

MAY 13 - 15, 2025

FREUND Inc.

675 44TH ST
MARION, IA 52302

+1 319-377-8263



2025

IN-PERSON TECHNICAL SEMINAR...

Focusing on Granulation & Coating Technologies

A comparison overview of the fundamental concepts and properties of fluid bed granulation and coating, high shear wet granulation, roll compaction dry granulation, tablet pan coating and spray drying will be presented and demonstrated.

 **FREUND**



COMPANY OVERVIEW

FREUND Inc.

Since 1964, The FREUND group has been a global leader of processing solutions for powders, particles, beads, pellets, tablets, and other solid materials for industries including pharmaceutical, nutraceutical, food, industrial, energy, and many more.

Applications include wet and dry granulation, drying, agglomerating, coatings, layering, instantizing, and densification.

A customized product lineup includes coating pan systems, fluid bed systems for granulation and drying, high shear granulators, roll compactors, and spray dryers. We also offer automated process control systems to support these technologies.

FREUND Inc's unique in-house research laboratory accommodates multiple lab-to-pilot and production scale equipment offering customers specialized solutions in:

- ✓ Process Evaluation
- ✓ Process Development
- ✓ Process Optimization
- ✓ Process Scale-Up
- ✓ Process Troubleshooting
- ✓ Product Development
- ✓ Product Evaluation
- ✓ Product Feasibility Testing
- ✓ Formulation Assistance
- ✓ Technology Transfer
- ✓ Training



AGENDA

DAY ONE | Tuesday, May 13, 2025

It's a Matter of Understanding!		
8:00am to 8:10 am	Welcome	Greg Smith/Tim Abodeely
8:10 am to 8:45 am	Technology Overview	Mitch Crawford
8:45 am to 9:30 am	High Shear Technology: Wet Granulation & Milling <ul style="list-style-type: none"> • Applications • Process Principles • Equipment Design • Scale-Up and Optimization 	Mitch Crawford
9:30 am to 10:15 am	Fluid Bed Technology: Top Spray Granulation <ul style="list-style-type: none"> • Applications • Process Principles • Equipment Design • Scale-Up and Optimization 	Jordan Teska
10:15 am to 10:30 am	Break	
10:30 am to 11:15 am	Fluid Bed Technology: Wurster Spray Coating <ul style="list-style-type: none"> • Applications • Process Principles • Equipment Design • Scale-Up and Optimization 	Maren Gabor
11:15 am to 12:00 pm	Perforated Pan Coating Technology <ul style="list-style-type: none"> • Applications • Process Principles • Equipment Design • Scale-Up and Optimization 	Tim Smith
12:00 pm to 1:00 pm	Catered Lunch/Tour	



AGENDA

DAY ONE | Tuesday, May 13, 2025

It's a Matter of Understanding!	
LAB SESSIONS 1:00 pm - 4:00 pm	
High Shear Wet Granulation <ul style="list-style-type: none"> • Proper Equipment Set-Up • Wet Milling • Fluid Bed Drying (NIR Moisture Analysis) • Product Analysis (LOD Analysis) 	Mitch Crawford Room L-1
Fluid Bed: Top Spray Granulation <ul style="list-style-type: none"> • Proper Equipment Set-Up • Proper Product Movement • Process Optimization • Product Analysis (QICPIC) 	Jordan Teska Room L-11
4:00 pm	Wrap Up/Leave for Hotel
6:00 pm to 8:00 pm	Reception at Hilton Garden Inn



AGENDA

DAY TWO | Wednesday, May 14, 2025

It's a Matter of Understanding!

LAB SESSIONS 8:00 am - 11:15 am		
Fluid Bed: Wurster (Bottom) Spray Coating <ul style="list-style-type: none"> • Proper Equipment Set-Up • Proper Product Movement • Process Optimization • Product Analysis (QICPIC) 		Maren Gabor Room L-12
Tablet Pan Coating <ul style="list-style-type: none"> • Proper Equipment Set-Up • Proper Product Movement • Process Optimization 		Tim Smith Room L-9
11:30 am to 12:30 pm	Catered Lunch	
12:30 pm to 1:15 pm	Granulation Formulation Considerations: <ul style="list-style-type: none"> - Selection of Excipients - Use of Binders, Fillers, Glidants, Lubricants & Disintegrants Basics of Film Coating Formulation: <ul style="list-style-type: none"> - Basic Formulation Ingredients – Polymers, Plasticizers, Colorants and Solvents 	Shawn Engels, Colorcon
1:15 pm to 2:00 pm	Roll Compaction Technology: Dry Granulation <ul style="list-style-type: none"> • Applications • Process Principles • Equipment Design • Scale-Up and Optimization 	Maren Gabor
2:00 pm to 2:15 pm	Break	



AGENDA

DAY TWO | Wednesday, May 14, 2025

It's a Matter of Understanding!		
2:15 pm to 3:00 pm	Fluid Bed Technology: GXR Rotor Processor Coating of Multi-Particulates <ul style="list-style-type: none"> • Applications • Process Principles • Equipment Design • Scale-Up and Optimization 	Jordan Teska
3:00 pm to 3:45 pm	Spray Drying Technology <ul style="list-style-type: none"> • Applications • Process Principles • Equipment Design 	Mitch Crawford
3:45 pm to 4:00 pm	Wrap Up/Leave for Hotel	

DAY THREE | Thursday, May 15, 2025

It's a Matter of Understanding!		
8:00 am to 9:00 am	Equipment and Process Trouble Shooting <ul style="list-style-type: none"> • Granulation Processes and Equipment • Coating Processes and Equipment 	Tim Smith
LAB SESSIONS 9:00 am - 2:30 pm		
Roll Compaction: Dry Granulation <ul style="list-style-type: none"> • Dry Milling • Process Optimization • Product Analysis (QICPIC) 		Maren Gabor Room L-14
Spray Drying <ul style="list-style-type: none"> • Proper Atomization Techniques • Proper Spray System Set-Up • Process Optimization • Product Analysis (QICPIC) 		Mitch Crawford Room L-11
Fluid Bed: Rotor Powder Layering <ul style="list-style-type: none"> • Proper Product Movement • Proper Spray System Set-Up • Process Optimization • Product Analysis (QICPIC) 		Jorden Teska Room L-12
12:00 pm to 1:00 pm	Catered Lunch	
2:30 pm	Seminar Complete	

LIST OF PRESENTERS



Mitch Crawford

Lab Manager

mitch.crawford@freundglobal.com

Mitch has been with FREUND Inc. since 2012. He graduated from Iowa State University with a BS in Mechanical Engineering and started working for FREUND as a Technical Service Engineer. He joined the lab in 2018 and worked on many customer projects as well as R&D efforts, including four AAPS posters. In 2023 he became the laboratory manager.



Tim Smith

Senior Process Development Scientist

tim.smith@freundglobal.com

Tim has been involved with the design and development of equipment and processes for the pharmaceutical, food, confectionary, energy, aerospace, computer, aseptic, and natural resource industries for over 40 years. Tim has worked in university and corporate settings as a research and development engineer, process application engineer, project manager, and is currently a process development scientist at FREUND Inc. Tim participates in university and industry seminars/webinars, poster presentations at AAPS, and has written a book chapter and trade journal articles in order to share his processing experiences. Tim has a BS in Chemical Engineering and a MS in Food Science from Iowa State University.



Maren Gabor

Process Development Scientist

maren.gabor@freundglobal.com

Maren joined FREUND Inc. at the start of this year. She graduated from Luther College in 2021 with a BA in Biology and Chemistry and completed a postgraduate program at Allen College in Medical Laboratory Science. Maren began her career in a medical laboratory, gaining valuable machinery experience before bringing her expertise to the FREUND Inc. laboratory team. Since joining, she has hit the ground running, actively contributing to numerous process developments across the different product lines.

LIST OF PRESENTERS



Jordan Teska

Process Development Scientist

jordan.teska@freundglobal.com

Jordan has been with FREUND Inc. since June of 2023. He recently graduated from Iowa State University with a BS in chemical engineering and started working at FREUND Inc. directly after graduating as a process development scientist. He has learned a lot about the different processes and assisted with customers both in the lab and on the road at process sights to help develop and troubleshoot their processes.



Shawn Engels

Colorcon®

Area Technical Manager

sengels@colorcon.com

Shawn Engels is an Area Technical Manager for Colorcon®, covering most of the Midwest. In his role, he provides technical assistance for Colorcon's coating and formulation products as well as process assistance with all solid dosage processes. Shawn previously worked at FREUND Inc. for 12 years as a Sr. Process Development Scientist, developing processes on fluid beds, tablet coaters, roll compaction and high shear mixers. Shawn lives in Tipton, IA and is a graduate of Iowa State University.

DOMESTIC SALES



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STAY CONNECTED

We are always here for you to answer questions or talk solutions for current or upcoming projects!

FREUND Inc.

A FREUNDGroup Company

HEADQUARTERS

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FREUND Inc. Granulation & Coating Technology Seminar

May 13-15, 2025

REGISTRATION FORM *(editable PDF)*

Name: _____

Title: _____

Company: _____

Address: _____

City: _____ State: _____ Zip: _____

Bus. Tel: _____ Bus. Fax: _____

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SEMINAR FEE: \$1,950.00

Dietary Restrictions: Y N

Check (Payable to FREUND Inc.)

Purchase Order # _____

Credit Card

VISA Master Card American Express Security Code: _____

Card # _____ Exp. Date: _____ (mm/yy)

Cardholder's Name: (Please Print) _____

Signature: _____ Zip Code: _____

Return Registration Form and Payment To:

FREUND Inc.

Attn: Granulation & Coating Technology Seminar
675 44th St | Marion, IA 52302-3800

email: tim.abodeely@freundglobal.com

