〈Material〉 A Hundred Years Technology History of Kobe Steel

1905 • • • • 1910 • • • • 1915 • • • • 1920 • • • • 1925 • • • • 1930 • • • • 1935 • • • • 1940 • • • • 1945 • • • • 1950 • • • • 1955 • • • • 1960 • • • • 1965 • • • • 1970 • • • • 1975 • • • • 1980 • • • • 1985 • • • • 1990 • • • • 1995 • • • • 2000 • • • • 2005

●Founded as Kobe Seikosho (Kobe Steel Works) of Suzuki Shoten
●Incorporated as K.K. Kobe Seikosho (Kobe Steel Works, Ltd.)
●Changed English name of the company to Kobe Steel, Ltd.

●Established Analysis Group, Inspection Department
●Established Research Gr.
●Inaugurated the Central Research Lab. ●Inaugurated the Technical Development Group ●Consolidated research facilities in the Kobe Corporate Research Laboratories
●Inaugurated the Asada Research Lab. ●Inaugurated the Mechanical Engineering Research Lab.
●Inaugurated the Structural Engineering Research Lab.
Technical Development Group

●Started making steel using an open hearth furnace
●Inaugurated the Nishi Kaigan Plant (later renamed Kobe Works - Wakinohama Area)
●Blew-in #1 BF at Nadahama, an integrated steelworks
●Started a 60 ton converter at the Kobe Works
●Coke center charging technology
●Started production of piano wires
●Absorbed Amagasaki Steel Co., Ltd.
●High pellets ratio operation technology for BF
●Started production of steel bars and shapes
●Production of high carbon chromium steel wire
●Pulverized Coal Injection into BF
●Started oxygen steelmaking
●Inaugurated the #7 wire plant in the Kobe Works
●Commercialized high strength steel valve springs
●Completion of the Akashi Strait Bridge using 180 kg wire
●Started rolling of thick steel plate
●Started integrated steel manufacturing at the Kakogawa Works
●Started production of special alloy steel
●Started rolling of thin steel sheets ●Commercialized high strength, 100 kg Hi-Ten
●Commercialized no paint, weathering steel
●Succeeded in developing 50 kg high tensile strength weathering steel for welded structures
Iron and Steel

●Started production of anvils, anchors and axles
●Inaugurated the Takasago Works
●Inaugurated a foundry ●Introduced a 2000 ton press
●Started production of thin wall castings and forgings for aviation ●Production of large B&W type crankshaft ●Production of supersize, solid type crankshafts
●Introduced a 1200 ton hydraulic press
●Production of RR crankshafts ●Production of large marine propellers ●Production of supersize, solid type rotors
●Production of build-up type crankshafts
●Production of supersize, Sulzer type crankshafts
●Production of large cast steel, B&W type crankshafts
Cast and Forged Steel

●Production of high grade welding rods
●Developed low fume welding rod ●Developed metal type FCW for thick plates
●Developed low hydrogen welding rods
●Production of submerge, arc-welding materials
●Development of an all-position, slag type FCW ●Development of a low fume, low spatter FCW
●Development of a general purpose welding robot ●Developed welding materials for HT950 steel
●Production of carbon dioxide, arc-welding solid wires ●Practical application of the welding materials for high strength Cr-Mo steel
Welding

●Started research on metallic titanium
●Installation of an AP line and a cold roll mill dedicated for titanium at the Kakogawa Works
●Production of metallic titanium
●First all-titanium condenser for combustion and atomic power plant
●Industrial use of a titanium melting furnace
●Started production and sales of Ti-6Al-4V ●Pressure resistant, titanium shell for the Shinkai 6500
●Development of Ti-9
●Development of KS100, KS120
Titanium

●Inaugurated the Moji Plant
●Production and sales of the KFC alloy for lead frames ●Licensed alloying technology to Outokumpu Technology
●Production of tubes and bars made of copper and brass
●Production of copper tubes
●Inaugurated the Hatano Plant ●Volume production of inner grooved copper tubes
Copper

●Started production of aluminum alloys at the Chofu Plant
●Inaugurated a hot rolling mill at the Moka Plant ●Started a full scale operation of the Daian Plant
●Started production of magnesium alloys
●Started production of aluminum blanks for magnetic recording disks
●Started production of magnesium alloy, aviation castings at the Nagoya Plant
●Inaugurated the Moka Plant
●Development of high strength aluminum alloys for cold forging
●Installation of a 1200 ton die-cast machine
Aluminum

●Started production of air compressors
●Produced a high pressure compressor of 1000 atm
●Produced a screw compressor ●Produced a large, reciprocal compressor for hydrogen gas ●The world's largest hot isostatic press machine ●Sales of high pressure screw compressors
●Received orders for ammonia compressors
●Sales of oil-free, screw compressors "Emeraude Series"
●Completed a cement machine ●Produced air separators
●Vinyl chloride coating machine for electric cables
●Started production of AIP equipment
●Produced the domestically largest rotary kiln
●Produced an intensive mixer
●Delivered an original 12 stage mill
●Produced a 4500 ton pressing machine
●Production of glass lining, acid-proof vessels ●Tire testing equipment
●Delivered a large, twin rotor, continuous, resin mixer
●Rubber mixer and extruder
●Tire valcanization equipment
Machinery

●Constructed an integrated cement plant
●Built a large oxygen plant ●Produced a large oxygen equipment ●Completed a DR plant in Venezuela
●Built a nitrogen cleaning plant
●Received order for a large fertilizer plant export ●Constructed an integrated DR iron making plant in Qatar ●Received an order for the FASTMET plant
●Received order for an LPG recovery plant in Algeria ●Production of world's largest class reactors for oil refineries
Engineering

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