



SOCMA Presentation

Booth 214

# Company Overview - locations



- Rotary Calcining
- High Temp Sintering
- Spray Drying
- Blending
- Milling

## Affiliates

NAK

- Rotary Calcining Repair
- Rotary Calciner Maintenance

Sui Sun



**RT**process

advancing technologies

- Calcining
- Blending
- Milling



Taiwan



- Spray Drying
- Batch Reactions
- Milling
- Blending



# PPT

## COMPANY TIMELINE

POWDERTECH  
CORPORATION

**POWDERTECH**  
**POWDER**

1973



INDIANA GENERAL

1988



POWDER PROCESSING  
& TECHNOLOGY

2002



PPT INSTALLS  
TRI-MER FILTER  
SYSTEM

2015



PPT FORMS INNOVATIVE  
MATERIALS CENTER

2016



PPT ACQUIRES  
CINCHEMPRO

2018



PPT ACQUIRES  
RT PROCESS

2021

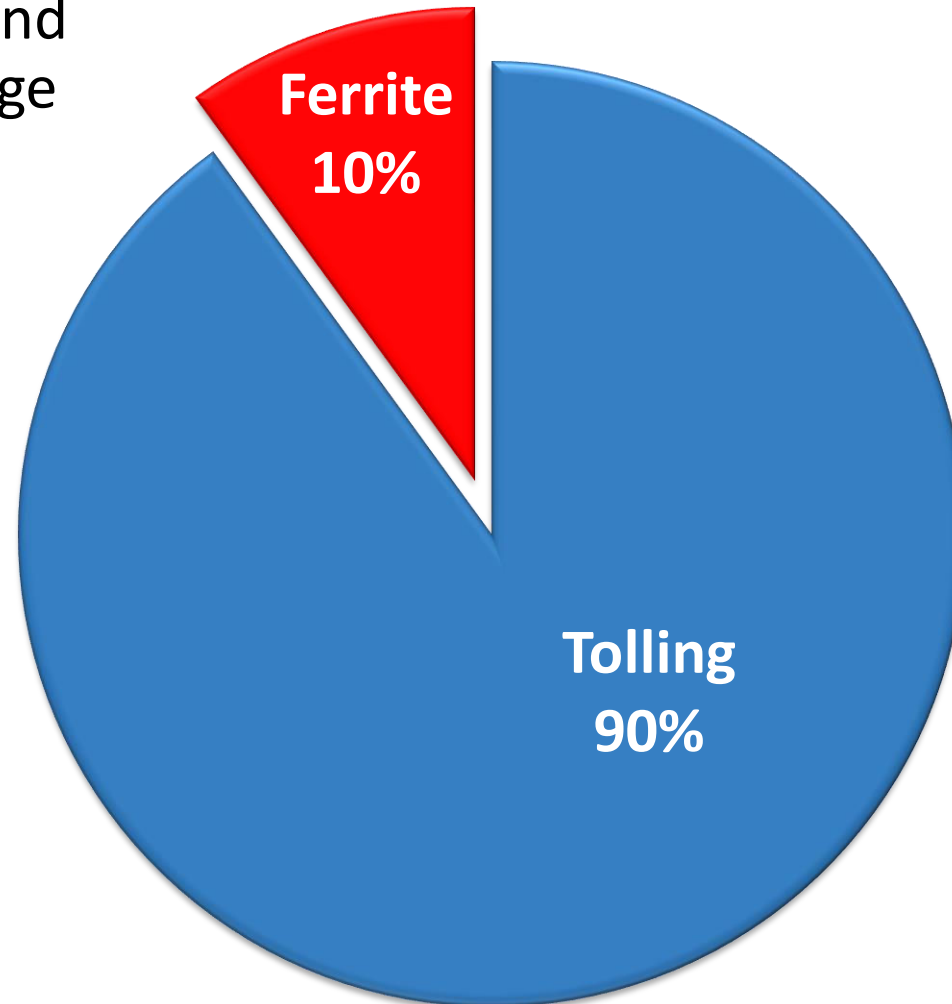


PPT INSTALLS  
ROLLER HEARTH  
KILNS

2022

# Business Make-up

- Ferrite – Applications and Development Knowledge
  - Iron Based Electronic Components
  - NiZn Ferrites



- Rotary Calcining
- High Temperature Firing
- Spray Drying
- Impregnation
- Physical Unit Operations

# Key Value Drivers

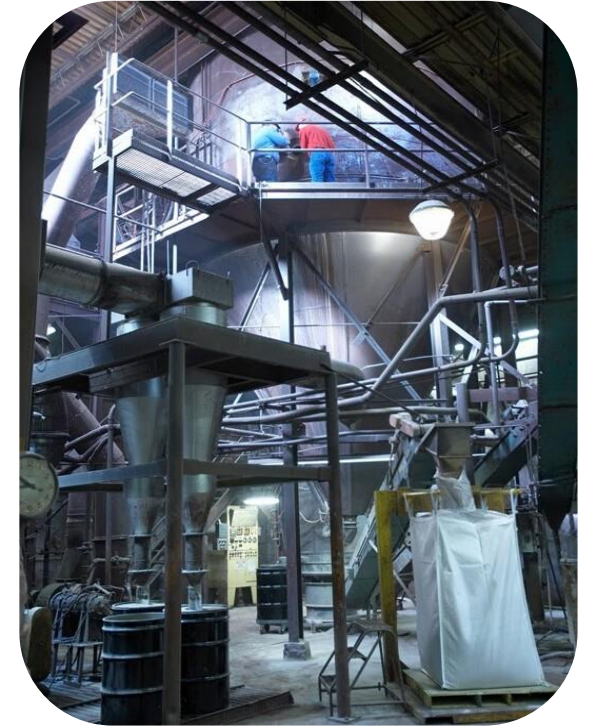
- Scale-up / Process Development
  - Personnel - Knowledge
  - Equipment – Various Scales
  - Analytical – Data Development
- Equipment Capability
  - Multiple Options on Key Unit Ops
  - Scale For Tonnage Quantities
- IP
  - 20+ Year Reputation Earned with Major Companies



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POWDER PROCESSING & TECHNOLOGY, LLC

# Major Unit Operations – Spray Drying

- Valparaiso – Seven Production Dryers + Pilot Unit
  - 3' Pilot Unit
  - 9.5' – 20' diameter
  - Nozzle and Disc Atomizer Capability
  - Upstream Processing
- Cinchempro – Two Production Dryers + Lab Unit
  - 10' & 16' Diameters
  - Disc Atomizer
  - Explosion Suppression for Class 1 dust ( $K_{st} < 200$ )
  - Upstream Batch Reaction Capability



# Major Unit Operations – Rotary Calcining

- Valparaiso
  - Nine Indirect Fire Production Units 14” – 48” Diameters
  - Gas and Electric
  - Inconel – 1100°C
- Valparaiso
  - Direct Fired Calciner – 1400°C (Ceramic Lined Tube)
  - 42” Diameter; 40 Feet Heating Zone



# Major Unit Operations – Rotary Calcining

- Valparaiso
  - Two Pilot Scale (6") calciners
  - Electric
- RT Process
  - Two 10" Semi-works scale calciners
  - Electric
- Capability
  - Atmosphere
  - NOx Control
  - Thermal Oxidizer
  - Feed Systems



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# Major Unit Operations – Kiln Calcining / Firing / Sintering

- Three Tunnel Kilns
  - Max Temp. – 1480°C
  - Continuous Push 34 or 37 Cars of 20"W x 40"L x 32"H
  - 6 ~ 24 Hour High Temperature Soak Time
- One Shuttle Kiln
  - Max Temp. – 1340°C
  - Two Cars of 38"W x 144"L x 56"H
- Two Periodic Elevator Kilns (Pilot Plant)
  - Max Temp. – 1480°C
  - One Car of 26"W x 26"L x 40"H
- Two Roller Hearth / Pusher Kilns –
  - Max Temp. – 1400°C
  - 2 – 8 Hours Residence Time



# Major Unit Operations – Impregnation

- Solid – Liquid Impregnation
- Munson Batch Mixer w/ Nozzle Spray
- Ribbon Blender w/ Liquid Spray
- Plowshare (Littleford / Processall)
- PK Blender w/ Liquid Spray



# Scale – Up and Technology Transfer

- Toll / Extension Projects
  - Capture all relevant operating data
  - Complete understanding of current operations
  - Anticipate problems which may have already been solved
- Scale-up work
  - Decision matrix
    - Equipment configuration & special considerations
    - Batch recipe, binder, nozzle vs rotary, operating pressures, concentrations.
    - Type of kiln, flights, air flow, atmosphere, residence time, actual temperatures
  - Key analytical parameters and measurements
  - Customer visits during pilot phase
- Goal #1 – Quickly achieve target properties
- Goal #2 - Optimize



# Complementary Processes

## Pelletizers / Mixers

- Eirich R-15 (500 L)
- Eirich R-12 (250 L)
- Eirich R-7 (50 L)
- Papenmeier Intensive Mixer (5 L)
- Henschel Intensive Mixer (250 L)
- Various Sized Cowles Mixers and Rotosolver®

## Powder Blending

- Double Cone Blenders (5 ft<sup>3</sup> and 155 ft<sup>3</sup>)
- Nauta Blender (113 ft<sup>3</sup>)
- V-Blenders (20 ft<sup>3</sup> and 50 ft<sup>3</sup>)
- Munson Rotary Batch Mixer (50 ft<sup>3</sup>)
- Ribbon Blender (127 ft<sup>3</sup>)
- PK Blender (20 ft<sup>3</sup>)

## Sweco-Type Vibratory Screeners

- 24", 30", 36", 48", and 60" diameter screen decks

## Grinding (Dry)

- Palla Vibratory Mill
- Hammer Mills
- Sweco Vibratory Mills (3 ft<sup>3</sup> and 20 ft<sup>3</sup>)
- Micron Master Jet Mill

## Grinding (Wet)

- Ceramic Ball Mills (1000 L and 3300 L)
- Multiple Steel Ball Mills (up to 3300 L)

## Misc.

- Magnetic Separator
- Various Sized Drying Ovens

# Analytical Capabilities

## Equipment

## Uses

- |                                                                        |                                                     |
|------------------------------------------------------------------------|-----------------------------------------------------|
| <input type="checkbox"/> Laser Particle Size and Shape Analyzer        | Particle Size and Shape (0.04 ~ 500 $\mu\text{m}$ ) |
| <input type="checkbox"/> Surface Area Analyzer (Micromeritics TriStar) | BET Surface Area                                    |
| <input type="checkbox"/> Surface Area Analyzer (Micromeritics Gemini)  | BET Surface Area                                    |
| <input type="checkbox"/> X-Ray Fluorescence Spectrometer               | Composition Analysis                                |
| <input type="checkbox"/> Carbon Analyzer                               | Carbon Content                                      |
| <input type="checkbox"/> Viscometer                                    | Viscosity of Liquid Samples                         |
| <input type="checkbox"/> pH Meter                                      | Cl Content or pH                                    |
| <input type="checkbox"/> Solids Contents Test Unit                     | Solids Percentages                                  |
| <input type="checkbox"/> Moisture Analyzer                             | Moisture Content                                    |
| <input type="checkbox"/> Flowmeter                                     | Powder Flow Rate                                    |
| <input type="checkbox"/> Dry Sieve Screen                              | Dry Particle Size Distribution                      |
| <input type="checkbox"/> Densitometer                                  | Powder Bulk Density and Tapped Density              |
| <input type="checkbox"/> Strength Tester                               | Mechanical Strength                                 |
| <input type="checkbox"/> Flux Meter                                    | Magnetic Saturation                                 |
| <input type="checkbox"/> LCR Meter / Impedance Analyzer                | Electromagnetic Properties                          |
| <input type="checkbox"/> Tube Kilns / Batch Kilns                      | Calcining / Sintering                               |
| <input type="checkbox"/> Helium Pycnometer                             | True/Bulk Density                                   |



# EHSS

- Health & Safety Programs
  - Dedicated Team – PPT Employees & Contractors
  - Suggestion Programs
  - Incentive Programs
  - Routine Monitoring
  - Job Task Analyses
  - SOCMA - Chemstewards
- Environmental
  - Title V Permit
    - CEMS Systems
    - On-line Parameter monitoring
    - Periodic Audits
  - No Contaminated Water Discharge
  - All Wastes Profiled and Shipped Offsite





Visit us at booth 214  
to discuss ways we can help your business