

The logo for Junora LTD features the word "Junora" in a blue, rounded sans-serif font. The letter "o" is replaced by a stylized icon of two eyes or a camera lens, also in blue. To the right of "Junora" is the word "LTD" in a bold, blue, sans-serif font. The background is white with blue geometric shapes on the left and right sides.

**Junora LTD**

**TECHNOLOGY · INNOVATION · SOLUTIONS**



# Company Statistics

- ▶ Established May of 2017 in Biddeford Maine
  - ▶ 18 employees
    - ▶ Employees average 10+ years of target manufacturing experience
  - ▶ 1400  $m^2$  factory
  - ▶ Additive manufacturing production system
  - ▶ Full Machine shop for target and planar cathode manufacturing
  - ▶ Lithium target production equipment.
- ▶ Foreign Invested Commercial Enterprise (FICE) established in Suzhou in 2019
  - ▶ Allows Import / Export and use of VAT reclamation
  - ▶ Establishes "footprint" for eventual Wholly Owned Foreign Enterprise (WOFE) and factory build
- ▶ R&D Laboratory in Tucson Arizona
  - ▶ Additive manufacturing development system
  - ▶ Sputtering System to test custom target materials

# Junora LTD Product Offerings

- ▶ Rotary Targets manufactured with:
  - ▶ Continuous Micro Casting (CMC)
  - ▶ Thermal Plasma Deposition (TPD)
    - ▶ Currently In Development
  - ▶ Casting of lower melting temperature metals
- ▶ Rotary and Planar Lithium Targets
- ▶ Custom Target Material Development
- ▶ Traded Targets



CONTINUOUS MICRO CASTING  
DEPOSITION



THERMAL PLASMA  
DEPOSITION™

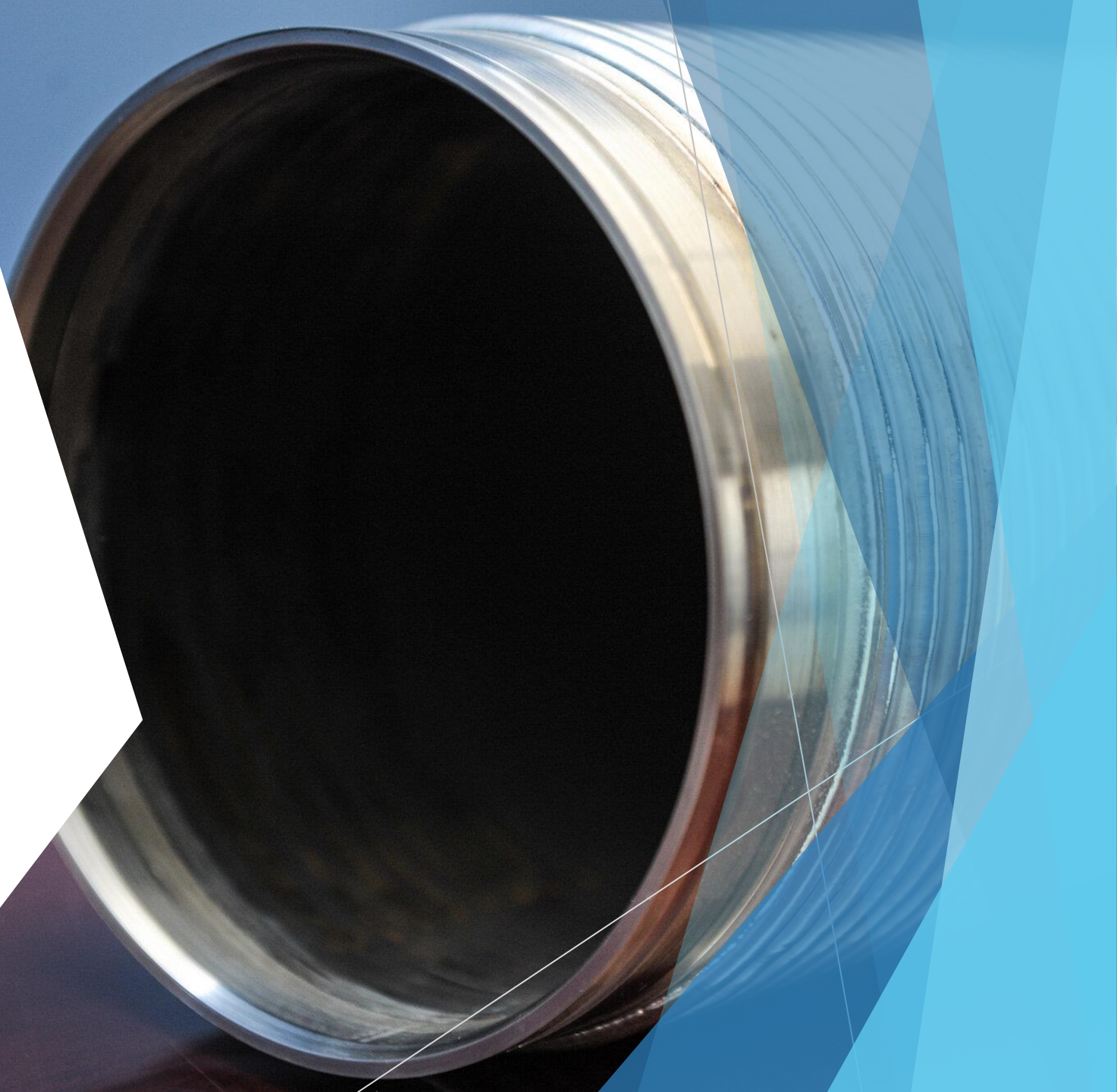


## Continuous Micros Casting (CMC)

- ▶ An electron beam is used to melt metal wire directly onto backing tubes to form the target material
- ▶ Reduced material waste
- ▶ No contaminants from casting molds, extrusion dies, or atmospheric gasses
- ▶ Fully dense material
- ▶ Directly recyclable targets
  - ▶ Target material can be reapplied to fully sputtered targets leading to customers only needing to purchase the material they sputter after the first target is purchased

# CMC Materials

- ▶ Our primary goal is to reduce the cost and increase the quality of silver targets for the Low-E industry
- ▶ Other high-volume metal target materials like Tin are also good candidates for the CMC process
- ▶ Initial focus is on materials that have a lower melting temperature than the backing tube materials

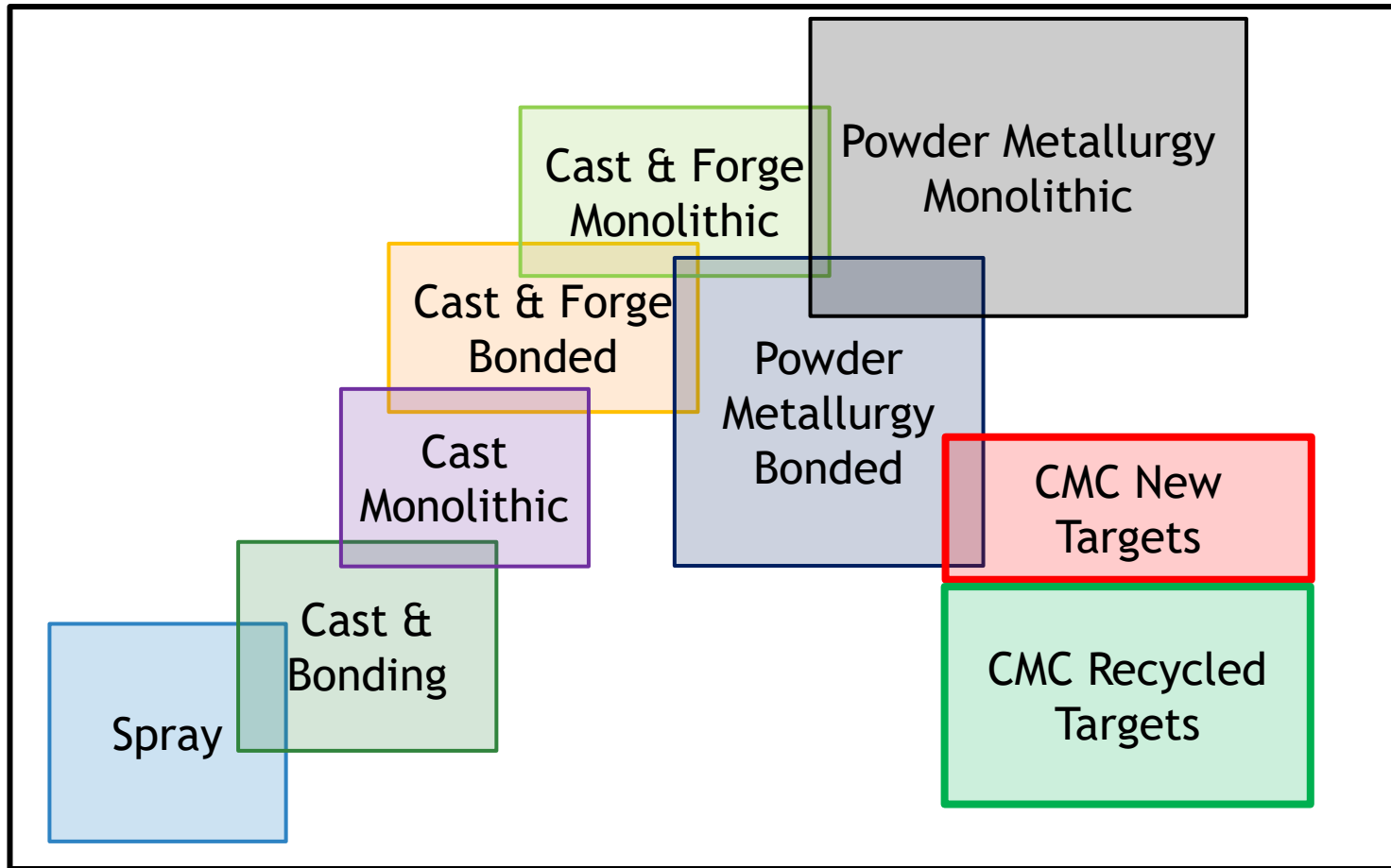


# CMC vs Traditional Target Manufacturing

	CMC	Casting	Forging	Extrusion	HIP/SIP	Spray
Material Waste and or overage requirements	<2-4%	10-20%	10-20%	30+%	30-50%	10-30%
Process contamination	<0.1%	<1%	<1%	<1%	<0.1%	<1%
Gas Incorporation	<100 PPM (<50 typ)	<250 ppm	<250 ppm	<250 ppm	100-1000 ppm	500-5000 ppm
Grain Size	Smallest	Largest	Smallest	Large	Small	Small
Density	>99%	>99%	>99%	>99%	>98% / >90%	<<95%
Bonding	None	Indium	Indium	Indium	Indium / Dif	None
Cost	\$\$	\$\$	\$\$\$	\$\$	\$\$\$	\$

\*These are average values that can be highly material dependent

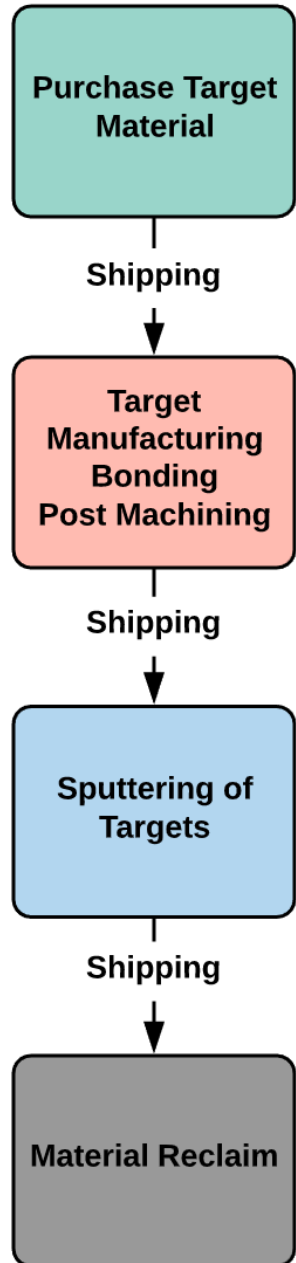
# Target Cost vs Quality



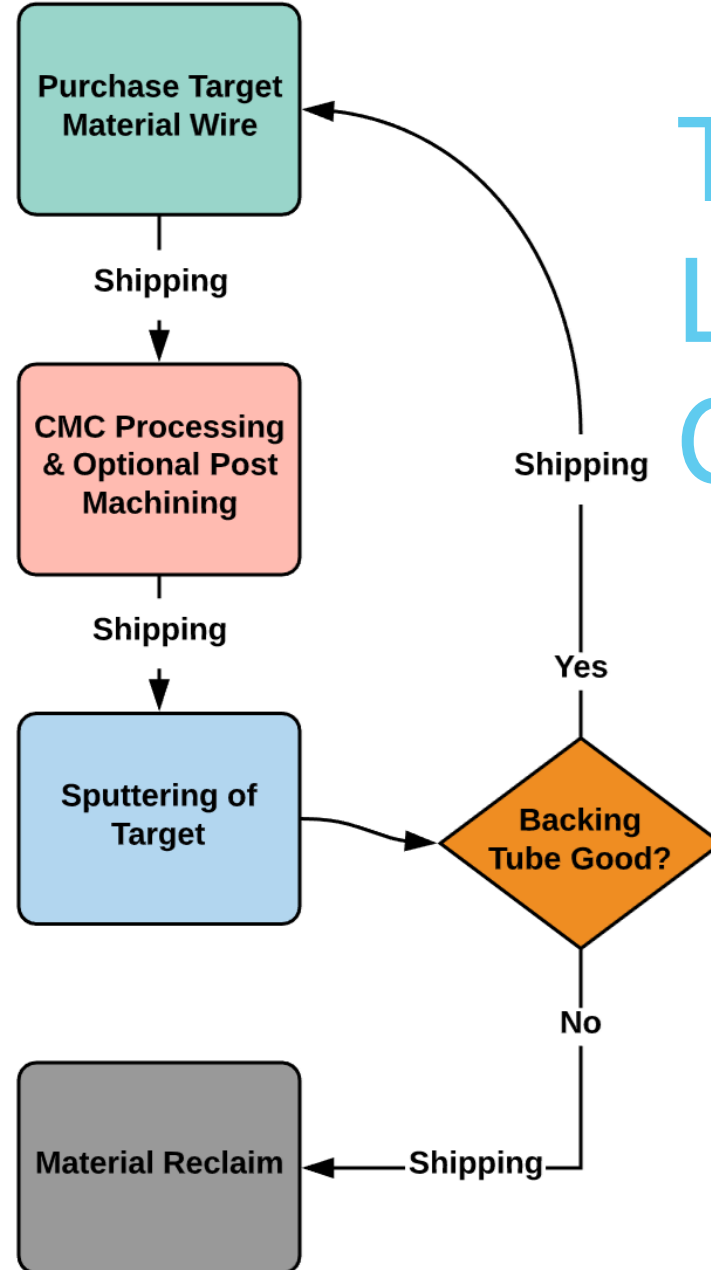
## Quality Metrics

- Higher Sputtering Rates
- Higher Cooling Efficiency
- Higher Material Density
- Smaller Grain Size
- Less Arcing at High Power
- Less Gas Incorporation
- Less Contaminants

## Standard Rotary Target Life Cycle



## Rotary Target Life Cycle using CMC



# Target Life Cycle Comparison

Recycling targets with the CMC process leads to large savings for precious and other expensive metals



# CMC™ Equipment: A Model of the Yearly Value Proposition to Silver Target Users



CMC™ Rotary Targets vs Planar (flat) Industry Standard Targets



New CMC™ produced targets provide a **39%** overall cost savings to the customer when compared with Planar

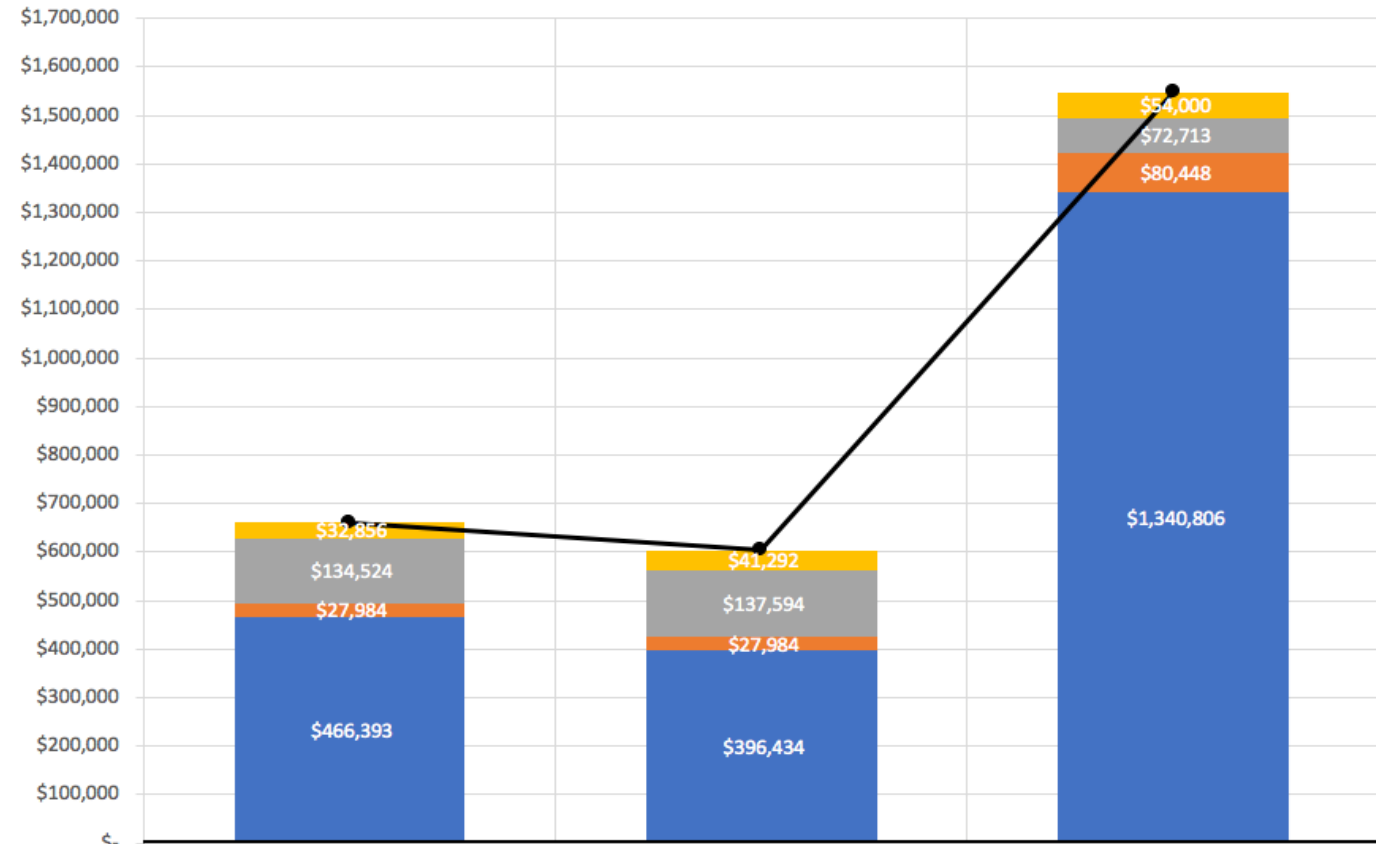


Recycled CMC™ produced targets provide a **43%** overall cost savings



*Similar models may be applied for a variety of materials with relative significant cost savings*

**TOTAL SILVER COST PER CAMPAIGN PER COATER**



	New Rotary Targets	Recycled Rotary Targets	Planar Targets
Target Shipping and Insurance	\$32,856	\$41,292	\$54,000
Silver Target Fabrication Cost	\$134,524	\$137,594	\$72,713
Silver Finance Cost	\$27,984	\$27,984	\$80,448
Silver Inventory Market Price	\$466,393	\$396,434	\$1,340,806
<b>Total Cost</b>	<b>\$661,757</b>	<b>\$603,304</b>	<b>\$1,547,968</b>

# We are Prepared to Take On Any of Your Target Material Needs

- ▶ Our goal is to form a long and fruitful relationship with our customers
- ▶ In exchange for your business we will strive to provide the highest quality target materials for the lowest reasonable price
- ▶ Find us at [www.junorald.com](http://www.junorald.com)

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