THE EVOLUTION OF ALUMINUM TOLL PROCESSING IN NORTH AMERICA

SAA Light-Weighting Conference, April 19, 2016
The Aluminum Tolling Story

- Introduction
- What’s at Stake?
- Aluminum Myths
- Changing the Sourcing Model
- Expectations for Today’s Supplier
- What Will it Take to Stay in the Game?
# ABCO Introduction

## What Sets Us Apart?
- Widest capabilities in both commercial and automotive markets
- Over 200M lbs. annual automotive capacity
- Aluminum is our standard process
- Top in quality and delivery
- Able to design & deploy custom equipment & processes to meet customer requirements

## Who We Are
- Original Aluminum blanker
- Established 37 years ago
- 7 blanking lines
- Automotive & commercial products
- Experts in high quality aluminum processing
- Rich in engineering & process experience

## What We Do
- Toll process aluminum & surface sensitive material
- Aluminum, Stainless, Galvanneal
- >1 billion automotive lbs. processed
- Blank rework center: level, lube, anneal and soon blank washing
Introduction

Background

• Family History: Metals Processing & Engineering
  • Energy Crisis Drives Change
  • ABCO’s Founder Sees Opportunity
  • Clean Air Act, ABCO is Formed
What is at Stake?

The Aluminum Proposition

- CAFE driven predictions; OEM plans

4Q15 DUCKER FORECAST FOR ALUMINUM BODY AND CLOSURE SHEET IN NORTH AMERICA

- By 2020, over 70% of all NA light vehicles will have at least one major stamped aluminum component
- Every OEM will have more than one body sheet and closure sheet aluminum intensive program by 2020

NA AI Auto Sheet Growth

Millions of Pounds


2,1 billion

NA Aluminum Program Launches for Body and Closure Parts

Source: Ducker Analysis

Aluminum in automobiles saves 44 million tons of CO2 emissions.

Independent studies have confirmed that aluminum in automobiles has a 20 percent smaller life cycle CO2 footprint than steel. And compared with today's steel cars, a fleet of aluminum vehicles saves the equivalent of 44 million tons of CO2 emissions.
What is at Stake?

The Aluminum Proposition

- Market share up for grabs
- Steel investments, capacities threatened

Unprecedented Growth

Numerous Opportunities to Introduce New Materials
What is at Stake?

Marketing offensive with “Steel Matters”

• Drive steel as the stalwart
• Promote green steel
• Highlight progress in AHSS
• Exploit aluminum myths
Automotive Industry Perceptions & Myths
Kept Aluminum into Niche Market for Years

1. “Aluminum is Difficult to Work With”
2. “Aluminum is Expensive”
3. “Aluminum is Not as Strong”
“Aluminum is Difficult to Work With”

- Not harder, just different; industry inexperienced
- Process and tools must be material centric
- Steel process and tools won’t address as is
  - Property differences
  - Surface sensitivity
  - Surface defect identification
  - Scrap management
- Quality, yields, and scrap value will suffer

“Mostly, it’s a lack of experience with the material ... In over half a century, any manufacturing process can mature to the point where it’s a low-risk choice when developing new products. It will be no different with aluminum.”

James Anderton, posted on August 18, 2015
“Is the New Aluminum the Death of Automotive Steel?”
Engineering.com
The Aluminum Myths

“Aluminum is Expensive”

• Material cost and value is higher
• Total landed cost enlightens
• Using real scenarios, demonstrated results & yields

Redesigned 2015 F-150

2015 F-150 Crew Cab Net Aluminum Sheet

- Cab & Box: 63%
- Hood: 4%
- Fenders: 9%
- Liftgate: 4%
- Doors: 17%
- Roof: 3%

600 Pounds (Excludes 70 pounds of extruded aluminum products)

## The Aluminum Myths

### Is Aluminum More Expensive?

**Review cost through supply chain**

**Assumptions**
- Cold rolled mild steel
- 6000 series aluminum
- Historical material yields for hood inner/outer
- Current scrap values; segregated applied to Al

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**Case Example looks only at material and freight costs for a very small piece of the value stream. Collateral savings throughout vehicle would be higher.**

**The lighter weight and high scrap value reduce costs through the value stream**

<table>
<thead>
<tr>
<th>Base Material Cost per Blank</th>
<th>Blank Scrap (Al - 5% Inner; 7% Outer)</th>
<th>Add Freight (40-100mi/ Pin Pallets)</th>
<th>Stamping Scrap (20%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Higher</td>
<td>% Higher</td>
<td>% Higher</td>
<td>% Higher</td>
</tr>
<tr>
<td>Steel Inner</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Steel Outer</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Alum Inner</td>
<td>93.5%</td>
<td>84.3%</td>
<td>81.9%</td>
</tr>
<tr>
<td>Alum Outer</td>
<td>93.5%</td>
<td>80.3%</td>
<td>78.0%</td>
</tr>
</tbody>
</table>

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11
“Aluminum is Not as Strong”

Ford’s past President and CEO Alan Mulally … “pound for pound, aluminum is stronger and tougher than steel” and “[aluminum] will be the material of choice” for Ford moving forward

- Criteria for panels:
  - Stiffness
  - Dent resistance

**Figure 3**

This graph compares yield strength of aluminum and steel based on dynamic dent resistance studies. Source: Design with Aluminum (European Aluminum Association, 2011).

**Figure 4**

Automobile hood weight decreases substantially when Al6010 is used rather than steel. Source: Design with Aluminum (European Aluminum Association, 2011).

TingTing Mao and Taylan aITan; January/February 2013 Stamping Journal
### Initial Sourcing Model

<table>
<thead>
<tr>
<th>Element</th>
<th>Model</th>
<th>Impacts/Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competition</td>
<td>1. Steel</td>
<td>ABCO material specific; OEM material decisions based on perception/risk; i.e. lack of experience; infrastructure</td>
</tr>
<tr>
<td></td>
<td>2. Internal mill processing</td>
<td></td>
</tr>
<tr>
<td>Customer / Model</td>
<td>Mills tier one to OEM</td>
<td>Aluminum still niche; few options for commodity sourcing by OEMs. In turn, mills sourced business with toll processors</td>
</tr>
<tr>
<td>Products</td>
<td>Few panels; luxury brand focused</td>
<td>Hoods, lift-gates, additional parts like fenders or doors on heavier duty or luxury models</td>
</tr>
<tr>
<td>Locations/Logistics</td>
<td>Simple; organized around existing locations</td>
<td>Few mill locations, few processors and capacity; freight secondary</td>
</tr>
<tr>
<td>Scrap Management</td>
<td>Simple; not yet mature</td>
<td>Scrapped locally unsegregated; scrap credit given to customer</td>
</tr>
</tbody>
</table>
Changing the Sourcing Model

What Has Changed?

• Initial CAFE standards were achievable through powertrain options and downsized vehicles
• The tighter standards force alternative options like use of light-weight materials
• Higher stakes and increased competition shift aluminum to commodity status
### A Toll Processing Evolution

#### New Sourcing Models Emerge

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<tr>
<td><strong>Competition</strong></td>
<td>1. Steel, AHSS</td>
<td>• Defense of market share</td>
</tr>
<tr>
<td></td>
<td>2. Steel processors</td>
<td>• Consolidation of processes within one supplier - generates more players</td>
</tr>
<tr>
<td></td>
<td>3. Processors from other value streams such as slitting</td>
<td>• Growth leads to commodity thinking; commodity competitors</td>
</tr>
<tr>
<td></td>
<td>4. Distributors</td>
<td></td>
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<tr>
<td></td>
<td>5. Trading companies</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. Localized overseas processors</td>
<td></td>
</tr>
<tr>
<td><strong>Customer/Model</strong></td>
<td>1. Mills as tier one to OEM</td>
<td>• Metals processing capital intensive</td>
</tr>
<tr>
<td></td>
<td>2. OEM sources processors direct</td>
<td>• Commodity market drives logistics decisions</td>
</tr>
<tr>
<td></td>
<td>3. Service centers and trading companies manage value chain</td>
<td>• Participants look for best utilization of existing capacities</td>
</tr>
<tr>
<td><strong>Products</strong></td>
<td>Hoods, lift-gates, luxury models</td>
<td>• All hang on panels, reinforcements, heat shields</td>
</tr>
<tr>
<td><strong>Locations/Logistics</strong></td>
<td>Regional strategies evolve; OEM requirements align with commodity markets</td>
<td>• Additional mills join market; existing add capacity and locations – new options</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Pressure for regional toll processing, low risk warehousing &amp; efficient logistics</td>
</tr>
<tr>
<td><strong>Scrap Management</strong></td>
<td>Segregate by customer, alloy for shipment back to mills</td>
<td>• Comprehensive recycling driven by raw material availability, energy costs, highest material value</td>
</tr>
</tbody>
</table>
What is Expected of Today’s Processors?

- Regional Processing
- Local Warehousing to Stamping
- Cost Efficient Logistics
- Comprehensive Scrap Management
- Supply Chain Management
- Full Program Responsibility
What Will it Take to Stay in the Game?

- Capacity & Capabilities Ready where Needed
- More Value-add with One Supplier
- Sustain Specialty Quality, Mitigate Risk through Growth Periods
  - Make Sourcing Easy & Cost Effective for Customers
  - Maximize Recoveries; Maximize Scrap Value Back to Mill
  - Optimize Logistics; Lower Total Landed Cost
- Develop Processing and Customer Partnerships
- Drive CIP with Customers in Mind
- Stay Agile during Periods of Flux and Market Uncertainty
  - Leverage Community and Government Partners
- Continue to Question & Explore Related Opportunities; e.g. Slitting, Laser Blanking, AHSS as a Specialty Process?
Thank you

Go to Market with Aluminum Blanking for What You Need When You Need It

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