Ceramic Manufacturing, Materials, Minerals, Marketing and Business Development

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Boots on the Ground Lean Manufacturing and Ceramic Consulting

In-The-Trenches Perspective

With nearly 60 years of combined experience helping manufacturers develop their companies, the founders of OPF Enterprises earned plant management the best way possible – with hands-on experience “On the Plant Floor.”

From OPF you can expect practical guidance and partnership as well as an in-the-trenches perspective to help your company be the best it can be.

We specialize in assisting emerging and established small to mid-size manufacturing operations to improve material utilization, operations, and processes for improvement to the bottom line through Lean Principles, Continuous Improvement and giving your TEAM the tools they need to succeed.

Frac sand, ceramic proppants, ceramic tile, refractories, oil and gas products, structural clay products, and mineral industries are industries in which we have extensive experience. We have also worked closely with materials providers including organic binders, bauxites, pozzolans, and waste materials for re-purpose.

We also specialize in plant design, equipment sourcing, plant leadership and more.

Currently active internationally OPF enterprises routinely jumps on planes to join clients in the trenches no matter where they are located. It’s just another example of our “boots on the ground” approach.

International Manufacturing & Ceramic Consulting Specialties

- Plant Start-Up, Build-out, and Relocation
- Marketing Studies Tailored for Products
- Repurposed Materials Utilization
- Plant and Process Design
- Frac Sand and Proppant Testing-Full Suite Capabilities
- Ceramic Formula Development
- Organic Binders and Applications
- Plant Leadership
- Lean Manufacturing and Six Sigma
- International Equipment Sourcing
- Raw Material Evaluation, Selection, and Sourcing
- Ceramic Engineering
- Mineral and Materials Analytical Testing
- Product Testing and Formulation
- Ceramic Proppant Plant Start-Up and Sourcing
Proppant Testing—Frac Sand and Ceramic

Better proppants make well production more efficient and effective making proppant selection vital to optimal well productivity. Proppant testing performed by OPF Enterprises can provide you with the information you need to determine suitability of proppants. Our testing services include:

**Full Suite Physical Testing - Quick Turnaround Testing**
- Bulk Density
- Specific Gravity
- Crush Testing (all strength classes)
- K Factor Determination
- Sieve Analysis
- Sphericity and Roundness
- Acid Solubility
- Decline Rate Preparation for Conductivity Testing
- Resin Melt Point and LOI
- All Testing API Recommended Testing
  - API RP58 and 60 or ISO 13503-2/API RP19C

**Ceramic Proppant Expertise and Know-How**

OPF is the only ceramic consulting company we know of whose principals have direct experience from R&D to complete construction and start-up of a ceramic proppant plant. Our capabilities include:

- Proppant minerals search and procurement
- Evaluation and testing of your materials
- Formulations of all classes proppants – low, medium, high density
  - Kaolin and bauxite based formulations
  - Unique formulations with unconventional materials
- Resin coating capabilities
- Plant design, equipment selection, process flows
- Capital and operating expense calculations
- Construction management
- Startup support
- Business plans and marketing
Are you currently selling your product into the ceramic industry and want to increase market share? OPF can help make it happen. With over 50 years of international experience in ceramic manufacturing, OPF Enterprises can determine if your product has promise and then prove that promise with physical testing of and targeted marketing.

- Extensive worldwide contacts in ceramic products manufacturing
- Market potential investigation and probabilities
- Cost tolerance in ceramic manufacturing markets
- Full service formulations in ceramics with your product
- Milling, mixing, forming, firing
- Physical testing
- Analytical services

**New to the Ceramic Market?**

We specialize in introducing minerals and other raw materials producers to ceramic manufacturing

- Clays, bauxites and other alumino silicates
- Organic binders to replace traditional materials
- Waste materials for repurposing
- Carbonates and other fluxing materials

Does your material have a higher value in new markets? OPF has long experience in evaluating materials for increased ROR.

- Recently showed a waste material producer how to increase sale of material into a new market that would increase product margin by 8X
- Formulated a low-return bauxite into a world class proppant for deep well hydraulic fracturing
- Marketed a new niche aluminosilicate mining operation into a ceramic market with regular sales at a high value
- Currently engaged with a multi-national company to enter the ceramic market for the first time

**OPF Enterprises Can Help Make it Happen For You**

[ontheplantfloor.com]
OPF Partnership with Eirich Machines

OPF Sales Territory: States of TX, AR, LA, OK

Industries Served
- Ceramics
- Friction Materials
- Building Materials
- Metallurgy
- Abrasives
- Petroleum Products
- Petroleum Coke
- Glass

World-Class Equipment Offerings
High Intensity Mixers
- Granulation-Mixing-Pelletizing-Coating-Kneading-Dispersion
- Batch and continuous models
- Lab size to large scale production
MaxxMill & TowerMill – Vertical Agitated Media Mill – Wet and Dry Grinding
FluxXMill – Horizontal Ball Mill – Dry Grinding
TurboGrinder – Impact Mill – Dry Grinding
OrbitMill – Centrifugal Ball Mill – Dry Grinding
MaxxClass – Dynamic Air Classifier
Instruments and Controls

OPF Enterprises Services in Support of Eirich Machines
Low-Cost Initial Laboratory Scale Testing in OPF Houston Laboratories
- RVO2 High Intensity Mixer
- OPF Staff With Long Experience in Diverse Industries and Materials
Pilot and upscale testing
- Houston, Texas; Gurnee, Illinois; Hardheim Germany
System Startups
Troubleshooting
Process Improvements
Yield Increases
Equipment Specifications
Plant Process & Design, Site Selection, Start-Up, and Build-Out

‘Boots On The Ground’ Experience With Results

The OPF team has built factories from the ground up and renovated / streamlined numerous operations. We have experience getting operations up and running and have operated a good number of them. Real-world experience can bring you real-world action and results. Here’s how we can assist your operation:

- Visit locations in multiple states for site selection
- Negotiate financial incentives from state and local agencies
- Design entire process flow and production process
- Source and purchase production equipment and materials
- New employee training
- Qualify and hire all contracting personnel
- Hire local supervisory, management, and hourly personnel
- Oversee a successful factory start up
- Streamline and improve operations
- Instill a proven culture of effective leadership within the operation

Bulk Solids & Ceramics Expertise

Our journeys in manufacturing, research & development, and business development have taken us to many places and to facilities of many types. Due to extensive immersion in multiple industries, we are uniquely qualified to provide assistance related to refractories, oil and gas products, structural clay products, organic binding materials & systems, and minerals.

- Frac Sand Qualifications, Mine Development, Processing
- Ceramic Engineering
- Product Development
- Color Science, Matching, Stain Selection
- Organic Binder Selection for Ceramic Products of All Types
- High Intensity Mixing and Granulating
- Refractory Designs, Selection, Sourcing
- Bauxites, Aluminosilicates, Clays and Carbonates
- Bulk Solids Transport and Storage
- Raw Material Selection, Batching, Mixing
- Ceramic Proppants