

Modern Aluminum Melting Furnaces



- Energy Efficient Gas Furnaces
- *Jet Melter* and *MicroJet* brands
- Material Handling Systems
- Turn-key Engineered Solutions



Reverb Furnace Problems

Poor Thermal Efficiency - Only 25%

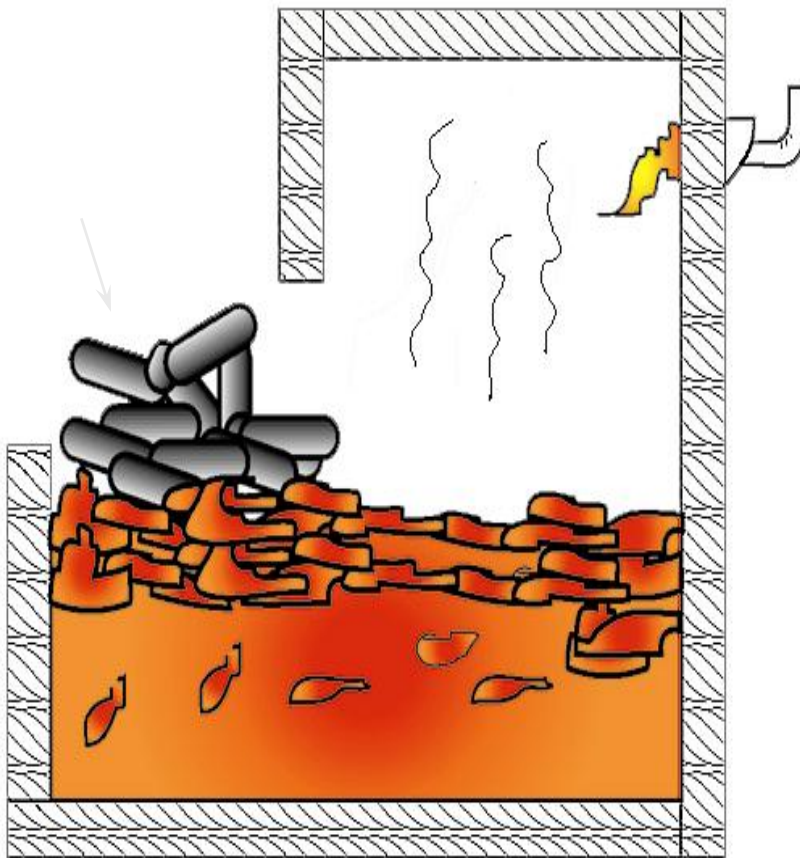
Accelerated Dross Formation - 3% to 7%

Large Metal Temperature Variations +/- 50° F

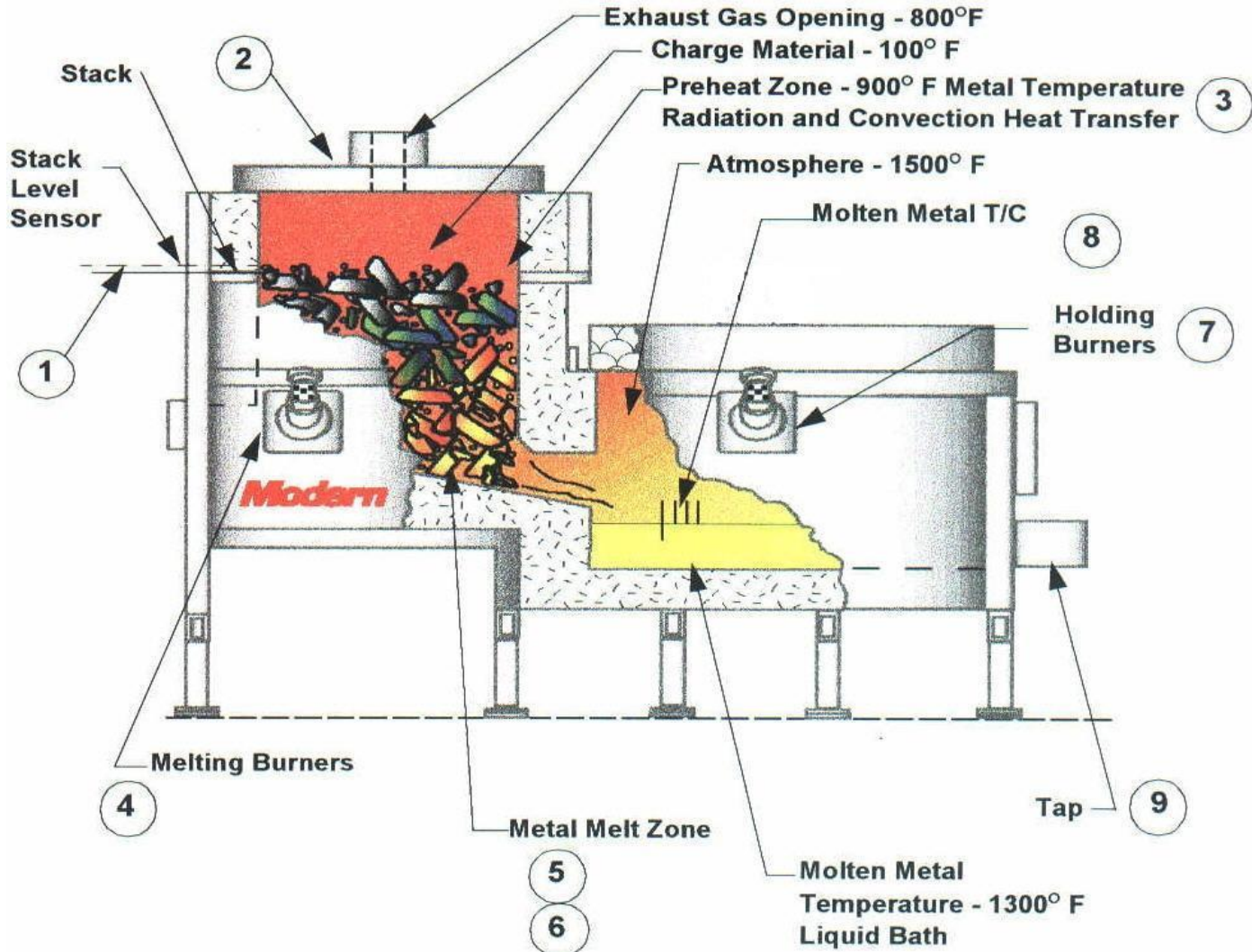
Higher Inclusions Levels

Larger Bath Required To Melt Aluminum

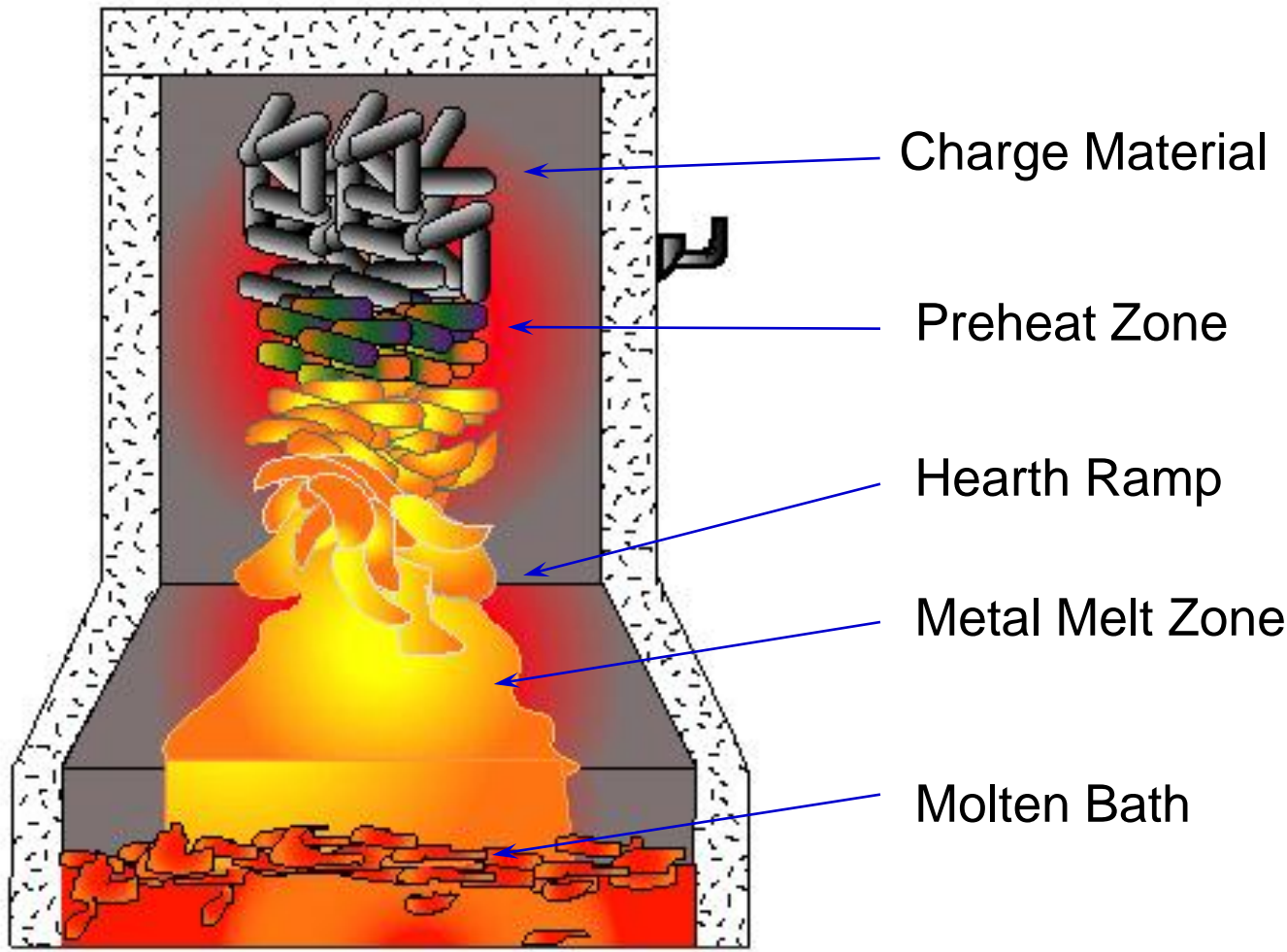
Greater Hydrogen Gas Pick Up



Jet Melter[®] Overall Design Principle



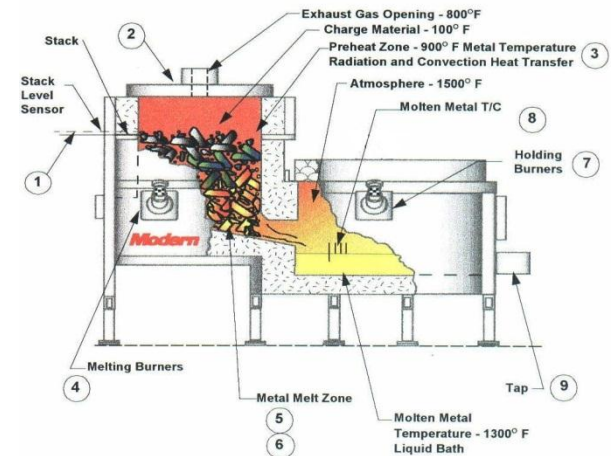
Jet Melter[®] Stack Detail



Aluminum Melting

Choose Stack Melters from **Modern**

- Smaller Bath Size
- Less Dross Formation
- Waste Heat (Flue Gas) Recovered
- Only Molten Aluminum Enters the Bath
- Small Bath Temperature Variation $\pm 10^{\circ}\text{F}$
- Minimal Hydrogen Gas Pick Up
- Safer Operation



Modern AL Series

<u>Model</u>	<u>Melt Rate</u> <u>lbs/hr</u>	<u>Capacity</u> <u>lbs.</u>
AL-1000	1,000	2,500
AL-1500	1,500	3,750
AL-2000	2,000	5,000
AL-2500	2,500	6,250
AL-3000	3,000	7,500
AL-3500	3,500	8,750
AL-4000	4,000	10,000
AL-5000	5,000	12,500
AL-6000	6,000	15,000



Modern JM Series

<u>Model</u>	<u>Melt Rate</u> <u>lbs/hr</u>	<u>Capacity</u> <u>lbs</u>
JM-5000	5,000	12,500
JM-6000	6,000	15,000
JM-7500	7,500	18,750
JM-8000	8,000	20,000
JM-10000	10,000	25,000
JM-12500	12,500	31,250
JM-15000	15,000	37,500



Modern Design Features- Micro Jet Melter

Capacity - up to 1100 pounds per hour

High Energy Efficiency - Close to 1,000 btu's per pound of aluminum

High Metal Quality – Molten Aluminum has lower gas and inclusion levels

Low Melt Loss - <1 to 2% of aluminum is lost to dross

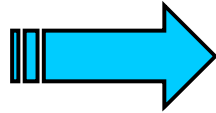
Compact Design and Footprint

Low Temperature Variations - $\pm 10^{\circ}\text{F}$ or less

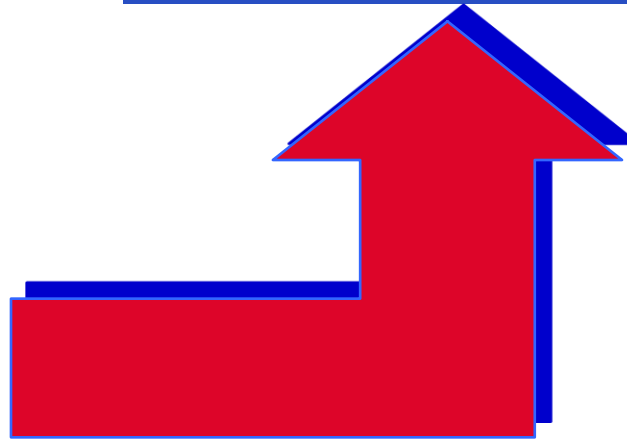
Low Price Point



Reverb Cost Variables



Cost / lb
to Melt



- BTUs
- Maintenance
- Refractory
- Melt Loss
- Labor

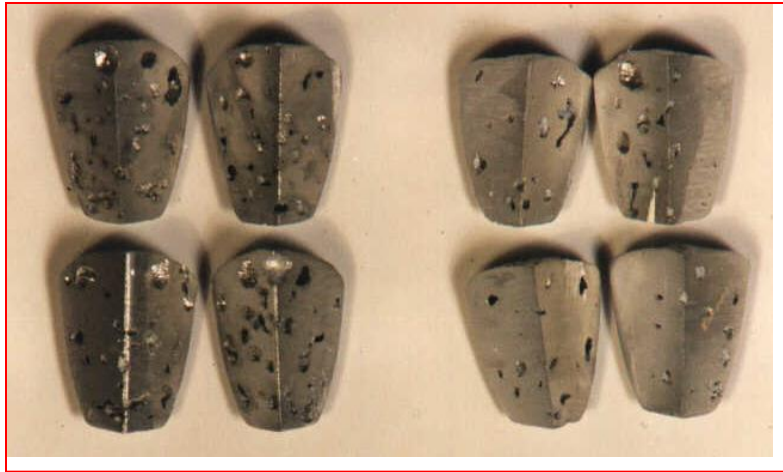
- Intangibles
- Real Estate
 - Safety
 - Ergonomics

A Clear Green Option, The Real Financial Choice

<u>Comparison Data</u>	<u>Jet Melter[®]</u>	<u>Reverb Furnace</u>
Fuel Consumption (Btu/Lb.)	900 - 1000	1500 – 3000
Thermal Efficiency (%)	45 - 55	24 – 32
Metal Loss (%)	0.7 - 1.5	3 – 7
Refractory Cleaning	Once per day	Once per day
Refractory Life (years)	5 to 8	2 to 4
Charging System	Semiautomatic or Automatic	Manual or Semiautomatic
Bath Capacity to hourly melt rate ratio	2.5 : 1	10 : 1
Molten metal Temp. variation	± 10° F	± 50° F
Noise Level	< 85 dba	> 90 dba

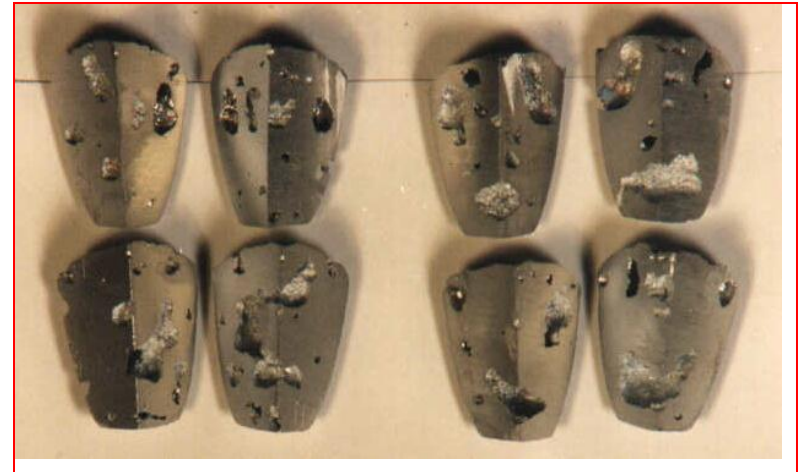
(Side by Side Test Results)

	<u>Jet Melter[®]</u>	<u>Reverb</u>
Melt Loss	0.9%	5.5%
Energy Usage	955 Btu/#	1975 Btu/#
Molten Metal Temp. Control	± 5° F	±32°F
Metal Specific Gravity	2.26	2.10
Metal Cleanliness K-Value	0.0	0.10
<u>Alloys added for chemistry adjustment</u>		
Mg	100#	175#
Sr	175g	475g



10:50 AM - S.G. = 2.16 11:50 AM - S.G. = 2.26

Modern Jet Melter®
Gas Samples



11:07 AM - S.G. = 2.10 12:12 PM - S.G. = 2.10

Reverb Melter Gas
Samples

Melting Costs

** Typical 2000 #/hr (1 shift operation)

ASSUMPTIONS	UNITS	REVERB	JET MELTER
Melt Loss	percent	4.0%	1.0%
Aluminum Cost	\$ per pound	\$1.20	\$1.20
Energy cost	\$ per therm	\$1.35	\$1.35
Energy usage	Btu's per pound melted	2,000	1,000
Aluminum Usage	Pounds Melted per Month	333,333	333,333
COST TO MELT PER POUND		\$0.075	\$0.026
ENERGY COST PER MONTH:		\$9,000	\$4,500
MELT LOSS COST PER MONTH:		\$16,000	\$4,000
TOTAL MELT COST PER MONTH:		\$25,000	\$8,500
<u>MONTHLY SAVINGS</u>			<u>\$16,500</u>

Melting Costs

** Typical 2000 #/hr (1 shift operation)

HOLDING COSTS	UNITS	REVERB	JET MELTER
Energy Cost	\$ per therm	\$1.35	\$1.35
Energy Usage	Btu's per pound held (assumed)	50	50
Amount Held	Pounds Held	20000	5000
Holding Period	Hours held monthly	533	533
COST TO HOLD PER MONTH		\$7,195.50	\$1,798.88
<u>MONTHLY SAVINGS</u>			<u>\$5,396.63</u>
<u>TOTAL MONTHLY SAVINGS (Melt & Hold)</u>			<u>\$21,896.63</u>

Why Buy *Modern* Melting Furnaces?

- Made in the U.S.A.
- Project capability from design to melt
- Teamed with Stotek for a broad range solution
- Complete Turnkey Solutions
- Spare parts readily available
- Technical Support
- On site service
- References, User Lists, & Repeat Customers -The Industry Leader!