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England

The Electric Melting Specialists

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The 39th ASEAN Glass Conference, Cebu, Philippines, October 2015

Conference Theme

Glass Technology and Innovation: Driving Growth in Traditional and New Markets

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Minimising energy usage

Minimising energy cost

- key priorities in an energy intensive process

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Electricity in Glass Making

. . . often the Low-Cost Option

Richard Stormont
Managing Director
Electroglass Ltd

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KiloCalories - kCal

MegaJoules - MJ

British Thermal Units - BTU

KiloWatt-Hours - kWh

Etc.

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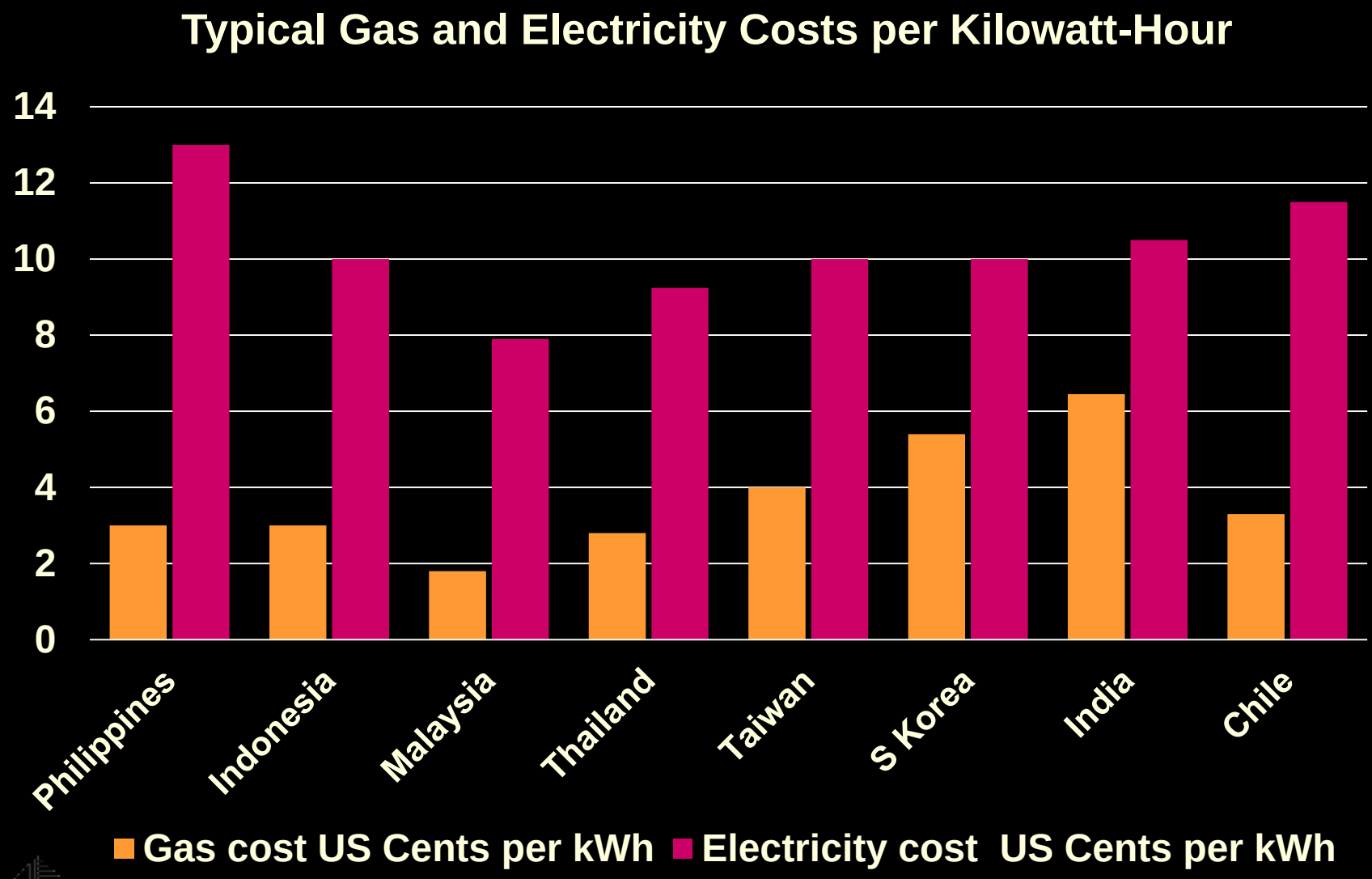

Gas?
Oil?
Electricity?

Process energy efficiency is the key

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Electrical energy in glass melting and conditioning

All-Electric Melting

Electric Boosting in fuel-fired furnaces

Electric Distributors and Forehearths

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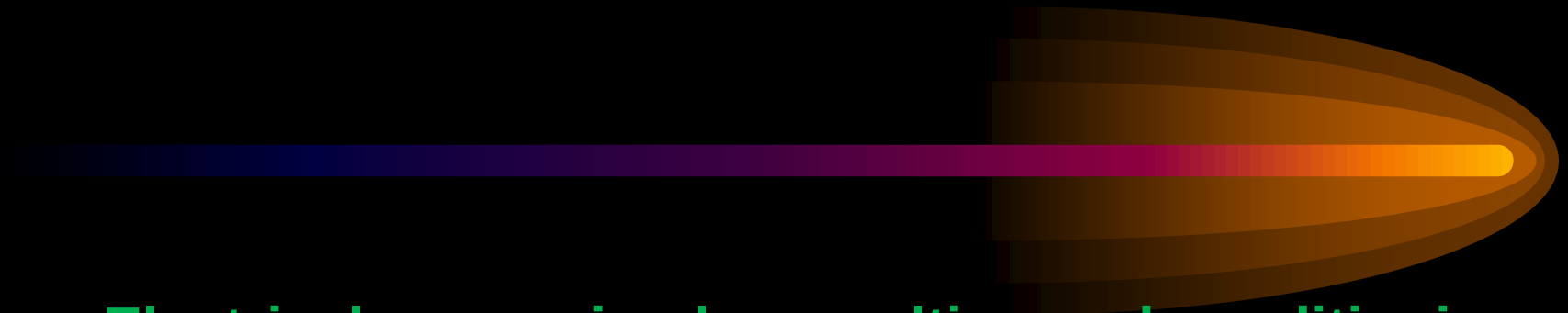

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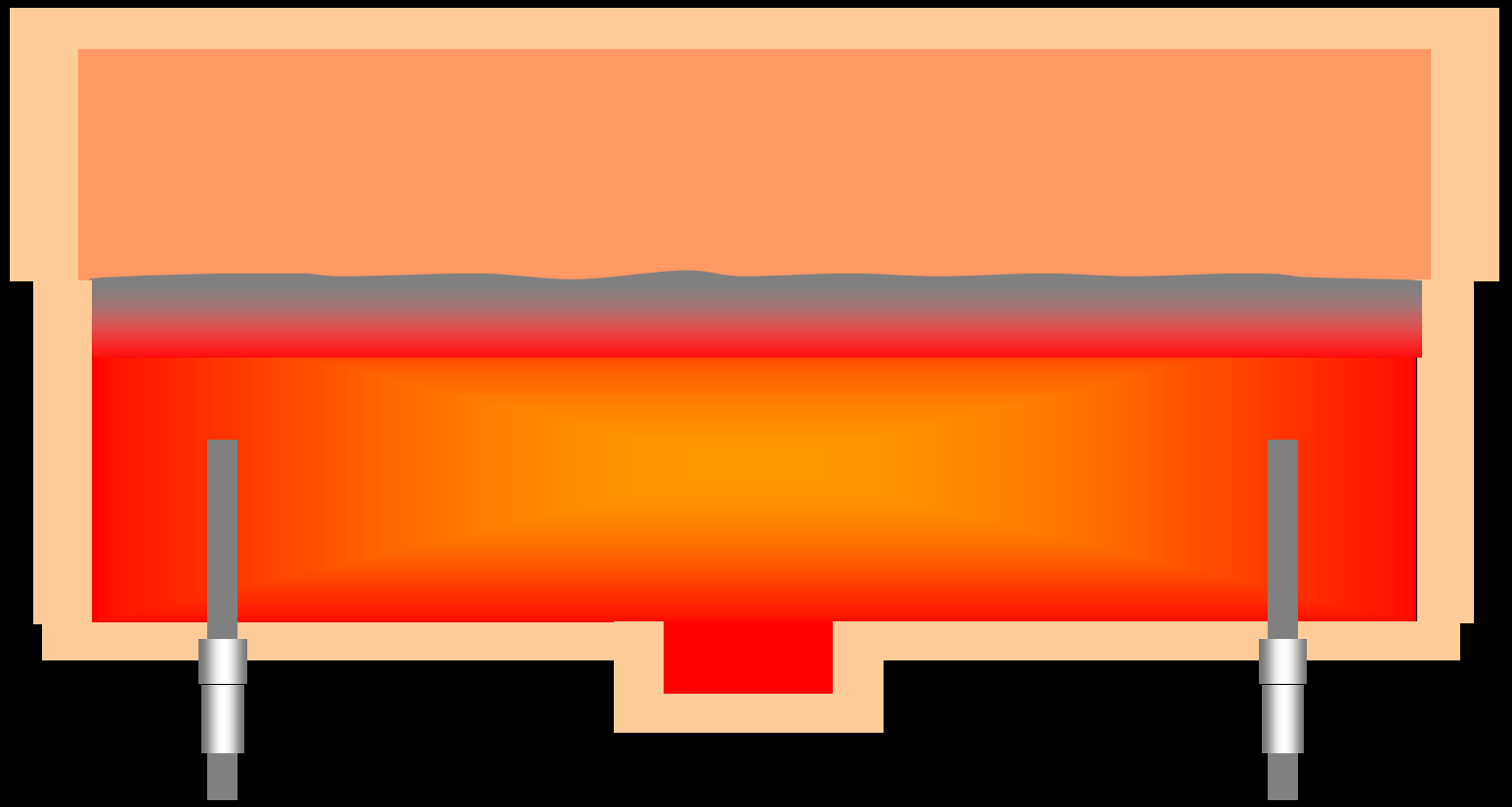
All-Electric Melting



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The Batch Blanket of an All-Electric Furnace

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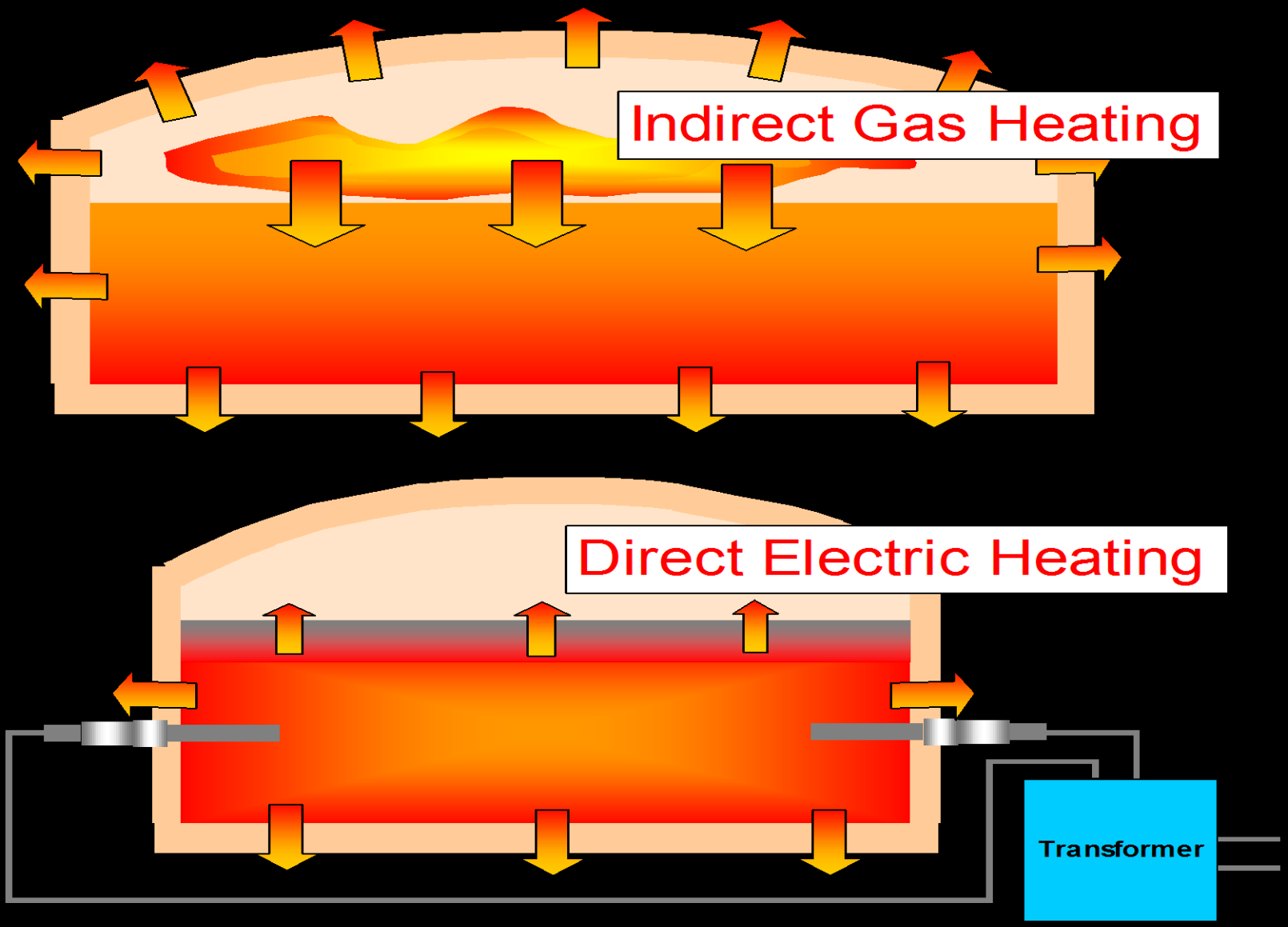

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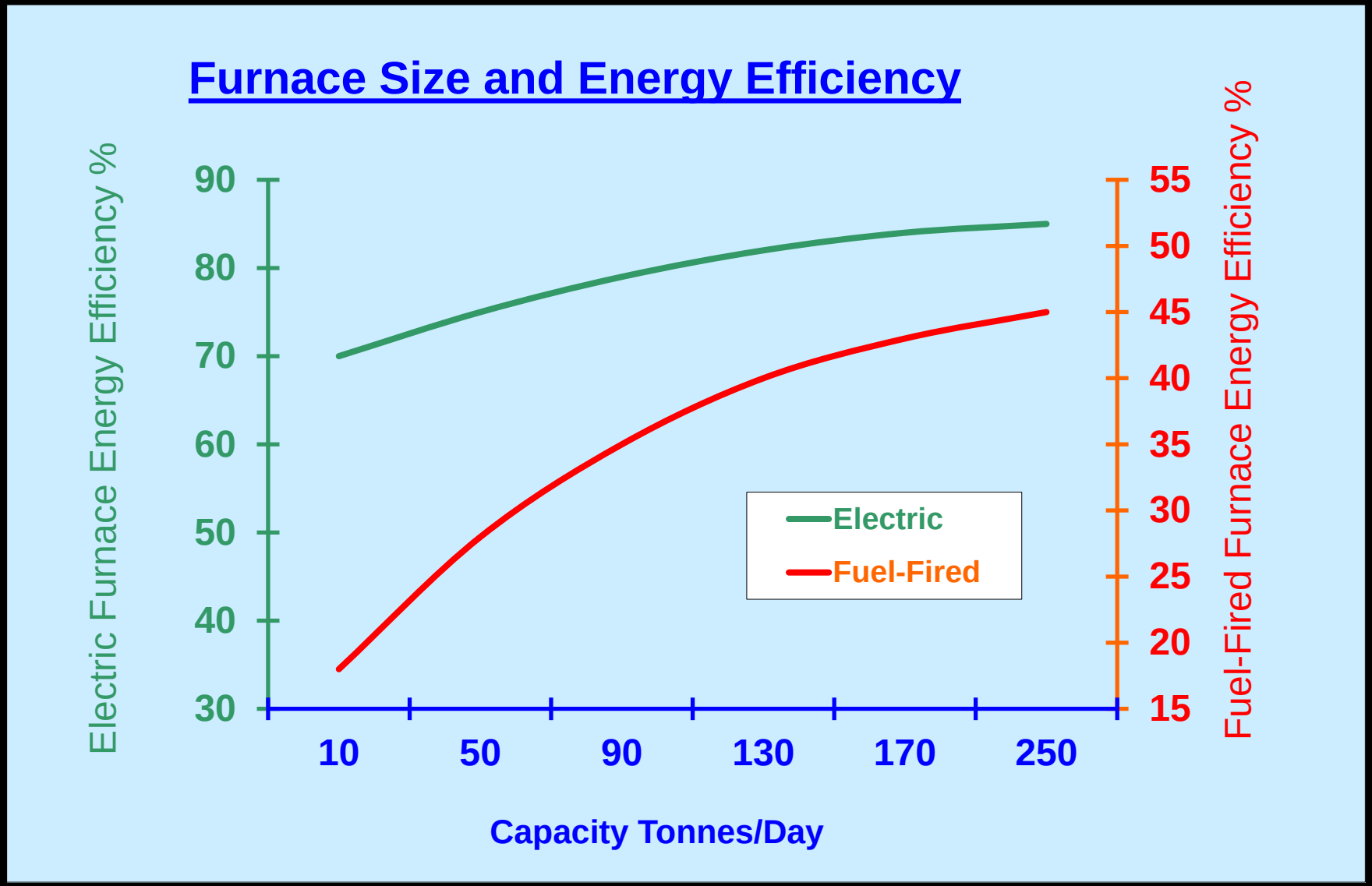

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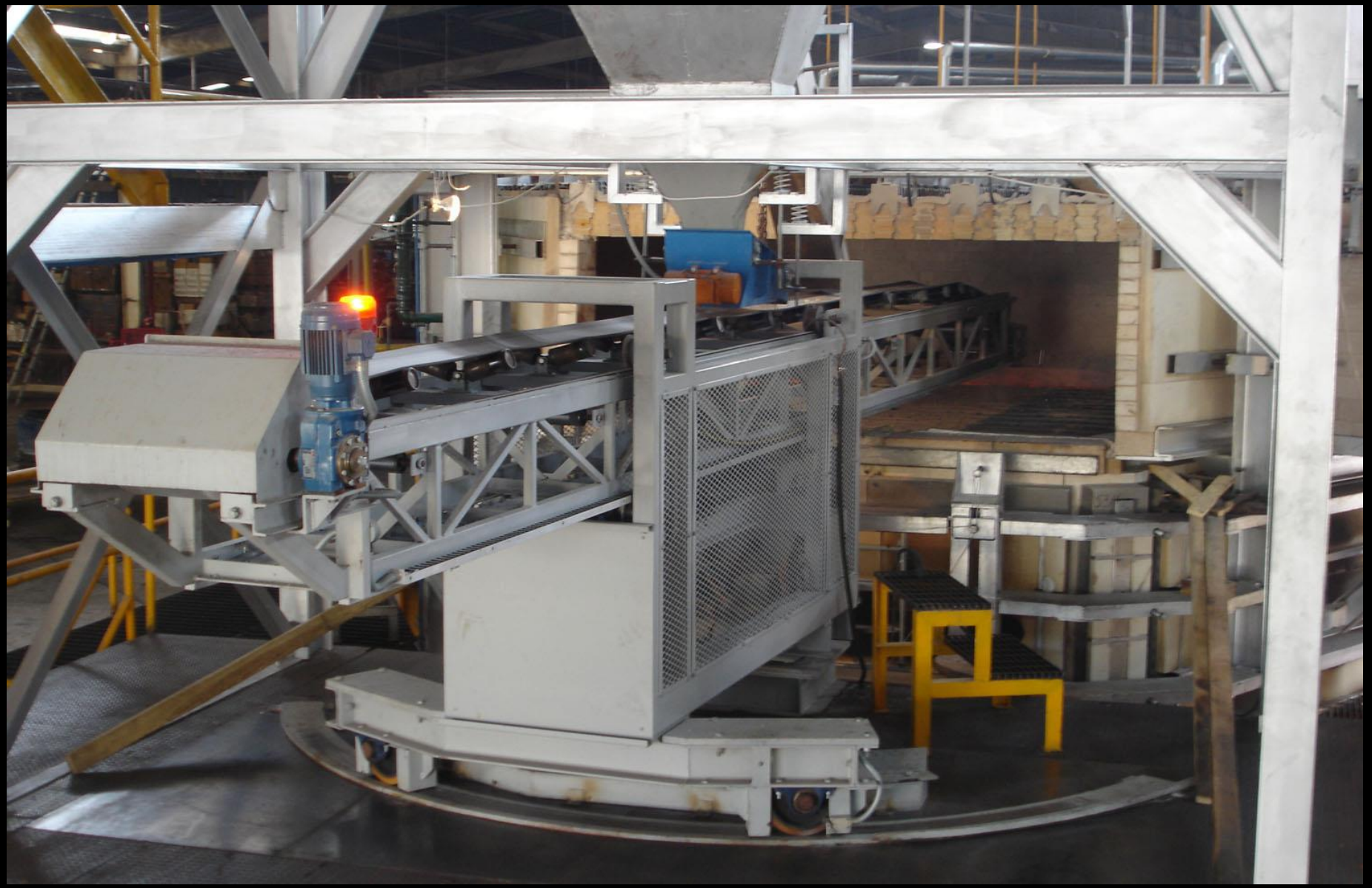

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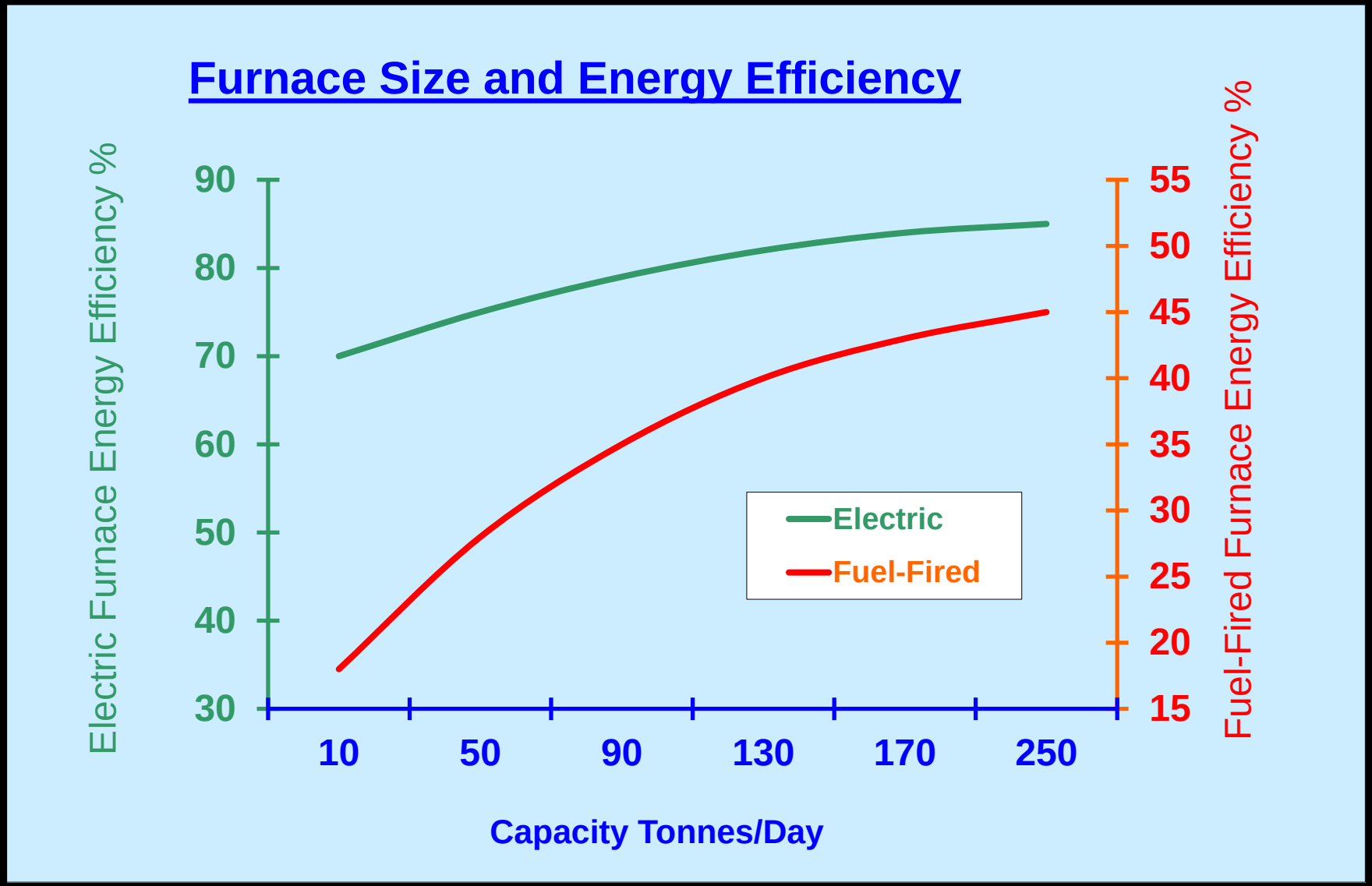

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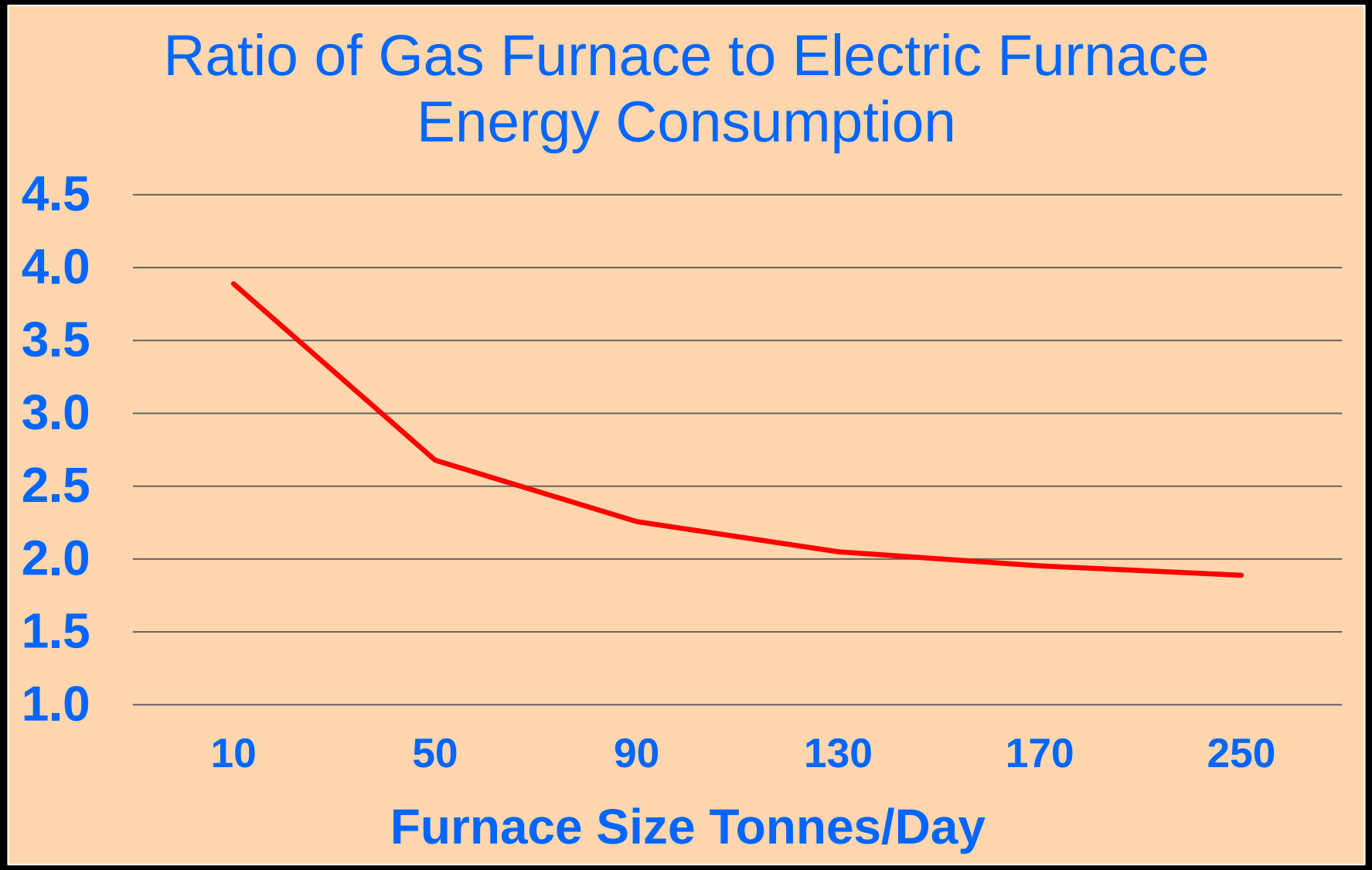

Where the cost of electricity per unit of energy is about 3 times the cost of the same amount of gas energy, or less, electric melting is likely to be the economic choice for furnaces up to about 40 tonnes/day.

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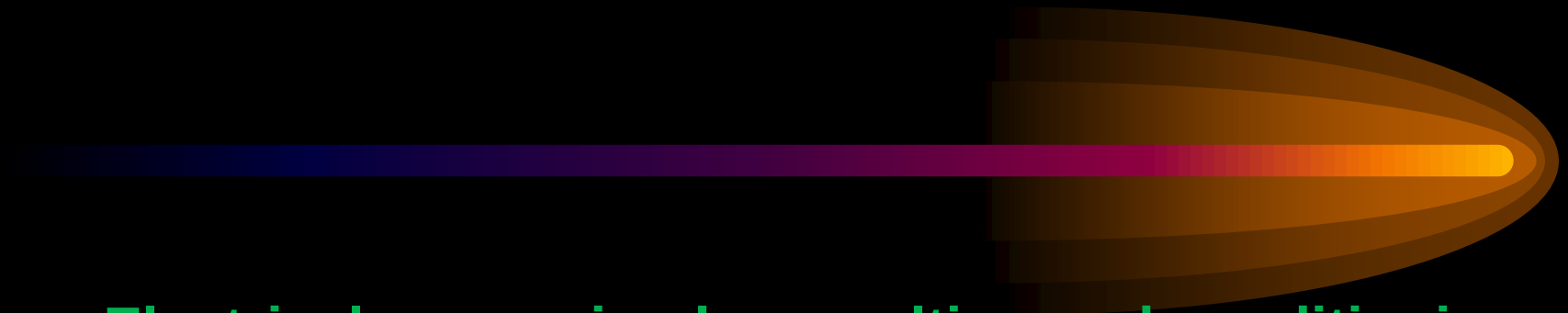

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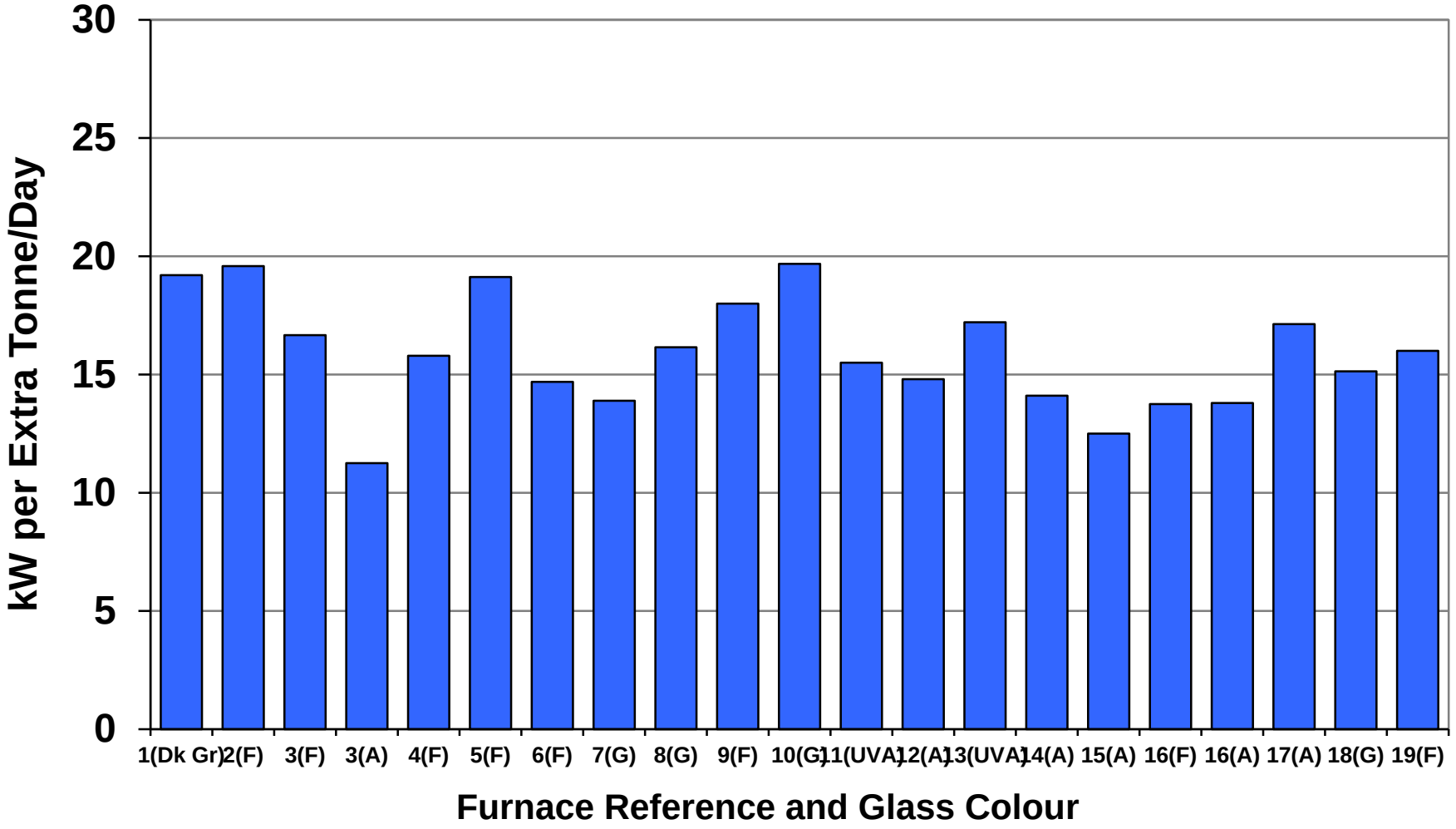
ELECTROGLASS CCC BOOST SYSTEMS
Typical Performance Data: Boost KW per extra Tonne/Day



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20 kW of continuous boost power input per extra tonne/day. Equivalent to 480 kW-hours of energy per tonne of glass, or 413 kCals per kg of glass.

If electricity is 3 times the cost of gas per unit of energy, and your unboosted furnace is using more than 1240 kCals per kg of glass, the glass from the boost system is cheaper than the glass from gas.

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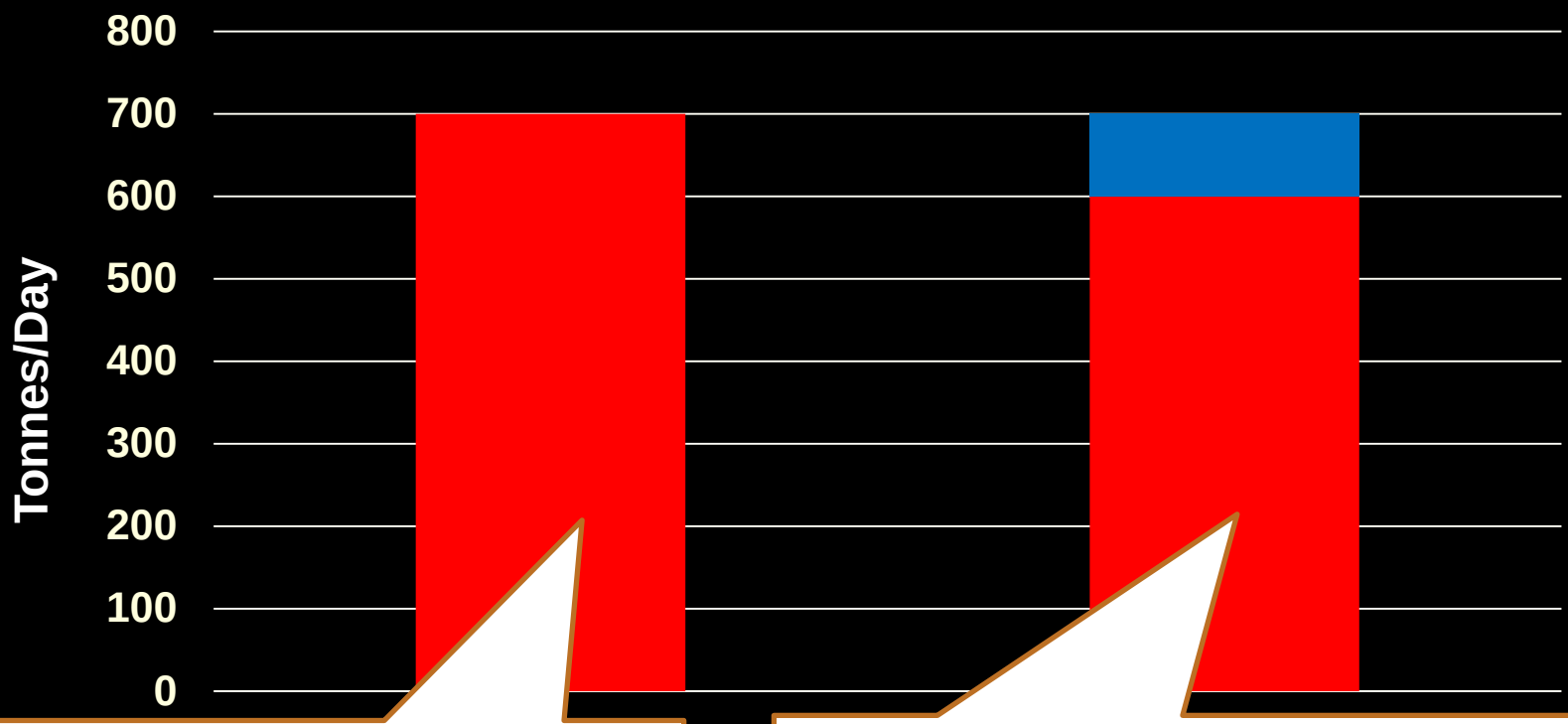
Electric Boost in Float Glass Furnaces



700 Tonnes/Day Furnace

Optimum thermal efficiency only at maximum pull rate.

Reduced efficiency at lower pull.

Reduced pull on tinted glass

600 Tonnes/Day Furnace with 100 Tonnes/Day Electric Boost

Optimum thermal efficiency from 600 to 700 tonnes/day, with boost adjusted according to pull.

Tinted glass output increased to match downstream line capacity

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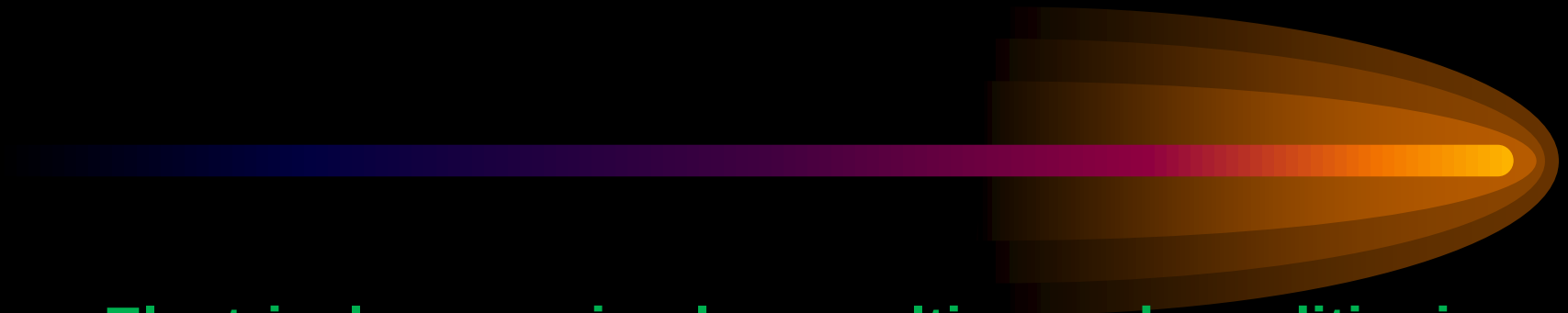

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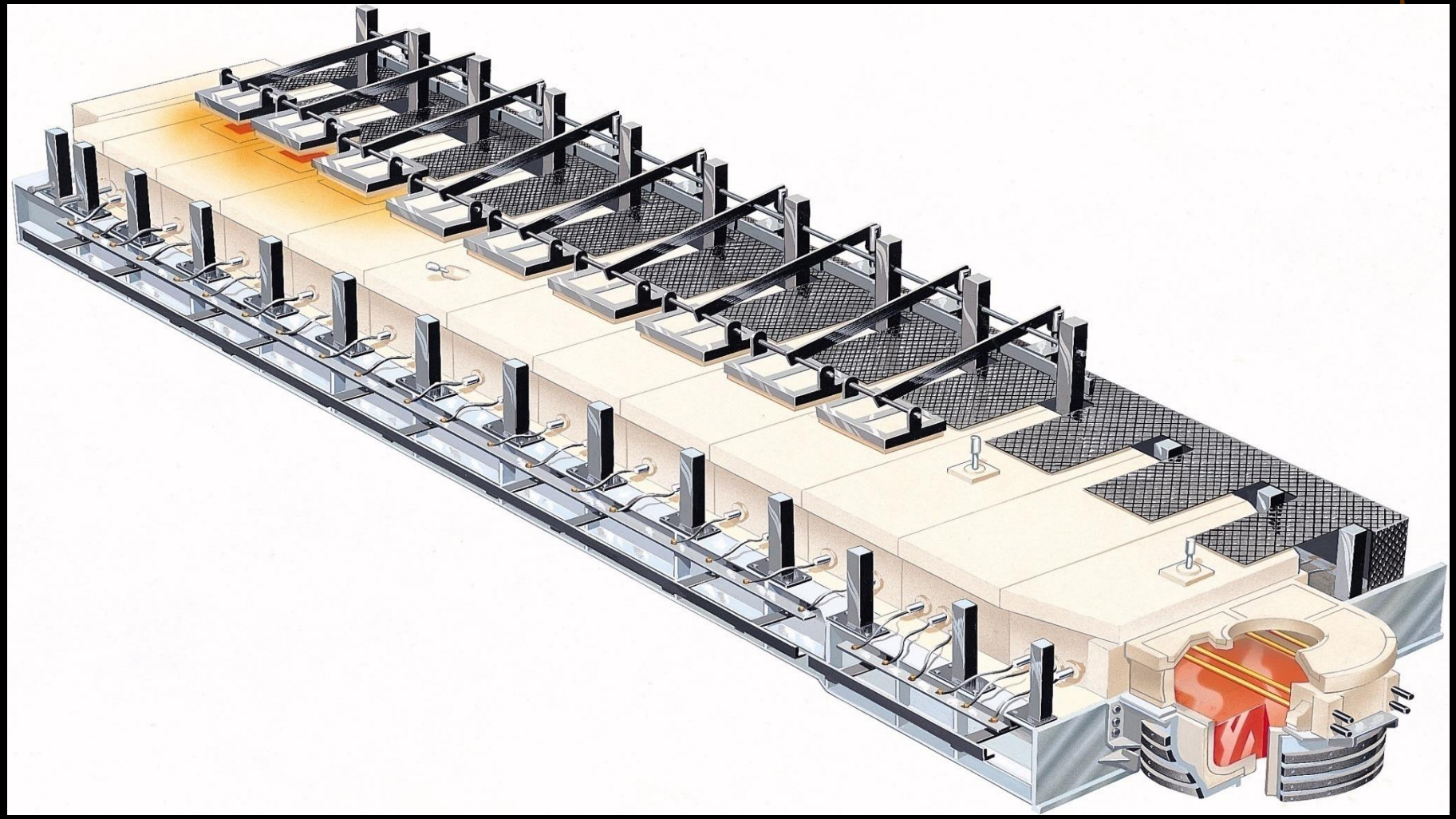
All-Electric Forehearths



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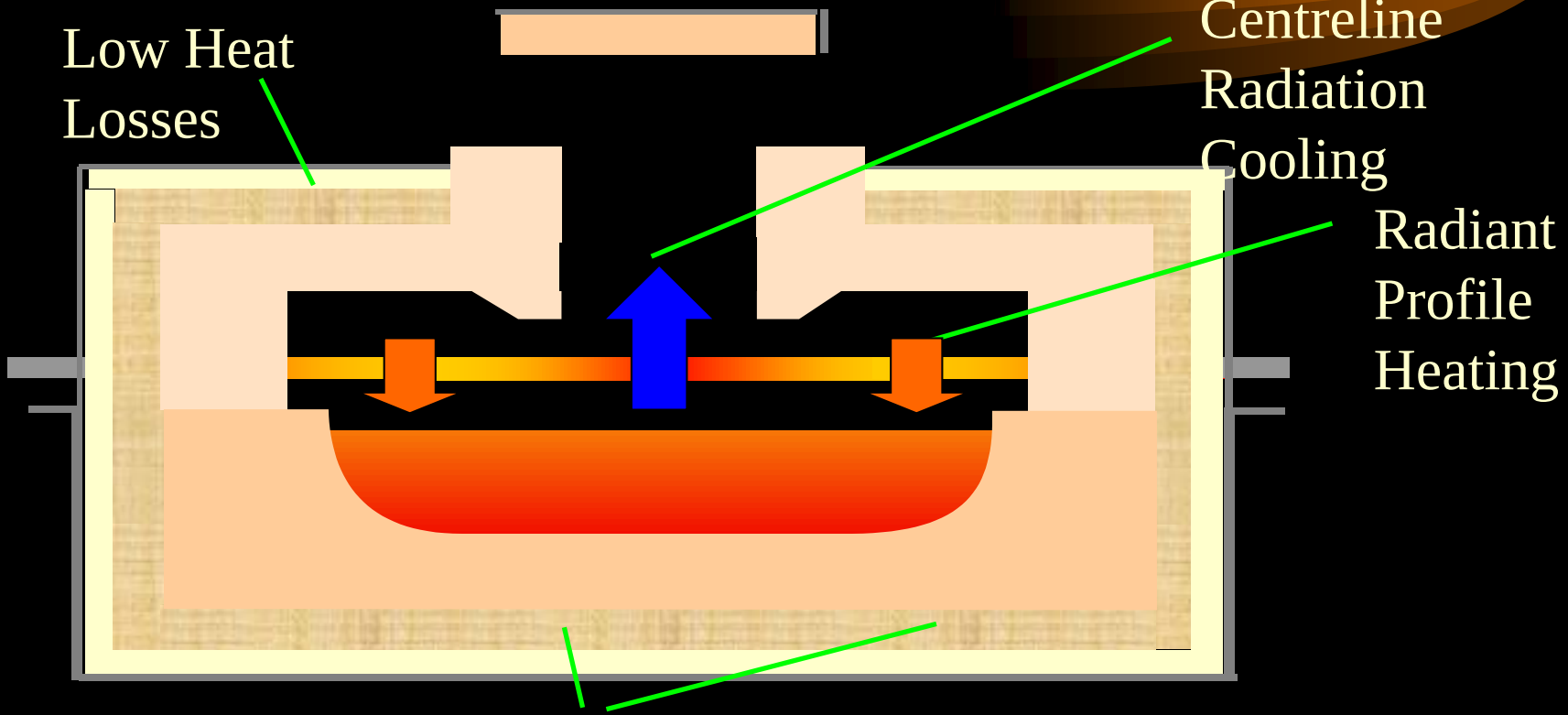
All-Electric Forehearths



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All-Electric Forehearths

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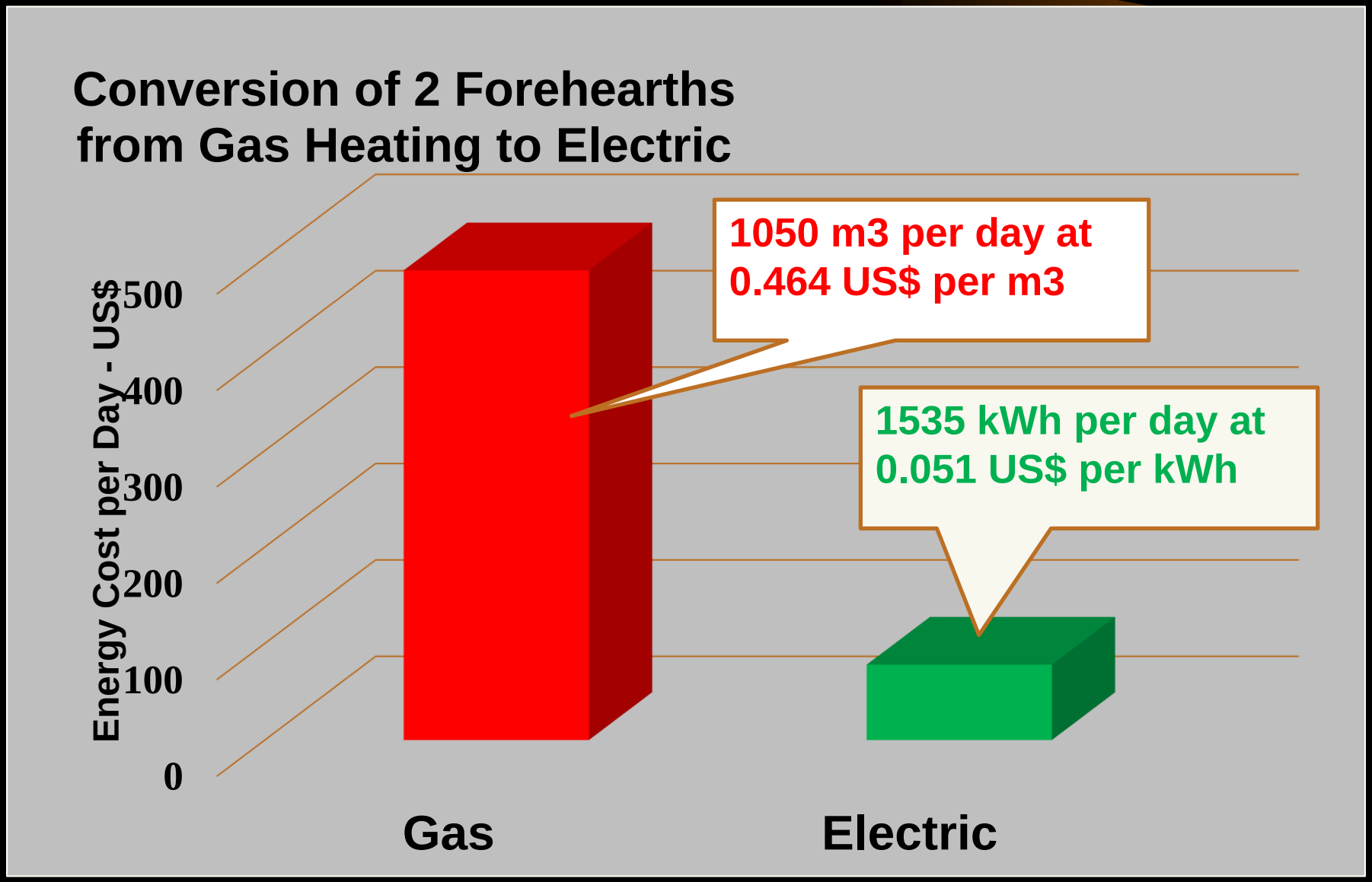

FOREHEARTH 1:2 36" WIDE

Date	12/21	12/22
PULL(T/D)	57.2	56.8
GLASS COLOUR	E.G	E.G
power(KVA)		
Rear	4.3	4.5
Middle	9.4	10.3
Conditioning	2.2	2.4
Electrodes Left	3.8	3.8
Electrodes Right	3.9	3.9
TOTAL POWER	23.6	24.9

FOREHEARTH 1:1 48" WIDE

Date	12/21	12/22
PULL(T/D)	73.2	71.8
GLASS COLOUR	E.G	E.G
KVA		
Rear Left	10.4	8.7
Rear Right	6.4	3.6
Middle Left	10.7	10.4
Middle Right	11.3	11.6
Conditioning	1.9	2.3
Electrodes Left	3.6	3.1
Electrodes Right	3.7	3.2
TOTAL POWER	48	42.9

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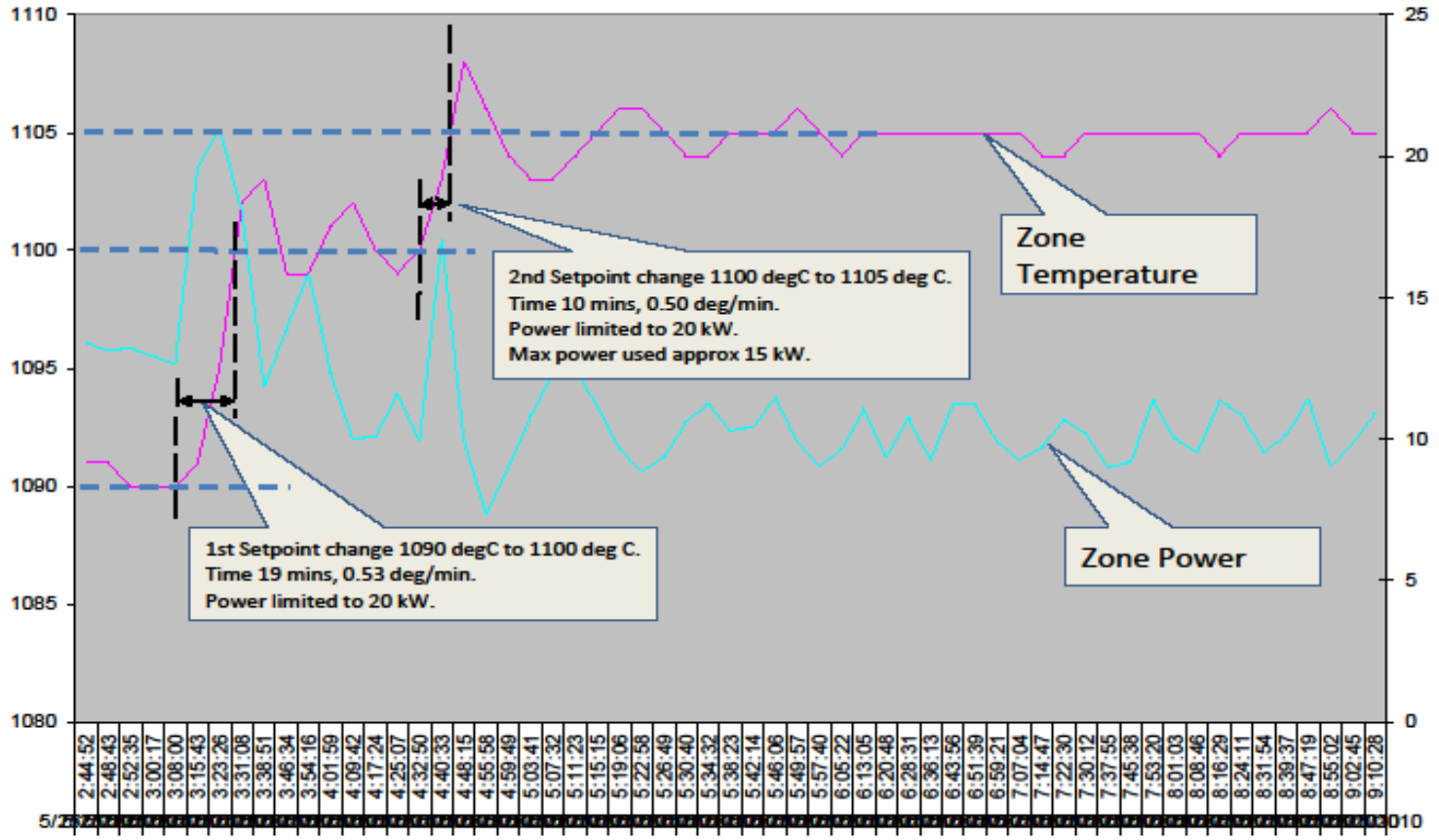

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All-Electric Distributor

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Electrical energy in glass melting and conditioning

All-Electric Melting

- Highly Energy Efficient
- Lower Melting Energy Costs in smaller furnaces
- Technology of Choice for Volatile Glasses
- Environmentally Friendly

Electric Boosting in fuel-fired furnaces

- Highly Energy Efficient
- Maintains Maximum Energy Efficiency at Reduced Pull
- Reduces Total Energy Consumption per kg. of Glass
- Can Reduce Total Energy Cost per kg. of Glass

Electric Distributors and Forehearths

- Highly Energy Efficient
- Can Reduce Gas Energy Costs by 60% to 90% in many cases
- Excellent Temperature Control and Fast Response
- Minimal Maintenance

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Energy is Expensive -

- Save It!

Thank You!

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