International Titanium Association

“Closing the Loop”

Las Vegas - October 2013
Presentation Outline

I. PCC Revert Group Overview
   • Role within PCC & Our Mission

II. Main Theme & Presentation
   • “Closing the Loop” Defined
     “Cradle to Grave”
   • Benefits to the Supply Chain
   • Benefits to the Customer
   • 3 Key Requirements for Success
   • Why It Makes Sense
PCC Presence

A WORLDWIDE, DIVERSIFIED MANUFACTURER OF COMPLEX METAL COMPONENTS AND PRODUCTS

PCC WORLDWIDE
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20,800 employees worldwide
126 Manufacturing Facilities

Precision Castparts is the world leader in structural investment castings, forged components, and airfoil castings for aircraft engines and industrial gas turbines. Airbus, Boeing, GE, Rolls-Royce, and many other leading manufacturers depend on us for critical airframe, engine, power generation, and general industrial components. With few exceptions, every aircraft in the sky flies with parts made by PCC.
The PCC Revert Group

- Nickel Melting and Consolidation
- Caledonian Alloys Provides Revert Managements Solutions
- 15 Current Locations Around the World
“Closing the Loop”
“Closing the Loop” consists of managing of all generators waste streams, where appropriate, to collect, process, and return to the designated melt facility where it can be best used to support the customer and the supplier.

The scope of ‘closing the loop’ includes all customers and suppliers melt facilities, forge facilities, machining facilities, and finishing facilities. It can even be extended into the ‘end of life’ recycling process.

PCC Revert Group is expected to satisfy those demands as required by our customers, thus creating a closed loop process within PCC.
Revert Cycle – Aerospace Example

"The Revert Cycle"

1. Raw Material to manufacturers and Suppliers
2. Aerospace Manufacturing Site
3. Segregation on Site
4. Transportation to Caledonian Alloys
5. Degreased Turnings returned to Vacuum Induction Melting
6. Degreased Turnings
7. Degreasing the Turnings
8. Crushing the Turnings
   
Part of SPECIAL METALS CORPORATION
PCC Revert Group - “Cradle to Grave”

Revert Manager

Melting

Forging

Machining

Revert Streams

End User

Customer

Finishing
Closing the Loop - Supply Chain Benefits

Safety
- Detailed Mutilation Records; Product Control

Quality
- Known source, known chemistry, known processes
- More consistent processing, overall higher yields

Delivery
- Known volumes and predictable deliveries

Cost
- Virgin (Raw) costs are higher than processed revert
- LTA’s control price and availability; limiting market exposure
- On-site revert management will improve the value of the revert via better segregations
- Lower cost processing and potential for less frequent testing
Closing the Loop - Customer Benefits

- **Safety**
  - Detailed Mutilation Records; Product Control

- **Quality**
  - Lower risk of escapes from your supply chain
  - Higher consistency of delivered product

- **Delivery**
  - Consistent deliveries with lower risk of material shortages
  - With supply chain having options between revert and raw, customer demand schedule can be achieved

- **Cost**
  - Supply chain manages revert streams, not the customer
  - Lower cost of billet from higher revert utilization
  - Known outlet for revert for the services business
  - Market fluctuations and material shortages are minimized
Closing the Loop - Requirements

I. Long Term Agreements (LTA’s) are essential;
   - Supply chain and customer “partnering” is key.

II. Revert Management Services are critical, and requires that provider be a Full Service Revert Manager.
   - ‘Full Service’ would include on site collections, logistics, processing and certification, as well as competent in inventory management.
   - Service provider selection is critical for realizing the benefits of a closed loop system.

III. Commitment to controlling your metal waste streams
   - Segregation of materials is critical to improving the value of the material.
   - Control of site activities; no “leakage” within your supply chain.
I. Reduces Risk of …
   I. Supply & Delivery
   II. Leakage
   III. Escapes

II. Improves …
   I. Cost
   II. Quality and Consistency

III. Protects you against …
   I. Technology shifts; reducing current revert supply available
   II. Market Volatility (vs spot buys)
Thank You