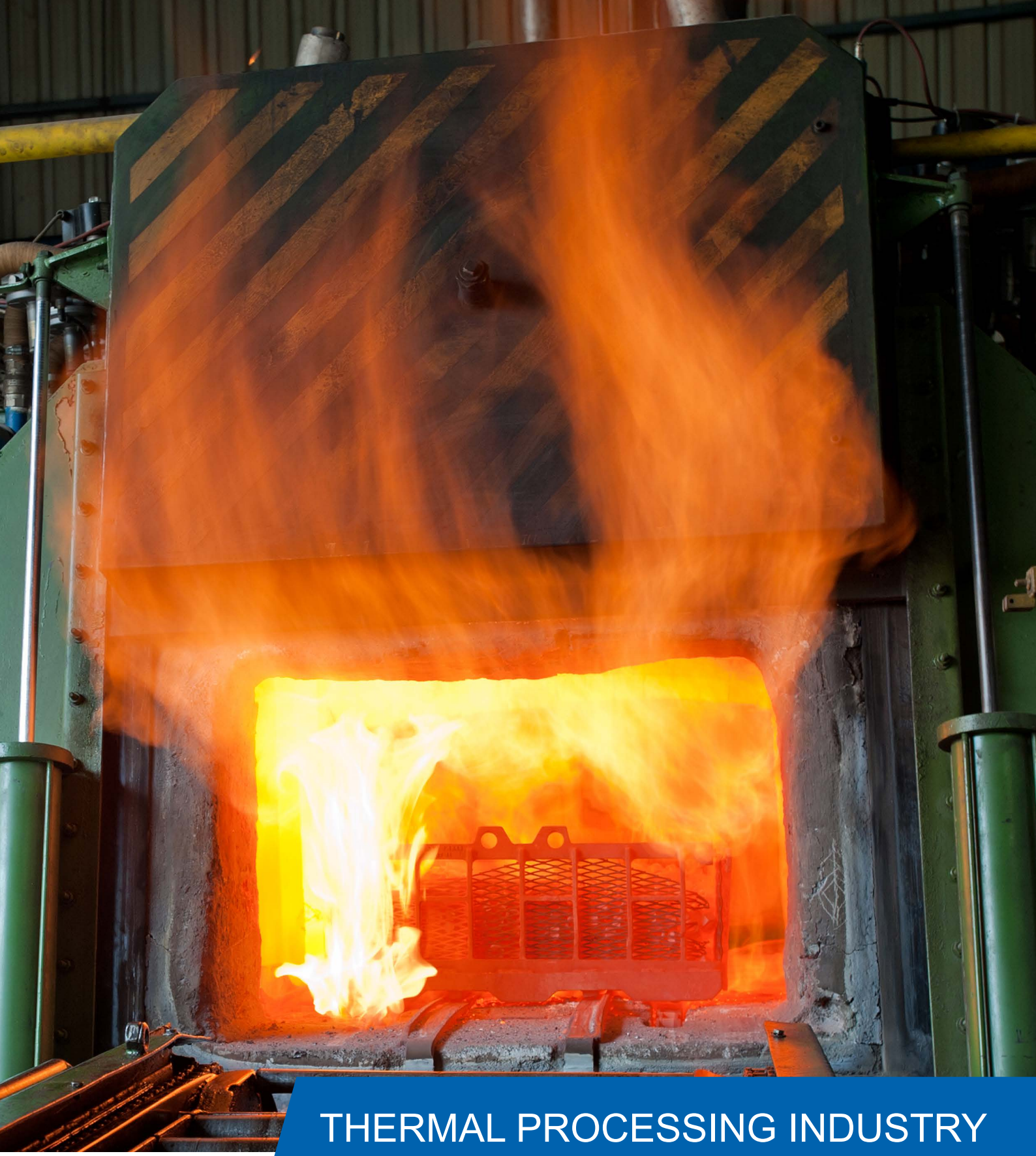

THERMAL PROCESSING INDUSTRY

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SUPPORTING YOUR SUCCESS

HIGH TEMPERATURE NICKEL ALLOYS

For the demanding environments encountered in the thermal processing industry alloys require high temperature strength, excellent resistance to corrosion by furnace atmospheres and thermal fatigue resistance. Uses include baskets, shrouds, fixtures, radiant tubes, muffles, belts and hearths and heater element sheathing tubes.

Anchor pins which affix the refractory lining to the furnace wall are subjected to high temperatures, must withstand aggressive corrosive environments and retain their mechanical properties and increasingly nickel alloys are replacing stainless steel grades as operating environments become more severe.

Alloys 800HT and 600 both have excellent resistance to oxidising and reducing atmospheres and can withstand repeated thermal cycling. They are ideal for use in applications where high creep rupture and strength are required at elevated temperatures such as heater element sheathing tubes and refractory anchors.

The content of aluminium in **Alloy 601** gives outstanding resistance to oxidation. The protective oxide layer that forms is tightly adherent and resists spalling even through repeated thermal cycling. This combined with high mechanical properties at elevated temperatures makes the alloy ideal for use in heat treating equipment. **Alloy 617** also benefits from additions of aluminium plus cobalt and molybdenum for exceptional high temperature strength and oxidation resistance.

INCOTHERM® Alloy TD was specifically developed for thermocouple sheathing where high-temperature strength and corrosion resistance in a range of environments is required. The alloy has outstanding oxidation resistance at temperatures up to 1250 °C and can withstand thermal cycling. Conventional thermocouple sheathing alloys can suffer embrittlement due to nitridation resulting in failure – INCOTHERM alloy TD has excellent resistance to nitridation. Careful control of the composition particularly with respect to aluminium and manganese – elements which can diffuse through the insulator material and contaminate the thermocouple element wires – giving excellent long-term performance of INCOTHERM Alloy TD sheathed thermocouples. For more information please contact us via info@bibusmetals.com

ALLOY PROPERTIES

	Composition (%)	Key attributes	Application
Alloy 800HT N08811 1.4876	32.5Ni – 21Cr – 46Fe	Resistant to high temperature oxidation, carburisation and nitridation	Element sheathing tubes, refractory anchors
Alloy 600 N06600 2.4816	76Ni – 15Cr – 8Fe	Good high temperature strength and oxidation resistance	Element sheathing tubes, refractory anchors
Alloy 601 N06601 2.4851	60.5Ni – 23Cr – 14Fe – 1.4Al	Good high temperature mechanical properties and outstanding oxidation resistance	Sheathing tubes, furnace furniture, refractory anchors
Alloy 617 N06617 2.4663	52Ni – 22Cr – 1.5Fe – 9.5Mo – 12.5Co – 1.2Al	Exceptional high temperature strength, stability and oxidation resistance	Heat treating equipment, refractory anchors
INCOTHERM Alloy TD	72Ni – 22Cr – 1.0Fe – 3.0Mo – 0.1Al + rare earth elements	High temperature strength, corrosion resistance and thermal cycling resistance	Thermocouple sheathing

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