



PONGSAN

BRASS ROD and WIRE Business

2023

Domestic Affiliates



R&D Institute



Seoul HQ



Angang Plant



Busan Plant



Ulsan Plant

- Rods & Wires
- Strips & Sheets
- Coin blanks
- R & D Institute for Materials

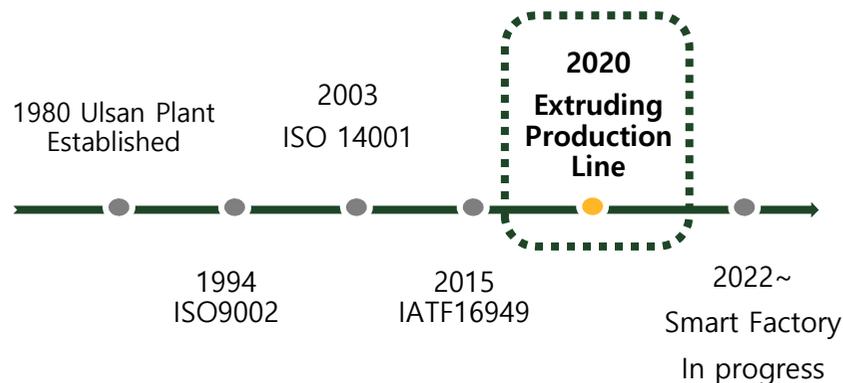


Poongsan FNS

Ulsan Plant Overview



- Plant Area
 - Site area : 282,210 m²
 - Floor space : 182,924 m²
- Number of Employees : 900+
- Organization : 5 divisions, 14 teams
- * The largest brass mill in the world as a single unit



Total Production Capability

228,200 MT/year

Rod & Wire Capability

48,000 MT/year

Extruding Production Line

- **Established** : April 1993
- **Plant Area**
 - Floor space : 2.2 acres
- **Number of Employees** : 55
 - Administrative & Technical staffs : 5
 - Labors : 50

New Investment (2020)

- **Main Facilities**

Process	Facilities
Extrusion	3500 Ton Press, Billet Heater
Drawing	50000 Draw Bench, IIB CDM, IB CDM(2), OB CDM(2) Rod Drawing, Rod Block(2)
Straightening	2-Roll(2), 22-Roll(3)
Annealing	Roll Hearth Furnace, Coil Annealing Furnace
Inspection	Visual Inspection

* CDM : Combined Drawing Machine

Production Items & Sizes

Unit : mm

Item	Alloy	Size
Free Cutting Brass	C3600, C3604, C3602, C604	Round 3 ~ 100 Hexagon 6 ~ 70
Forging Brass	C3770, C3771, C3772	Round 9 ~ 100
Others	Pure Copper C1011, C1100, C1220	Round 4 ~ 45
	Brass C2600, C2700, C2800	Round 6 ~ 25
	Low-Lead C2745	Round 20 ~ 50
	Naval C4641	Round 20 ~ 100
	Lead-Free C4627 (Biobrass II)	Round 10 ~ 50
	High-Strength C6785	Round 25 ~ 50

✓ For other alloys and sizes not listed above please consult us.

Manufacture & Development of Alloy

Mass Production

- **Copper**
 - C1020, C1100, C1220
- **Brass**
 - C2600, C2700, C2720 etc.
- **Leaded Brass**
 - C3604, C3771, C3800
- **Lead-Free Brass**
 - Bio-Brass II(Si Brass)
- **High Strength Brass**
 - C6782 (Low-Al)

New Development

- **BioBrass II (Si-Sn Brass)**
 - Rod & coil
 - Environmentally friendly
 - Satisfied *RoHS, *ELV regulation
 - Improve productivity



To be Developed

- **High Strength Brass (High Al & Ni alloy)**
 - Good wear resistance
 - Development of manufacturing technology for high-Al alloy
- **High performance Cu wire**
 - C70250, C19400, C14500 etc.
- **New Alloy Development**



- Bio-Brass I : Registered in Dec. 2017 (US 9840758) - Bio-Brass II : Applied in Sep. 2019 (US 16/495351)
* RoHS : Restriction of Hazardous Substances Directive * ELV : End of Life Vehicles

Poongsan Lead Free Brass Rod

1. Chemical Composition

(Unit : wt%)

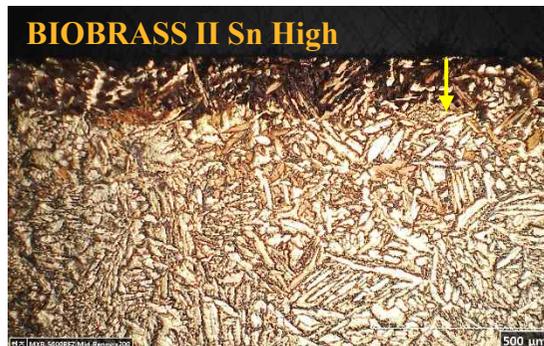
Material		Cu	Zn	Si	P	Sn	Mn	Pb	Remarks
Poongsan Lead-free	BIOBRASS II Sn High	63	Rem.	0.9	0.07	1.2	-	<0.09	
	BIOBRASS II Sn Low	62.5	Rem.	1.0	0.07	0.5	-	<0.09	Improved Machinability

2. Summary

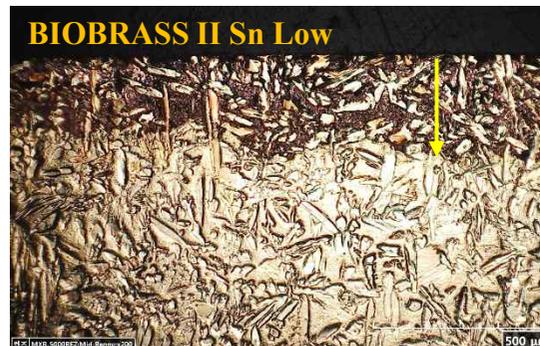
◎ : Very good ○ : Good △ : OK X : NG

Material	Hardness (Hv, 5kg)	Dezincification (Depth, μm)	Forgeability	Machinability	
				cutting torque	cutting chip
BIOBRASS II Sn High (1.2%)	160	○ ≤300	◎	○	△
BIOBRASS II Sn Low (0.5%)	152	○ ≤500	◎	○	○

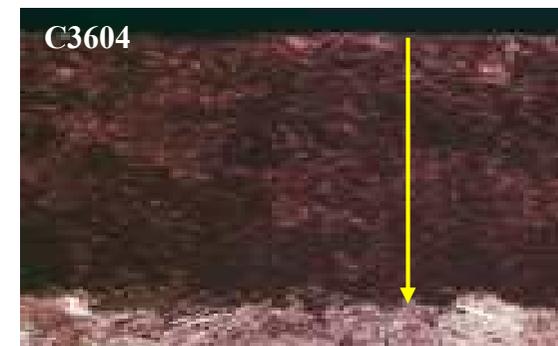
3. Dezincification



Dezincification Depth : 150μm



Dezincification Depth : 260μm



Dezincification Depth : >1,000μm
Test according to KSD ISO 6509

Main Uses

International recognition for technique & quality



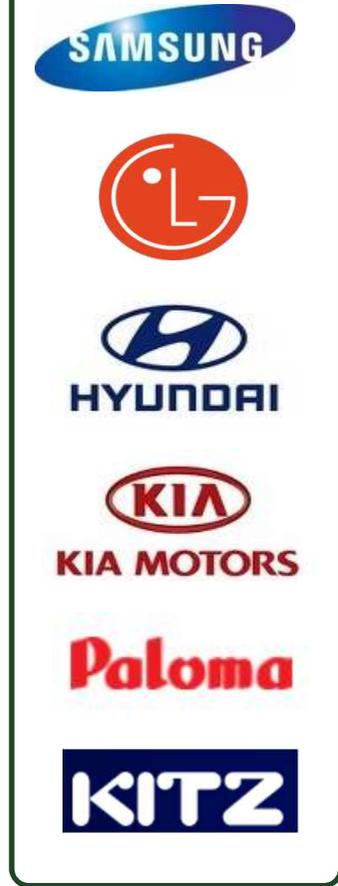
POONGSAN
Products



Various Industries

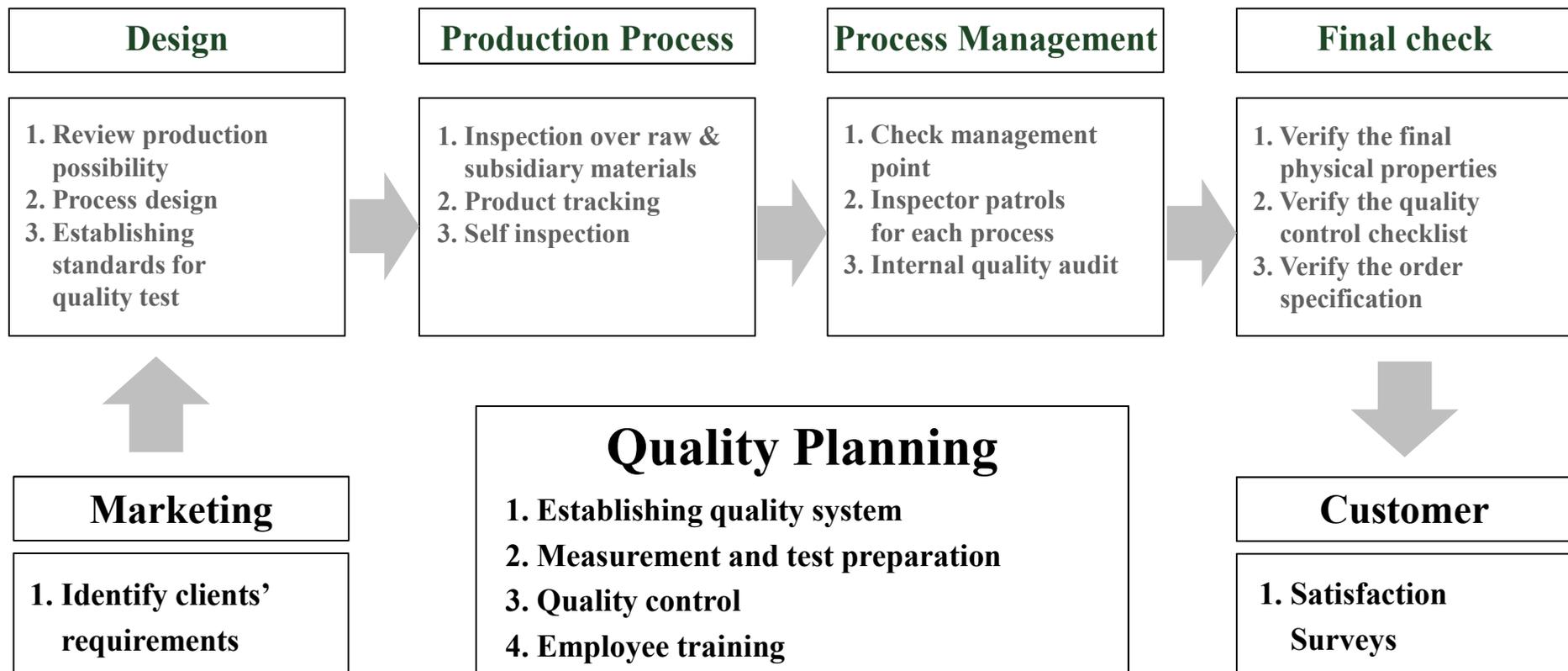


End User



Quality Assurance System

- To run the integrated management system, concentrating on the process
- Planning, Supporting, Managing, Evaluating performances mainly based on leadership, Applying the structure to be implemented for improvements



Analysis Equipment

Room	Main Analysis Content	Equipment
<p>X-Ray Analysis</p>	<p>Chemical Composition of Copper and Copper Alloy (Casting Line, Scrap etc.)</p>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>X-Ray Spectrometer</p> </div> <div style="text-align: center;">  <p>Optical Emission Spectrometer</p> </div> <div style="text-align: center;">  <p>Carbon Sulfur Determiner</p> </div> </div>
<p>Mechanical Analysis</p>	<p>Tensile Strength, Hardness and Grain Size</p>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Universal Testing Machine</p> </div> <div style="text-align: center;">  <p>Hardness Tester</p> </div> <div style="text-align: center;">  <p>Metallurgical Microscope</p> </div> </div>
<p>Chemical Analysis</p>	<p>Chemical Composition of Solution and Water in Plant</p>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>ICP Spectrometer</p> </div> <div style="text-align: center;">  <p>UV-VIS Spectrometer</p> </div> <div style="text-align: center;">  <p>PH Meter</p> </div> </div>