An integrated alloy – refining company is uniquely positioned to offer valuable guidance in terms of its expertise to improve a lab’s material control and scrap collection to improve efficiency and profitability.

FEEDBACK:

While accountability and transparency is critical, there are other significant advantages to labs refining with their alloy manufacturer, like Jensen, who not only knows alloy and refining, but who also possesses expertise in porcelain application and lab process. If Jensen does its job right, we are uniquely positioned to offer valuable follow-up review of your settlement in order to help you continue to improve your material control and scrap collection system. By working together to document everything from shipping dates to alloy consumption to “scrap-to-alloy” metal ratios, the lab and Jensen can enter into a long-term partnership designed to maximize scrap returns with the goal of minimizing scrap generation. Unlike other competing, non-alloy producing refiners who prefer receiving as much scrap as possible, Jensen is motivated to educate you, so you can maximize your alloy yield. While this is novel for the industry, less scrap translates into greater profitability for your lab.

Over time, the information gathered in this way should allow the expert refining partner to make detailed recommendations to the lab regarding sprue design, waxing techniques, scrap segregation practices, and equipment operation. Jensen strives to create this type of partnership with all customers.

THE BOTTOM LINE:

If lab ownership manages the entire receipt-to-settlement process, there is no question that it can help create a more positive and realistic experience, while reducing uncertainty. However, the refiner is still obligated to provide transparency at all times, and the information generated from each scrap transaction (and any resulting recommendations) should provide enough meaningful content to become a useful management tool.

If this is not the case, the lab is not benefiting from its own scrap history, practices and trends in relationship to its alloy consumption, and thus, the value from having a long-standing refiner partner may never be realized. Deriving true value from refining ultimately requires a refiner, like Jensen, who is uniquely positioned in alloy, refining and lab process to provide guidance and support for improving the lab’s efficiency, metal control, and ultimately, its profit.

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The foundation of any refining transaction – and the one factor most responsible for the amount of your financial settlement – is the sampling of fully homogenized materials.

OVERVIEW:

Scrap refining is not alchemy, and understanding the process can only enhance your refining relationship. The following will shed some light on the best practices that refiners employ, arranged sequentially by the four main steps in a typical refining transaction:

- Homogenization and Sampling
- Analyzing
- Settlement
- Feedback

The refining process is both complex and time consuming, and requires precision and a meticulous attention to detail.

HOMOGENIZATION AND SAMPLING:

The foundation of any refining transaction – and the one factor most responsible for the amount of your financial settlement – is the sampling of fully homogenized materials. Refiners take a sample from each lot under tight controls in order to preserve economies of scale and provide customers with a fast turnaround. The goal is to produce a sample that accurately represents the entire lot. However, scrap lots with combustible content require thorough pre-treatment, including incineration and foundry melting in order to eliminate extraneous materials and effectively homogenize the scrap. Once incinerated, the resulting ash will be pulverized, blended and sampled, or, alternatively blended with flux, then melted and cast into an clean production ingot, which is later sampled.

At Jensen, the sampling process for cleaner metallics and foundry-produced ingots begins with the placement of your lot in a clean crucible, where it is melted using induction melting. The charge is melted by current generated from an electromagnetic field. When the metal becomes molten, this field also causes the bath to move in a “figure eight” pattern, called inductive stirring, which thoroughly mixes the molten metal and produces a more homogeneous alloy. When the homogenized metal reaches its given “pour” temperature, a sample is taken via vacuum pin tube. The metal is then poured from the crucible and cast into a clean bar; both the sample and the bar are then subsequently weighed and vaulted secured until the customer approves the settlement. Here, Jensen’s final approval step affords the customer ample recourse to resolve questions on a given lot, as well.

ANALYZING:

Accurate and precise analysis is predicted on obtaining a truly representative sample, and once the refiner obtains an acceptable sample, it is time to determine the sample’s precious metals content through the proven process known as assaying. Assaying effectively separates the non-precious base metals from gold, platinum, palladium and silver contained in the sample. Oftentimes, the assaying procedure must also cope with scrap contamination within the sample that originates from a variety of base metals, including nickel, chrome, iron, Monel, molybdenum, tin and tungsten.

As a result of this complexity, there is no single, “silver bullet” assaying method. In fact, there are several ways to determine the amount of precious metals in the sample, including fire and gravimetric assaying, X-ray Fluorescence (XRF), atomic absorption (AA), and ICP-Optical Emission Spectroscopy (ICP-OES). At Jensen, we employ a comprehensive array of techniques including classic fire assay, XRF and other comparative instrumentation to assay precious metals. We then run duplicate or triplicate samples using either the silver/lead sample combination or, in the case of predominantly base metals, a process called cupelling. The advantage of XRF is precision and the fact that a sample can be read directly without destruction. However, if fire-assaying is employed, it begins by combining your sample with pure silver or pure lead in a process called cupelling, or, in the case of predominantly base metals, a process called electric fusion. The silver/lead sample combination is placed in a cupel (a small bone-ash bowl), where it is heated in a furnace until the non-precious metals are absorbed, leaving a small button of precious metal. This button is combined with nitric acid and de-ionized water, then heated. The acid slowly dissolves all metals except gold in a process called “parting.” Other precious metals can be precipitated from the dissolution of duplicate samples, and analyzed through other methods, or proportionally diluted and then read directly through aspiration sampling via AA or ICP-OES.

SETTLEMENT:

Once the assay content of the lot is precisely determined, the refiner next applies its published rates, terms and conditions to the lot’s characteristics and grade to arrange for payment on a pre-announced settlement date. The refiner issues a settlement report, which can include just the basic values and fees or can also present detailed information such as before- and after-process weights, assays, metal credits, rates and fees, statistical data, digital pictures and historical comparisons.

Refiners have many different approaches to this settlement step, and some do not show either the after-process weight or the actual after-process assays before payable metal credits. This makes it impossible for you to calculate the real recovery value and assays on your lot.

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At Jensen, we want to help customers track their recovery and assay results by material type over time, by providing the before-process and after-process weights, the after-process assays and supporting verification of findings. The settlement should allow you to easily track results, follow calculations and understand fees, which should always be made clear in the refiner’s written terms and conditions.