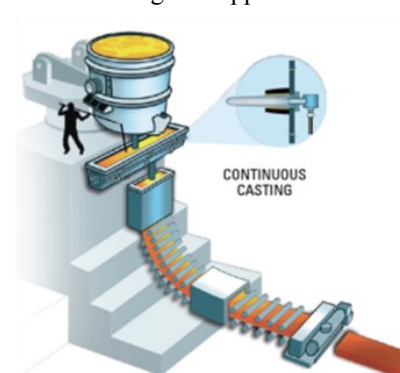
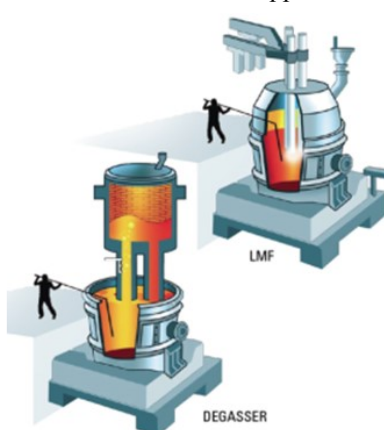
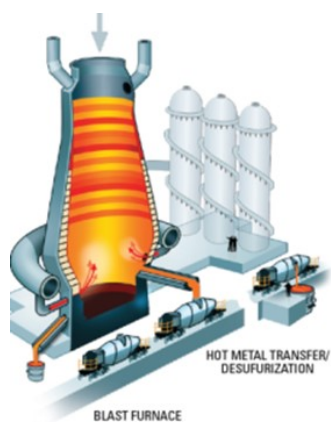
Regardless if the sampling application is at a blast furnace runner, torpedo car, a refining ladle, a caster tundish, or a caster mold, Heraeus Electro-Nite has a sampler and an ArMOR based sampling process to meet the unique demands of each sampling application to obtain clean, consistent samples. ArMOR is equipped with an immersion depth detection strategy to ensure that samples are taken with sufficient depth in the molten metal bath when used with a manual or an automated sampling lance.

ArMOR can apply one of 2 Strategies to capture the best Sample

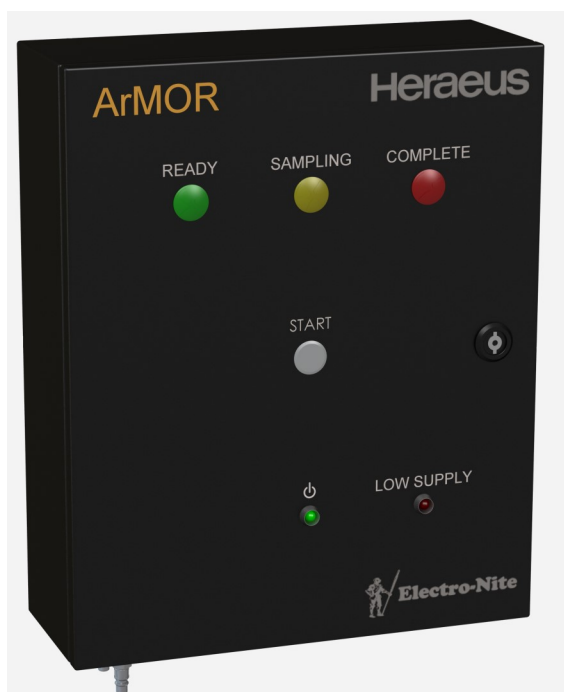


Closed—where an inlet cap is necessary for heavy slag applications

Open—where an inlet cap is not necessary for limited or slag free applications



ArMOR offers a true cross application technology for the best available chemical analysis samplers



AR1000—ArMOR Control Box

How does it work?

Operationally the use of ArMOR is a very simple four step process

1. When the operator is ready to sample, they place a sampler on the pole.
2. Either press the Start button or utilize the advance IO capabilities to initiate the sequence from the shop Level 1 control system and wait for the ready light.
3. Immerse the sampler according to the recommended specification of the sampler's design, the sequence is carried out on the indicator lights of the AR1000 control box,
4. Receive a complete light remove manually or the auto drive of the pantograph can be triggered to remove the sampler from the molten metal sample collection position, then the sampler is retrieved as recommended by HEN according to the sampler type.

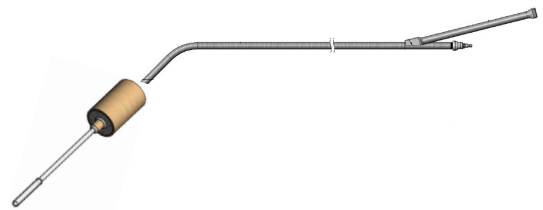
ArMOR Clean Sampling System

Heraeus

Typical Pantograph Auto Lance Ladle Application
QSPAL*****



Typical Handheld Tundish/Caster:
QSPAC*****

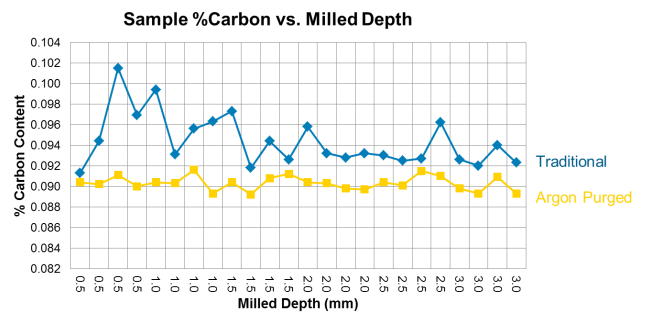


ArMOR offers a true Cross application technology for the best available Chemical analysis Samplers

Open and Closed immersion Sampler Designs run on ArMOR

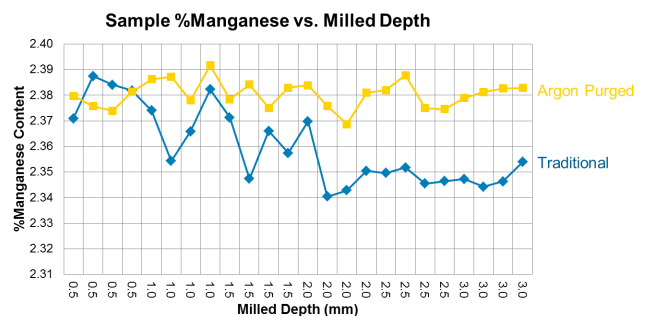
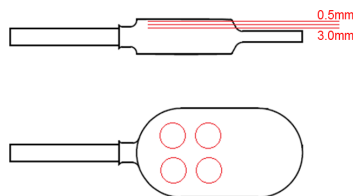


Capability to analyze under any preparation



Analysis of sample homogeneity

- Traditional and Argon Purged samples taken from refining ladle
- Samples measured at depths from 0.5 to 3.0 mm below of surface, 0.5mm increments
- Four burns on OES at each level
- Elements of interest:
 - Carbon
 - Manganese



Electro-Nite

ArMOR Clean Sampling System

Heraeus

Ordering Information

The Equipment

AR1000 - The ArMOR control Box, this device is used to manage and control all the workings of the ArMOR Sampling System. This is connected to a supply line in, a 110/120VAC, 50 power supply and has an Ar out supply for the Pole via the hose.

Needed Accessories

Cables

ARH315 - 15 foot supply hose from the AR1000 Control box to Pole
ARH330 - 30 foot supply hose from the AR1000 Control box to Pole

Poles

ARH***** The sampling pole is custom built to fit the needs of the application in the steel making shop

Caster Ram ARH1SR
Ladle Rams ARH1QSR
Ladle Pole Part ARH2CS
Trap ARH2N

The Ram is the special connection between the Pole and the Sampler
The Ram is the special connection between the Pole and the Sampler
The Ladle pole support coupling/end
The trap is the intermediate component between the Ram and the pole designed to collect the off gasses to minimize contamination of the AR100 control Box

Immersion Sampler Options for various Applications

Caster/Tundish Applications

HSAL	Description
QSPACR60NK10P	QuiK Spec Pneu Argon Purges Sampler for Caster, Round, 6mm Inlet, No Kill, 10" fill Pin W/ PYREX cap (275-00513)
QSPACD70NK10P	QuiK Spec Pneu Argon Purges Sampler for Caster, DT 12mm and 4mm, 7mm Inlet, No Kill, 10" fill Pin W/ PYREX cap (275-00007)
QSPACS70NK10P	QuiK Spec Pneu Argon Purges Sampler for Caster, STAR, 7mm Inlet, No Kill, 10" fill Pin W/ PYREX cap (275-00014)
QSPACD7RNK10P	QuiK Spec Pneu Argon Purges Sampler for Caster, Reversed DT 4mm and 12mm, 7mm Inlet, No Kill, 10" fill Pin W/ PYREX cap (275-00515)
QSPACR60NK10X	QuiK Spec Pneu Argon Purges Sampler for Caster, Round, 6mm Inlet, No Kill, 10" fill Pin, no cap
QSPACD70NK10X	QuiK Spec Pneu Argon Purges Sampler for Caster, DT 12mm and 4mm, 7mm Inlet, No Kill, 10" fill Pin, no cap
QSPACS70NK10X	QuiK Spec Pneu Argon Purges Sampler for Caster, STAR, 7mm Inlet, No Kill, 10" fill Pin, no cap
QSPACD7RNK10X	QuiK Spec Pneu Argon Purges Sampler for Caster, Reversed DT 4mm and 12mm, 7mm Inlet, NoKill, 10" fill Pin, no cap

Ladle Applications

HSAL	Description
QSPALR6048SNKXH	QuiK Spec Pneu Argon Purges Sampler for Ladle App, Round, 6mm Inlet, 48" OAL, Std Tube No Kill, no inlet cap, Metal over-cap with a hole
QSPALD7072SNKXH	QuiK Spec Pneu Argon Purges Sampler for Ladle App, DT 12mm and 4mm, 7mm Inlet, 72" OAL, Std Tube No Kill, no inlet cap, Metal over-cap with a hole
QSPALS7060SNKXH	QuiK Spec Pneu Argon Purges Sampler for Caster, STAR, 7mm Inlet, No Kill, , 60" OAL, Std Tube No Kill, no inlet cap, Metal over-cap with a hole
QSPALD7R48SNKXH	QuiK Spec Pneu Argon Purges Sampler for Caster, Reversed DT 4mm and 12mm, 7mm Inlet, No Kill, , 48" OAL, Std Tube No Kill, no inlet cap, Metal over-cap with a hole

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