



Developing Agriculture from the Ground Up

ENGINEERING & PILOT PLANT SERVICES



The International Fertilizer Development Center (IFDC) is a nonprofit public international organization which helps developing countries increase food security through the development and dissemination of fertilizers and application practices that meet the needs of farmers worldwide.

For more information, contact us directly at +1 (256) 381-6600.



ENGINEERING & PILOT PLANT SERVICES

For more than 50 years, the International Fertilizer Development Center (IFDC) has worked to deliver agricultural solutions to end hunger and poverty in developing countries, particularly through quality inputs such as balanced fertilizer. We specialize in taking fertilizer concepts from laboratory research, to pilot plant testing, to commercial-scale implementation.

Our Engineering and Pilot Plant Services can help you test feasibility and scalability of any new fertilizer product. From physical properties testing to technical assistance, IFDC's services will ensure a comprehensive approach to your process development.

RESOURCES AND CAPABILITIES OF IFDC PILOT PLANTS

- Fully continuous pilot-scale granulation plants with production capacities from 10 kg/h to 1,000 kg/h.
- The pilot plants can produce any combination of granular N, P, and/or K fertilizers using solid and/or liquid feedstocks.
- Phosphoric acid units that process from 0.5 kg/h to 20 kg/h of phosphate rock.
- A liquid fertilizer pilot unit.
- Batch operations for bulk blending, compaction, briquetting, pelletizing, and tableting.
- Laboratory testing to evaluate the technical feasibility of granulating new raw materials.
- Laboratories for chemical and physical characterizations of fertilizer materials.

ENGINEERING ACTIVITIES

- Conduct feasibility and conceptual studies.
- Provide process design package. Package includes basis of design, process description, heat and mass balance (HMB), process flow diagram (PFD), piping and instrumentation diagram (P&ID), equipment list, equipment and instrument data sheets, interlock matrix, and control philosophy.
- Review basic and detail engineering package.
- Inspect equipment during fabrication.
- Assist during commissioning and start up.

TECHNICAL ASSISTANCE AND TRAINING

- On-site technical assistance includes:
 - ✓ Troubleshooting, debottlenecking, and optimization of process and equipment.
 - ✓ Assessment of unit consumptions.
 - ✓ Analysis of design, materials handling, and operating conditions.
 - ✓ Identification of housekeeping and safety issues.
 - ✓ Evaluation of plant personnel.
- Engineering personnel host:
 - ✓ Tailor-made training programs designed for client-specific needs
 - ✓ International training programs for fertilizer industry stakeholders on fundamentals of fertilizer production processes



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The large-scale pilot plant

TYPICAL ACTIVITIES

- ✓ Technical assistance during design, construction, and startup of fertilizer production plants.
- ✓ General and specialized technical training programs.
- ✓ Fertilizer research and development.
- ✓ Fertilizer production for greenhouse and field evaluations.
- ✓ Commercial facility assessments.

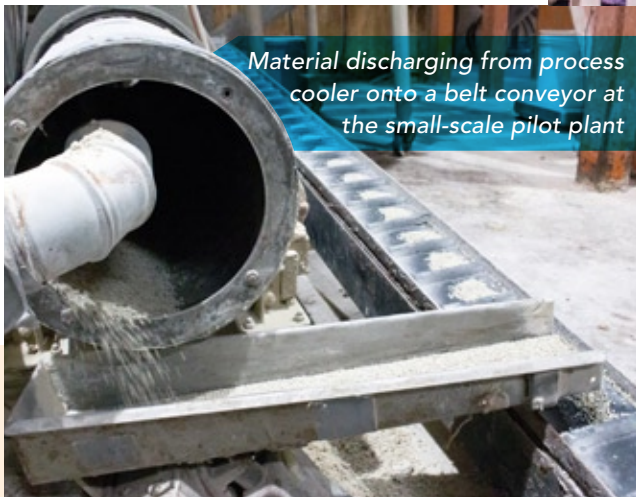
PHYSICAL PROPERTIES TESTING

IFDC personnel conduct comprehensive physical properties determinations on solid fertilizers produced at commercial- or pilot-scale plants.

All process and product development are conducted under confidentiality agreements and all technology that is developed goes to the ownership of our client.



Drum granulator at the large-scale pilot plant



Material discharging from process cooler onto a belt conveyor at the small-scale pilot plant



Dryer combustion chamber at the large-scale pilot plant