**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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Page 3 – MC-433 Cast House Detail

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.