



KANSAS STATE
UNIVERSITY
Bulk Solids Innovation Center

Bulk solids solutions through education, research, and innovation

The Kansas State University Bulk Solids Innovation Center offers innovative solutions to enhance productivity through ground-breaking research, product testing, and global education related to bulk solids storage, flow, and conveying.

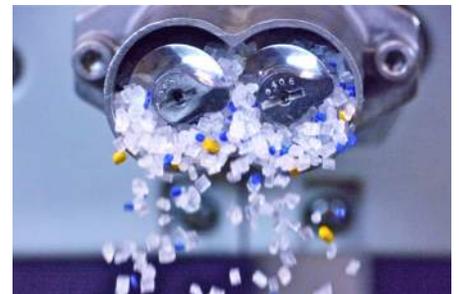
ABOUT THE CENTER

The Bulk Solids Innovation Center is a collaborative partnership of government, industry, and education entities. This university-level research center is the only one of its kind in North America.

The facility is comprised of:

- Two-story 13,000 ft² (1,208 m²) building
- Six laboratories for university and industry sponsored research
- Training and conference rooms
- Material properties testing laboratory with full range of instruments
- Full scale bulk solids test bay - see details on reverse

The Center provides a wide range of value-added solutions and services to enhance efficiency and productivity to variety of industries - food, chemical, pharmaceutical, and plastics. Bulk solids account for 80% of items produced and transported around the world, but formal education and research are rare.



LEARN MORE ONLINE

bulk-solids.k-state.edu

Notice of Nondiscrimination

Kansas State University is committed to nondiscrimination in admissions, programs and employment. Inquiries and complaints: Contact Director of Institutional Equity, Kansas State University, 103 Edwards Hall, Manhattan, KS 66506-4801, (Phone) 785-532-6220; (TTY) 785-532-4807.

KANSAS STATE
UNIVERSITY

Bulk Solids
Innovation Center



KANSAS STATE
UNIVERSITY
Bulk Solids Innovation Center

The Center provides research and consulting services to industry and the university. Testing services range from scale sample material characterization to full-scale material handling and storage.

Full Scale Pneumatic Conveying Systems

Dense and Dilute Phase Pneumatic Conveying

- Vacuum
- Pressure
- Vacuum sequencing

Problems in Conveying

- Attrition
- Segregation
- Sizing
- Wear
- Energy consumption

Bulk Solids Processing Systems

- Feeding, weighing, scaling
- Silo blending and segregation
- Particulate air filtration
- Gravity flow and flow aids

Material Properties Testing

- Particle size and distribution
- Particle shape
- Loose and compacted bulk density
- Particle density
- Angle of slide, repose
- Moisture content
- Flow function and wall friction angle
- Cohesive strength
- Time consolidation
- Cohesion
- Internal friction
- Compressibility
- Aeration
- Permability

CFD, FEM, and DEM Modeling

- Flow patterns
- Stress distribution
- Velocity profile
- Segregation patterns



LEARN MORE ONLINE

bulk-solids.k-state.edu

Notice of Nondiscrimination

Kansas State University is committed to nondiscrimination in admissions, programs and employment. Inquiries and complaints: Contact Director of Institutional Equity, Kansas State University, 103 Edwards Hall, Manhattan, KS 66506-4801, (Phone) 785-532-6220; (TTY) 785-532-4807.

KANSAS STATE
UNIVERSITY

Bulk Solids
Innovation Center