Innovative System Solutions

Pneumatic Conveying Concepts

NOL-TEC ASIA

Mission

NOL-TEC is a service-oriented company whose primary objective is to provide our customers with quality systems at a competitive price.

We've Built a Reputation for Handling Success...

Reputation

Since 1983, NOL-TEC Systems, Inc. has established a solid reputation as an industry leader in providing engineered solutions for the automation of bulk material handling systems. Our broad background in supplying pneumatic conveying systems and process controls has resulted in successful installations worldwide.

A large percentage of these installations are to "repeat customers" or to companies that heard about NOL-TEC from other users. We take pride in our reputation, and go to great lengths to maintain it. A basic philosophy with all employees of NOL-TEC is that customer satisfaction is essential to our mutual success. Let our reputation work to enhance your success by providing quality systems that will continue to operate profitably for many years.

Handling

Experience is an essential key to successful handling of most powdered and granular products. The personnel at NOL-TEC have hundreds of years of collective experience in handling a wide variety of products and installations. In addition to this wide experience base, we routinely conduct material testing of your individual products, so there will be no "surprises" in the field. NOL-TEC maintains a complete testing facility to handle dense phase, dilute phase, and pneumatic blending applications.

From basic single station delivery, to complete plant design, NOL-TEC treats each application on a custom basis, providing engineered solutions to your material handling needs.

Success

Superior technology and industry knowledge have helped to make NOL-TEC a leader in providing pneumatic bulk material handling systems. However, the true measure of our success comes from having developed long term partnerships with our customers. With offices in Minnesota, North Carolina, Indiana, and Europe, along with world wide representation, NOL-TEC has the resources and personnel to meet all of your bulk material handling needs. Let NOL-TEC show you how we've built a...***reputation for handling success.***

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CAPABILITIES

NOL-TEC has a proven track record in providing a wide variety of system concepts and designs, from simple modifications to complete plant automation. Our personnel draw on years of experience to design systems that meet the toughest demands.

The following illustrations show systems and design concepts routinely handled by NOL-TEC.

CONVEYING CONCEPTS:

- Dense Phase Transporter Systems
- *SLOW FLOW* Dense Phase Airlock Systems
- Dense Phase Vacuum Systems
- Dilute Phase Systems (Pressure & Vacuum)

TYPICAL APPLICATIONS:

- Pneumatic Blending
- Weighing & Batching
- Bulk Storage
- Dust Collection
- Railcar & Truck Unloading
- Bag Dump Stations
- Bulk Bag Unloading
- Compressed Air Systems
- Process Controls

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DENSE PHASE TRANSPORTER SYSTEMS

Dense phase transporter systems utilize relatively high pressure (above 15 psig), low volume (cfm) air as the motive force to transfer powder or granular bulk solids through a pipeline at low velocity. In a typical cycle, the transport vessel fills via gravity. When the transporter is full, the inlet and vent valves close, the system is pressurized, material flows into the conveying line, and on to the destination.

FOUNDRY INSTALLATION

"NON-PURGING" SYSTEM CONCEPT

A "non-purging" system design can be utilized when long distance or product degradation is of concern. The material remains in the pipeline while the transporter depressurizes and refills. Air Assists™ enable the system to re-start reliably.

TRANSPORTER ASSEMBLY

THREE-WAY SWITCH

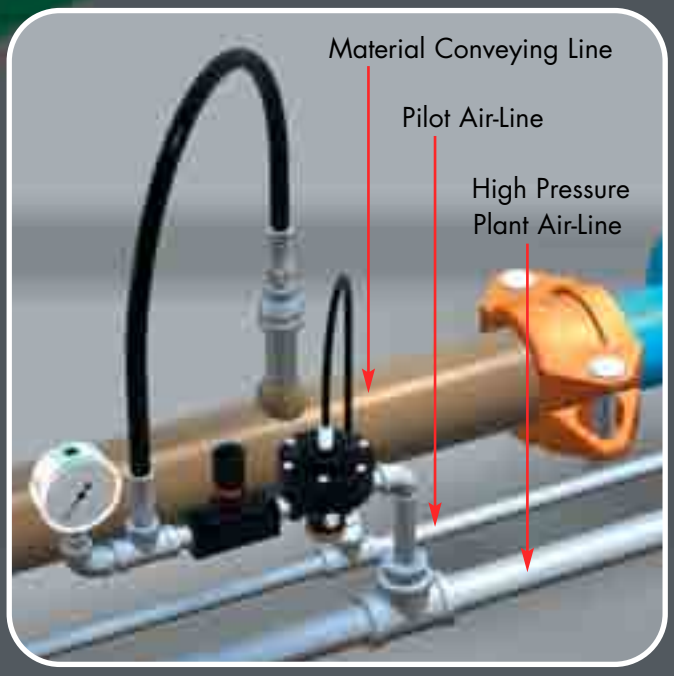
AIR ASSIST™ TECHNOLOGY

To overcome the overall resistance in the conveying line, NOL-TEC's exclusive Air Assists™ are placed strategically to distribute energy throughout the system. This results in increased efficiency and reliability.

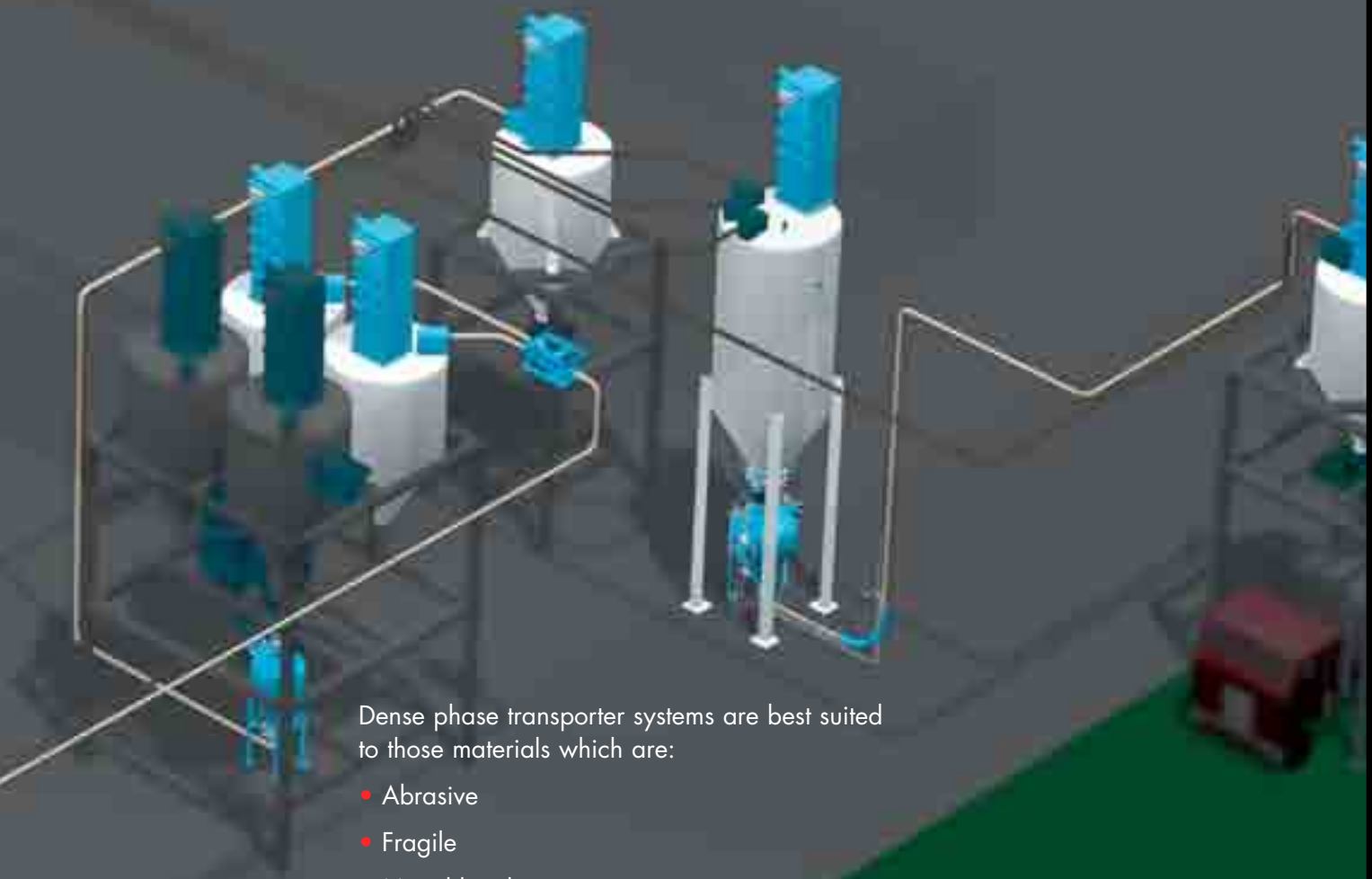
NOL-TEC's high pressure Air Assist™ manifold design prevents "back-feeding" which may be experienced with low pressure manifold systems.

AIR MIZER™ TECHNOLOGY

On longer systems, the Air Mizer™ can be added to further reduce compressed air requirements. This Air Assist™ design (patent pending) introduces air only when required.



AIR ASSIST™ ASSEMBLY



Dense phase transporter systems are best suited to those materials which are:

- Abrasive
- Fragile
- Mixed batches (minimize segregation)
- Heavy
- Hygroscopic

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DENSE PHASE VACUUM

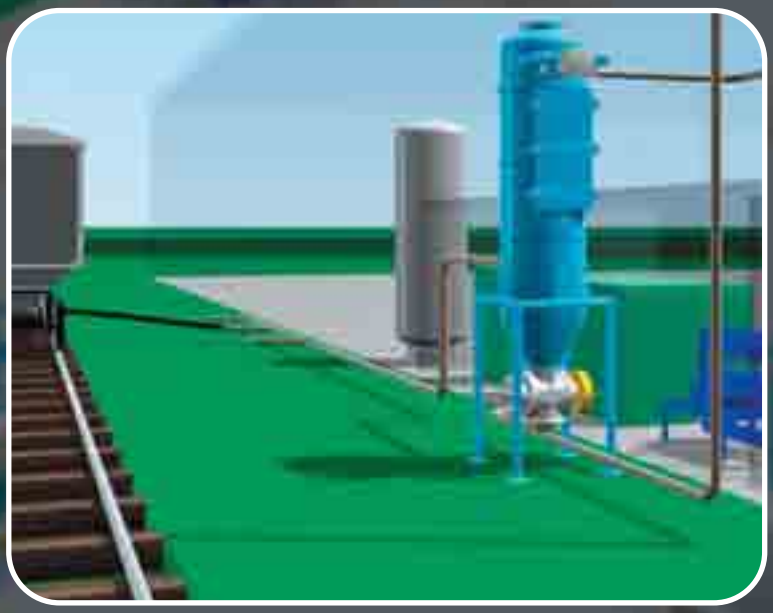
Dense phase vacuum systems utilize a vacuum blower (usually rated for 15" Hg) as the motive force to transfer powder or granular materials through a pipeline at low velocity. This system is typically used in a continuous mode for relatively short conveying distances, such as in truck or railcar unloading. When conveying long distance, material can be fed into a transporter or *SLOW FLOW* airlock system for delivery to the final destination.

System efficiency and reliability can be increased by placing Air Assists™ along the conveying line.

DUST COLLECTOR

DENSE PHASE VACUUM INSTALLATION

HIGH PRESSURE AIRLOCK



DENSE PHASE VACUUM &
***SLOW FLOW* SYSTEMS**

SLOW FLOW DENSE PHASE

SLOW FLOW dense phase airlock systems utilize relatively high pressure (above 15 psig), low volume (cfm) air as the motive force to transfer powder or granular materials through a pipeline at low velocity. This system is typically used in non-abrasive, continuous applications, where there is limited headroom available or when product degradation is of concern. The concept utilizes a special high pressure airlock to introduce material into the conveying line, while the exclusive NOL-TEC Gas Management System controls airflow, maintaining optimum solids-to-air ratios.

Again, system efficiency and reliability can be increased by placing Air Assists™ along the conveying line.

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DILUTE PHASE

Dilute phase pneumatic conveying systems use low pressure, high volume gas to transfer powder or granular bulk solids through a pipeline in an airborne state. These systems, pressure or vacuum, typically use a positive displacement blower (under 15 psig) to develop the required motive force. This design concept provides a system operating with high material velocities and is well suited for a wide variety of applications.

ROTARY AIRLOCK

Rotary airlock valves are typically required in dilute phase systems to control material feed, while isolating system pressure differential. NOL-TEC offers various state-of-the-art airlock designs to suit each application.

POSITIVE DISPLACEMENT BLOWERS

VENTURI EDUCTOR SYSTEMS

Venturi eductors can take the place of rotary airlocks and operate from low pressure blowers or plant air. These systems can also be used to vacuum material from drums or other containers.

VACUUM FILTER RECEIVER

Dilute phase systems are most often used on those materials which are:

- Non-Abrasive
- Non-Fragile
- Light Density (Typically < 60 pcf)

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BATCHING & BLENDING

TYPICAL BATCH, BLEND AND TRANSPORT INSTALLATION

BATCHING

Many processes require that precise quantities of various ingredients be brought together to make up a specific batch or formula. This typically involves metering materials individually into a weigh hopper using a metering device such as a screw feeder, airlock, or butterfly valve.

Through many years of experience, NOL-TEC has developed a unique scale control package, designed specifically for bulk materials. Each ingredient has fast & slow speed feed, automatic target weight preact, and auto jog. Multiple weigh hoppers, or loss-of-weight feeders, may also be used to formulate the batch. Liquid addition scale systems are also provided.

Electrical batching controls are custom designed for ease of operation and flexibility utilizing the latest technology available. Commercial Programmable Logic Controllers (PLCs) are used for system management. A multitude of options are available for batching systems.

BLENDING

After the batch is formulated, the NOL-TEC pneumatic blender is commonly used to homogenize the ingredients. The technologically advanced design of the pneumatic blender uses pulses of compressed air to gently mix abrasive or friable products quickly and efficiently. Long service life, and ease of maintenance, are incorporated in the design.

The pneumatic blender can easily be mounted in an atmospheric bin or on the bottom of a transporter. Dense phase is then used to convey the mixed batch with minimum segregation.

PNEUMATIC BLENDER

DENSE PHASE BLENDER TRANSPORTER

Dense phase transporters provide gentle mixing, trouble-free conveying of dry powder and/or granular materials.

PNEUMATIC BLENDING CONE

AERATION VALVE

SANITARY BATCH PLANT INSTALLATION

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STORAGE & UNLOADING

NOL-TEC has the engineering experience to handle all of your material storage and unloading needs. We custom design storage and unloading components to integrate the specific design requirements of your plant. Reliable product flow, dust free operation, traffic requirements, and equipment serviceability are all given consideration in our storage facility designs.

BAG DUMP & BULK BAG UNLOADERS

BULK BAG UNLOADERS

Handling FIBCs is made clean and easy using a NOL-TEC Bulk Bag Unloader. We offer a variety of designs and options ranging from fork lift loaded to hoist with power trolley.

MANUAL BAG DUMP STATIONS

Manual bag dump stations are offered in a variety of sizes and construction materials, with integral dust collection and exhausters.

STORAGE SILOS

NOL-TEC provides a wide variety of custom designed storage silos and their associated support structures. Material flow enhancement, such as aeration or vibration, are provided to suit specific product requirements.

BULK BAG UNLOADERS

TYPICAL TRUCK UNLOAD STATION

TYPICAL PLANT INSTALLATION

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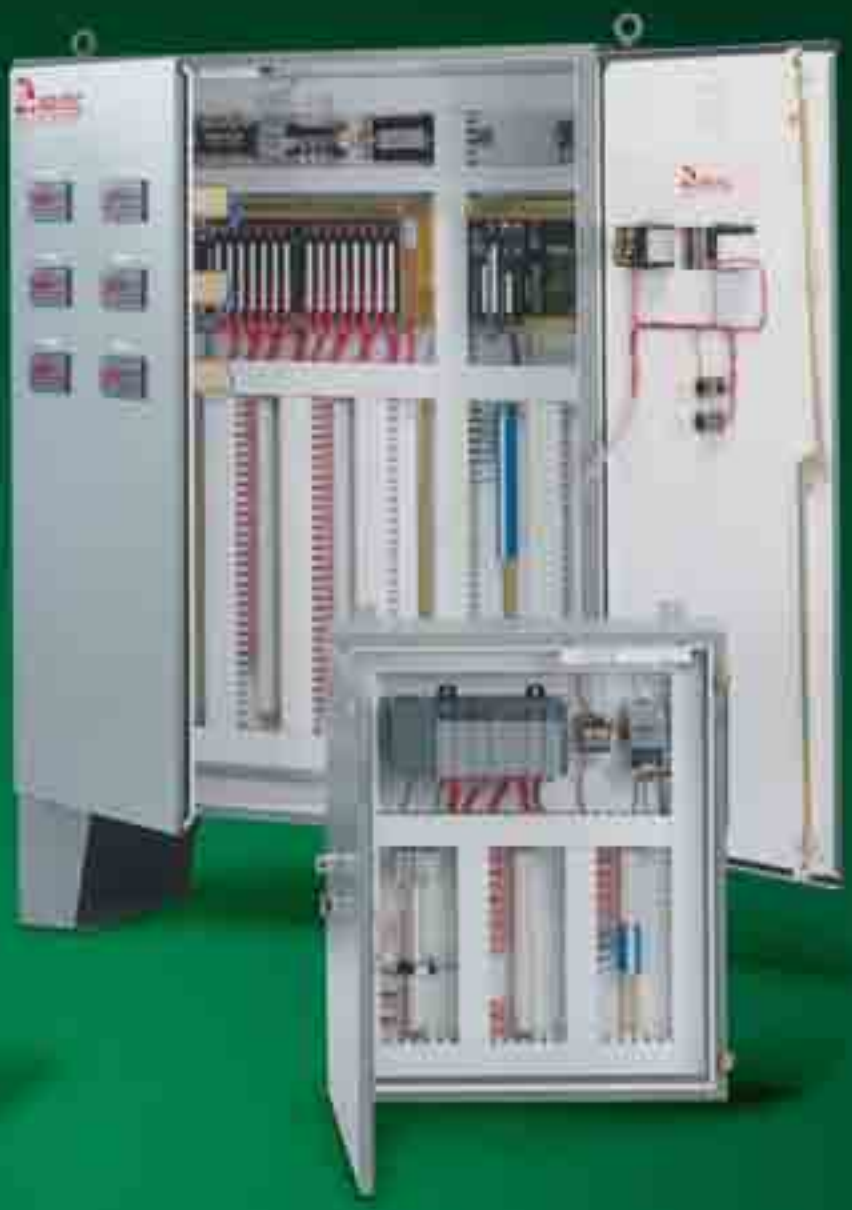
ELECTRICAL CONTROL

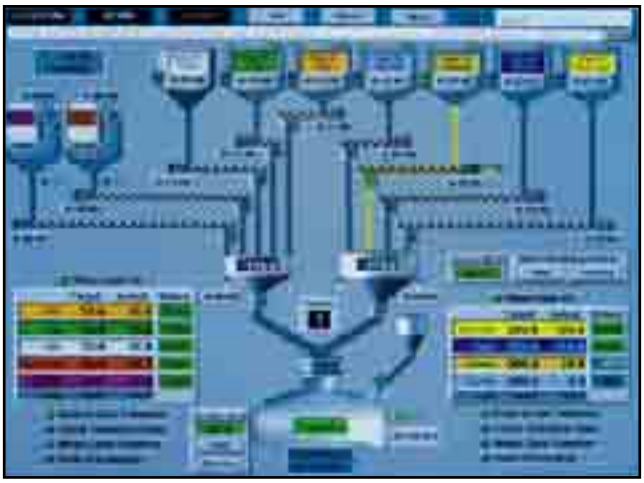
The control system is a vital part of any bulk material handling application. With many years of industry experience, NOL-TEC is unmatched in its ability to provide the best bulk material handling and batch process controls systems in the industry. Our sales engineers work closely with you to completely understand your specific requirements. NOL-TEC's electrical engineers not only know controls, but they have a thorough understanding of conveying, batching and plant processes.



NOL-TEC control systems utilize "off-the-shelf" technology, using the latest standard programmable logic controllers (PLC) and human machine interface (HMI) software packages. All programming is supported with detailed documentation provided to the customer, making future modifications by plant personnel quick and easy.

User Friendly Operator Interface

NOL-TEC's HMI systems utilize graphic imaging to create screens that closely resemble the actual processes and equipment in your plant, thus increasing operator awareness and efficiency.



Batching and Weighing Technology

NOL-TEC's PLC based weighing systems are designed specifically for the bulk materials handling industry. Combining years of experience with standard features such as fast/dribble speed, automatic preact, jog and tolerance alarms makes for an unbeatable combination.

Applications Experience

NOL-TEC engineers have years of experience developing control systems for many applications related to the bulk material handling industry, including:

- Pneumatic Conveying Systems (All Types)
- Batching (Powders and Liquids)
- Liquid Pumping and Metering
- Process Systems
- Data Collection
- Automatic Weighing
- Report Generation
- Mixing and Blending
- Packaging Equipment
- Inventory Management
- Bar Code Systems
- Recipe Management and Implementation

But It Takes More Than Just Good Equipment...

Design

System Design Services

Since each bulk material handling system is truly unique, NOL-TEC offers custom design services tailored to meet the needs of an ever changing industry. We work closely with your staff and/or consulting engineers to develop solutions for a wide variety of applications at an affordable price. Some of the design services routinely offered by NOL-TEC include:

- Analyze and Solve Problems With Existing Systems
- Develop System Concept Options & Their Associated Cost
- Create Specifications For Bidding
- Conduct Plant Material Handling Process Studies

Testing

Material Testing Services

NOL-TEC maintains a complete product testing facility at our Corporate Headquarters in Lino Lakes, Minnesota. The test lab equipment can simulate most types of dense and dilute phase pneumatic conveyors, at various lengths and transfer rates. Your material is conveyed simulating actual field conditions, to determine rate, degradation, air consumption, flow characteristics, etc.

Additional testing of material characteristics, such as bulk density, particle size distribution, moisture analysis, etc., is also conducted. This data is analyzed and used by our engineers to design a system specifically suited to meet your requirements.

Installation

Installation, Start-Up, and Spare Parts Services

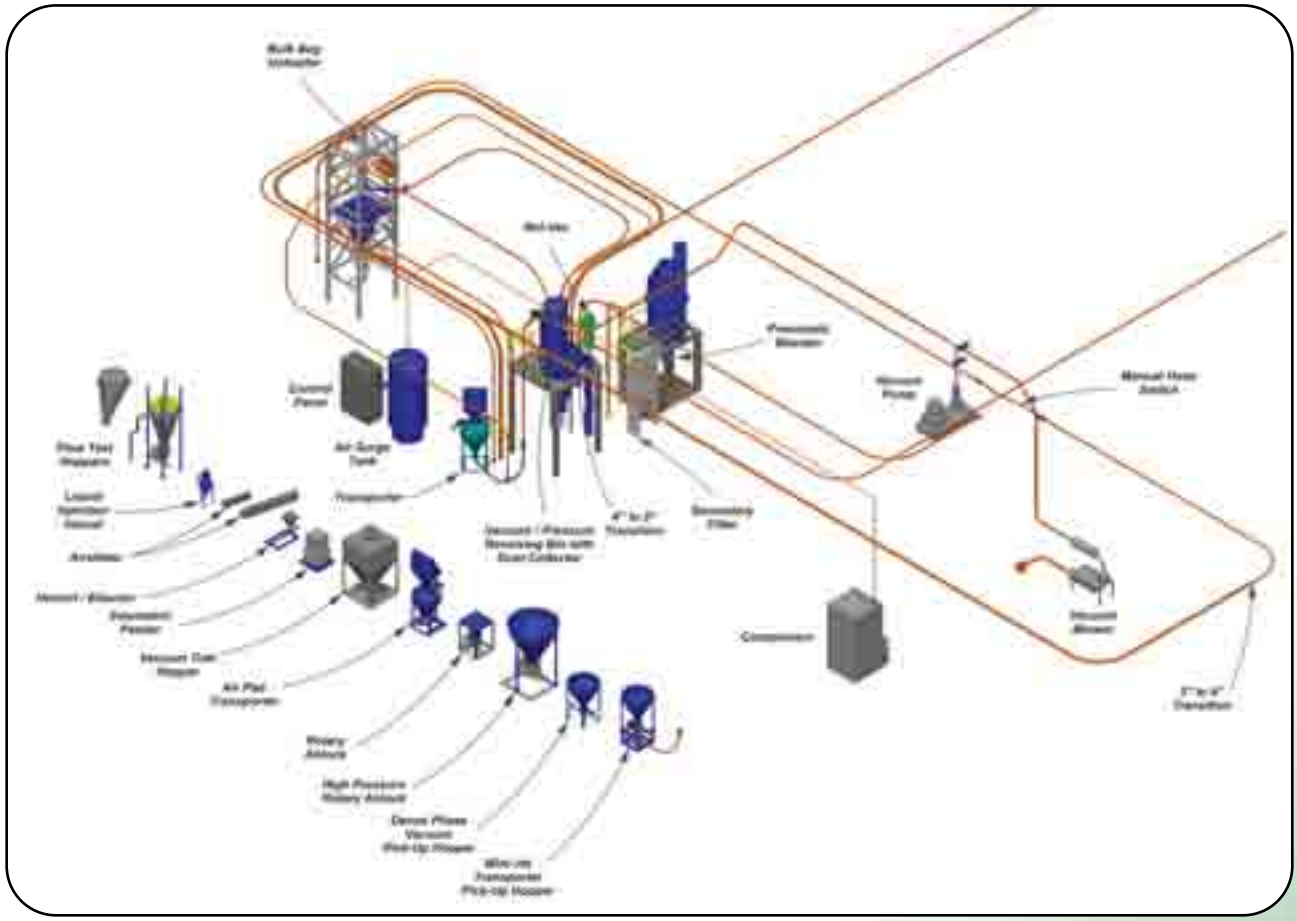
In addition to supplying properly designed equipment, installation services are available from NOL-TEC ranging from site supervision to total "turn key." When it's time to commission the system, NOL-TEC can also supply on site start-up assistance.

Each system comes with a complete spare parts list, as well as detailed operation, installation, and service manuals. We staff a full time parts department, and stock most replacement/spare parts for quick delivery.

Testing Is Believing

Whether you're considering a new installation, or enhancing an existing one, preliminary material testing will help to ensure the long-term success and performance of your system.

In NOL-TEC's state-of-the-art test facility, your material is handled, conveyed, or blended to best simulate actual field conditions. As a result, we are able to reliably determine rate, degradation, air consumption, material flow characteristics, etc.



NOL-TEC has the ability to perform any of the following material tests:

Dense Phase Pressure utilizing a transport vessel or SLOW FLOW rotary airlock (*The transporter system can be tested using "batch" or "non-purge" conveying, with or without our patented Air Assist "Multi Zone Pressure Control.")

Dense Phase Vacuum utilizing a surge hopper and vacuum blower

Dilute Phase Pressure utilizing a rotary airlock, screw feeder, or an eductor

Dilute Phase Vacuum utilizing a rotary airlock or screw feeder

Pneumatic Blending (dry and/or wet) - Model 244 Blender

Bulk Bag Unloading

Air Slide Metering or Transferring

Bulk Densities verification (loose, packed, or aerated)

Sieve Analysis

Moisture Content Analysis

NOL-TEC ASIA

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"Custom-Designed Solutions To Meet Your Application Needs."

For informations or sales assistances, please contact us at:

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