**MC-433**

**Complete Slug / Strip Production Plant**

**MORE DETAIL DOCUMENT**

1. MAIN COMPONENTS: Hazelett Twin-Belt Continuous Strip Caster for Aluminum and Zinc

 Wellman Hot Rolling Mill + Warm/Cold Rolling Mill

 Blanking Presses, Roll Grinder, etc.

2. PURPOSE: Melt, Cast, Hot Roll, and Cold Roll Aluminum and Zinc Strip

 Blank slab/strip into Slugs and Strip products

3. APPLICATION: Production of Aluminum coil, strip, or slugs

 Production of strip used in zinc-chloride batteries

 Production of slab/strip for many other zinc applications including 250mm x

 300mm x 25mm zinc slabs for electroplating

4. EQUIPMENT:

 a. MELTING FURNACES:

 Manufacturer: SRC Aluminum Ltd. (Turkey)

 Quantity: One (1)

 Type: Stationary Reverb, Natural gas fired, with hot air recuperative supply

 Holding Capacity: 17 mtons aluminum

 45 mtons zinc

 Melt Rate: 3,800 kg/hr (8,375 lbs/hr)

 Burner Capacity: 2 x 1,500 kW/hr (2,580,000 kCal/hr)

 Power Supply: 380 volts / 3 phase / 50 Hz

 b. CASTER

 Manufacturer: Hazelett Corporation (USA)

 Type: Twin-belt continuous

 Cast Thickness: 9.5 to 50.0mm / .375" to 2.0”

 Max Cast Width: 305mm / 12”

 Cast Width at Start-Up: 285mm max. / 11.2"

 Production Width 285mm / 11.2" (majority of product)

 Belt Width: 508mm / 20"

 Casting Speed Range: 2.69 to 13.46 mpm / 8.8 to 44.0 fpm

 Production Speed: 6.78 mpm / 22.0 fpm (majority of product)

 Drive Motor Power: 1.36/7.46 kW

 RPM (min/max) 400 / 2200

 Overall Gear Ratio: 313.05:1

 Maximum Production: 10,900 kg/hr / 24,000 lbs/hr

 Cooling Water Flow: Rating at Manifold = 5680 L/min @ 2.46 bars

 Cooling Requirements: 453,000 kCal/hr

 Approx. Pump Power: 55 kW @ 1440rpm (for each main pump)

 Typical Size Produced: 12.7mm thick / .500”

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Page 2 – MC-433 Cast House Detail

 c. HOT ROLLING MILL 1:

 Manufacturer: Wellman Engineering (U.K.) Ltd.

 Type: 2-Hi Hot Mill

 Rolls: Water-Cooled, with recirculation system

 Screwdowns: Motorized

 Typical Zinc Reduction: 12.7mm - 6mm / .50” - .236"

 Roll Diameter: 435mm max / 17"

 Roll Face: 425mm / 16.75”

 Mill Speed: 27.5 mpm / 90 fpm

 Roll Loading Capacity: 300 mtons max

 Screwdown Motors: 2 motors per screwdown, 6.7/8.5 kW @ 1410/2850 rpm

 Maximum Roll Gap: 34mm with 435mm diam rolls / 1.34"

 Screwdown Speed: Min - 4.8 mm/min / .190 inches/min

 Max - 9.69 mm/min / .380 inches/min

 Rolling Temp - Entry: 200-250 Deg. C

 Material Section: Zinc (typical) - 285mm wide x 12.7mm thick / 11.2” x .500”

 Material Reduction: Zinc (typical) - 12.7mm down to 6mm / .50” down to .236"

 D.C. Drive Motor: 0/100/200 kW, 0/800/1600 rpm

 Drive Gear Ratio: 79.6:1 reduction

 c.1 HOT MILL RECOILER

 Capacity: 1500 kg / 3300 lbs

 Drive: 35 kW DC Variable Speed

 Speed Range: 0-55 mpm / 0-180 fpm

 Coil Pushoff: Hydraulic

 Coil Car: Included

 d. HOT / COLD ROLLING MILL 2:

 Manufacturer: Wellman Engineering (U.K.) Ltd.

 Type: 2-Hi Hot/Cold Mill

 Rolls: Water-Cooled, with recirculation system

 Screwdowns: Motorized

 Material: 99.99% Commercially Pure Cast Zinc

 Roll Diameter: 435mm max / 17"

 Roll Face: 425mm / 16.75”

 Screwdown Motors: 2 motors per screwdown, 6.7/8.5 kW @ 1410/2850 rpm

 Maximum Roll Gap: 34mm with 435mm diam rolls / 1.34"

 Screwdown Speed: Min - 4.8 mm/min / .190 inches/min

 Max - 9.69 mm/min / .380 inches/min

 D.C. Drive Motor: 0/500/500 kW, 0/850/1600 rpm

 Drive Gear Ratio: 8.3:1 reduction

 d.1 ZINC HOT ROLLING:

 Strip Entry Temp: 200-250 Deg. C

 Material Section: 285mm wide x 6.0mm thick typical / 11.2" x .236"

 Material Reduction: 6mm down to 3mm / .236” down to .120"

 d.2 ZINC COLD ROLLING:

 Strip Entry Temp: 20 Deg. C

 Material Section: 285mm wide x 3.0mm typical / 11.2" x .120"

 Material Reduction: 3mm down to 0.45mm / .120” down to .018" IN 4 PASSES

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 d.3 UNCOILER:

 Mandrel Expanded: 610mm / 24"

 Mandrel Collapsed: 535mm / 21"

 Weight Capacity: 1500 kg max / 3300 lbs

 Coil OD: 1250 mm max / 49"

 Speed: 190 mpm / 624 fpm

 D.C. Drive Motor: 0/20/20 kW, 0/640/1600 rpm

 Gearbox Ratio: 14.5:1 Reduction

 d.4 RECOILERS (2) with BELT WRAPPERS (2)

 Type: Expanding Mandrel

 Mandrel Expanded: 610mm / 24”

 Mandrel Collapsed: 585mm /23”

 Weight Capacity: 1500 kg / 3300 lbs max

 Coil OD: 1250mm / 49"

 Speed: 55 mpm / 180 fpm (hot rolling)

 250 mpm / 820 fpm (cold rolling)

 D.C. Drive Motor: 0/35/35 kW, 0/640/1600 rpm

 Drive Gear Ratio: 52:1 Hot Rolling / 11.48:1 Cold Rolling

 Coil Pushoff: Hydraulic

 Coil Car:

 Fume Exhaust System:

 d.5 COIL EXTRACTION SYSTEM

 Type: Walking Beam

 Capacity: 21 Coils at 1500kg x 1250mm OD x 300mm width

 e. JIB CRANE 1

 Capacity: 2.0 mtons

 Hoist Swivel: 3000mm / 118" (9’10”)

 Max Lift Above Floor: 2900mm / 114" (9’6”)

 f. JIB CRANE 2

 Capacity: 3.2 mtons

 Hoist Swivel: 6400mm / 252” (21’0”)

 Max Lift Above Floor: 3200mm / 126" (10’6”)

 g. HYDRAULIC UNIT 82 - 110 Bar Pressure

 h. SLUG BLANKING PRESS 1

 Manufacturer: Rhodes (U.K.) Ltd.

 Type: Double Sided, Single Helical

 Capacity: 151 tons

 Stroke: 31.75mm / 1.25”

 Opening: Bed Plate To Ram Stroke = 298mm / 11.75”

 Ram Adjustment: 76 mm / 3.0”

 Bed Area: 736mm (29") x 610mm (24")

 Width Between Slides: 889mm / 35”

 Strokes Per Minute: 0-100

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Page 3 – MC-433 Cast House Detail

 i. SLUG BLANKING PRESS 2

 Manufacturer: Rhodes (U.K.) Ltd.

 Type: Double Sided, Single Helical

 Capacity: 200 tons

 Stroke: 31.75mm / 1.25”

 Opening: Bed Plate To Ram Stroke = 298mm / 11.75”

 Ram Adjustment: 76 mm / 3.0”

 Bed Area: 736mm (29") x 610mm (24")

 Width Between Slides: 889mm / 35”

 Strokes Per Minute: 0-100

 8 COMPLETE SETS OF BLANKING TOOL SETS

 j. SLUG CLEANING / DRYING / VIBRATING UNITS

 k. ROLL GRINDER

 Manufacture: Churchill (new 1982) (model 82C / 20” x 72” 001)

 Crowning: -/+ crown profile grinding feature installed

 Equipment Wheel lifting attachment

 Hydraulic oil-feed system

 Centre grinder

 Electrical control panel and assembly

 Headstock (2)

 Tailstock (1)

 Roll balance supports (2)

 Grinding wheel and assembly

 1.5 mton electrical hoist

 l. SPARES

 Lots of spare parts including three sets of rolls with chocks & bearings

 Hydraulic/ Pneumatic valves and components

 Gears, gaskets, seals, etc.

 Cores/spools and others relevant equipment

**ACTUAL PRODUCTION CAPACITIES:**

 - Daily: 1 shift (1 shift = 8 hours)

 - Running 305mm wide x 19mm thick slab at 4.3 mpm

For Aluminum Casting (aluminum gravity of 2.7gr/cm3)

 - Weight/min = 30.5cm x 1.9 cm x 430cm/min x 2.7gr/cm3= 67.2 kg/min

 - W one hour = 60min x 67.2 kg/min = 4.032kg/hr

 - W one day = 8h x 4.032 kg/hr = 32.2 tons per shift per day

 - W annual = 300 days x 32.2 tons/day = 9677 tons per shift per day

 - W annual = 2 shifts x 9677 tons = 19,354 tons/yr (for two shifts)

For Zinc Casting (zinc gravity of 7.14 gr/cm3)

 - W daily = 85 tons per shift

 - W yearly = 25,500 tons/yr (one shift x 300 days/yr)

 - W yearly = 51,000 tons/yr (two shifts)

 End.