HIGH PERFORMANCE ALLOYS, INC.

444 Wilson Street
Tipton, IN 46072

P.O. Box 40
Tipton, IN 46072-0040

1985 East 500 North
Windfall, IN 46076

A Niton XRF metal analyzer used in metal distribution

An article in 2012 about a Naval supplier misidentifying materials prompted the discussion internally about what procedures and services we could implement in order to remedy a situation like this. It offers peace of mind in knowing that the material you are buying is actually what you are buying. Without this high tech piece of equipment, you would have to depend on the reliability of your supplier and their entire supply chain to get it right every time. It is simple math that the more products that are handled, the greater chance for misidentification.

Positive Metal Identification (PMI)

Another addition to our services offered is the PMI of your material. You can request a PMI, which is a Positive Material Identification, of the shipment. This will ensure that our internal material traceability is verified. A report of the PMI check with the composition, as read by the Niton unit, will accompany the shipment. Depending on the item and quantity, PMI reports can be generated for as little as $50. This is a very small insurance to prove the material identity, traceability and pedigree.

The PMI report documents what heat was evaluated and makes an identification of the material grade. The report may also include a Purchase Order number and part number. The Niton unit presents the operator with a grade designation based on criteria of the composition measured. While the composition it measures may not fully reflect the results found in a laboratory sample or as the mill sheet reports, the elements are used only to classify and confirm a materials grade or alloy designation. Any elements that are to be reported need to be established at the time the PMI is ordered.

While the accuracy of the unit is quite good, the results are only as good as the sample it is reading. A clean and bright surface should be used, free of contaminants such as oxides and materials that may transfer on to the surface. With some samples it is not possible, due to cosmetic or tolerance reasons, to attain an optimal reading. These potential samples usually occur when sampling finished parts, tube or pipe that does not have a cut end large enough to sample. Scotch-brite has proven effective to brighten a surface on bar, sheet and plate, but again – for cosmetic reasons this may not be allowed for uniformity of the finish. On scaled or oxidized items, a clean emery cloth or an abrasive grinder will be used to create a suitable sample area. Unless proper cleaning is specifically allowed, the chemical results may show an element out of tolerance. It should be known in advance that the PMI composition should not be reason for rejection, unless a laboratory analysis is performed after to verify any non-compliance.

An integral part of our quality system

The equipment is utilized as a screening process of incoming materials. Materials are sampled as they arrive to ensure that they are properly labeled from the mill. This procedure during material receipt keeps unknown material from entering the facility stocks. Older stock that has not been checked already is verified before shipment and marked as being evaluated. These procedures ensure materials are sampled at least once through the system before shipping to your facility. This is only a small part of our commitment to quality.

Reverse engineering a component

The Niton XRF unit can also be utilized to identify materials used in service as well as reverse engineering an old part. Half the battle of a new material recommendation is knowing the current materials' shortcomings. Once you can establish what materials are being used, it becomes simple deduction to determine other materials more suitable or capable of handling an environment. It is a simple tool that can be part of a failure analysis, with a simple determination of what the material actually is comprised of chemically.