

SEPT 9-11, 2025

FREUND Inc.

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MARION, IA 52302

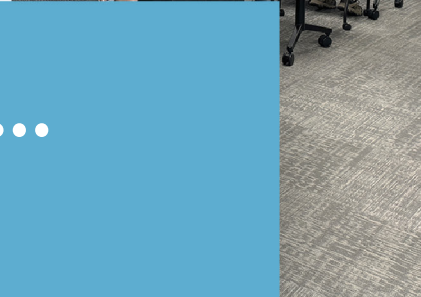
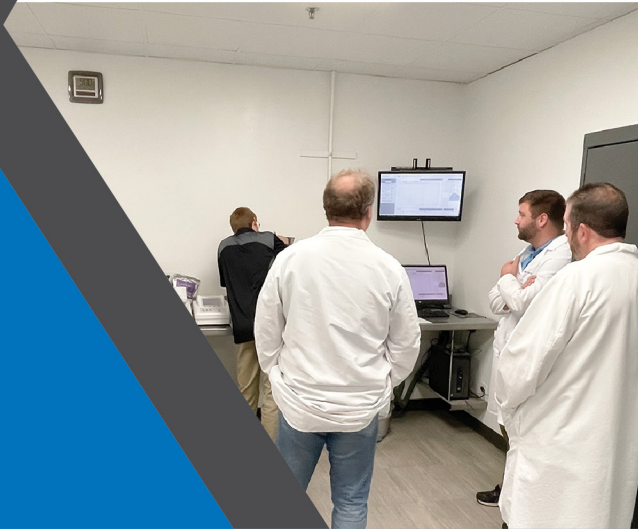
+1 319-377-8263

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.



## 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, Sept 9, 2025

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



# AGENDA

DAY ONE | Tuesday, Sept 9, 2025

It's a Matter of Understanding!		
LAB SESSIONS 1:00 pm - 4:00 pm		
<b>High Shear Wet Granulation</b> <ul style="list-style-type: none"> <li>• Proper Equipment Set-Up</li> <li>• Wet Milling</li> <li>• Fluid Bed Drying (NIR Moisture Analysis)</li> <li>• Product Analysis (LOD Analysis)</li> </ul>		Jordan Teska
<b>Fluid Bed: Top Spray Granulation</b> <ul style="list-style-type: none"> <li>• Proper Equipment Set-Up</li> <li>• Proper Product Movement</li> <li>• Process Optimization</li> <li>• Product Analysis (QICPIC)</li> </ul>		Jack Kenny
4:00 pm	Wrap Up/Leave for Hotel	
TBD		





# AGENDA

DAY TWO | Wednesday, Sept 10, 2025

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



# AGENDA

## DAY TWO | Wednesday, Sept 10, 2025

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

## DAY THREE | Thursday, Sept 11, 2025

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

## LIST OF PRESENTERS

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### **Mitch Crawford**

*Lab Manager*

[mitch.crawford@freundglobal.com](mailto: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](mailto: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](mailto: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

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### **Jordan Teska**

*Process Development Scientist*

[jordan.teska@freundglobal.com](mailto: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.



### **Jack Kenny**

*Process Development Scientist*

[jack.kenny@freundglobal.com](mailto:jack.kenny@freundglobal.com)

Jack started at FREUND Inc. in June of last year. He graduated from Iowa State University with a BS in chemical engineering. Since starting in the lab, he has worked on a multitude of processes. In the past year, Jack has worked with customers both in the lab and at process sites, collaborated on R&D projects, and helped troubleshoot customer processes.



### **Shawn Engels**

*Colorcon®*

*Area Technical Manager*

[sengels@colorcon.com](mailto: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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## INTERNATIONAL SALES

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**Ryan Crawford**

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## STAY CONNECTED

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

### **FREUND Inc.**

A FREUNDGroup Company

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# FREUND Inc. Granulation & Coating Technology Seminar

**Sept 9-11, 2025**

## REGISTRATION FORM *(editable PDF)*

Name: \_\_\_\_\_

Job Title: \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Bus.Tel: \_\_\_\_\_ Cell Phone: \_\_\_\_\_

Email: \_\_\_\_\_

**SEMINAR FEE: \$1,950.00**

**Dietary Restrictions:     Y     N**

If Yes, Please Explain: \_\_\_\_\_

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

email: [matt.winkler@freundglobal.com](mailto:matt.winkler@freundglobal.com)

