

# LET NATOLI BE YOUR GUIDE LEADING YOU in the RIGHT DIRECTION

## BASICS OF TABLET MANUFACTURING & TROUBLE SHOOTING TRAINING COURSE

By attending this course you will enhance your knowledge of troubleshooting and maintenance procedures for tablet presses and tooling, and increase your understanding of TSM specifications and tooling options, reducing production downtime by minimizing compression problems.

### We provide direction in:

- » Tablet shapes & designs
- » Tablet press setup & operation
- » Tooling options
- » Steel types
- » Tool inspection
- » Tool reworking & polishing



**KNOWLEDGE**  
**IS POWER** 

## Welcome to **Natoli!**

With well over a decade of training experience, our instructors have taught The Basics of Tablet Manufacturing & Troubleshooting course both at our own location as well as on site at numerous companies throughout the world. Join our team at our technical training center for an immersive experience to learn the basics of tablet shapes and designs, press setup & operations, tooling options & steel types, tool inspections, and tool reworking & polishing.

Reference books and webinars definitely have their place in keeping current in the industry, but nothing compares to the quality training offered at Natoli Engineering Company's state of the art facilities that promise to have you actively engaged and learning. This is the type of learning we strive for when we map out each of our extensive training courses.

Also covered is how to overcome a vast array of tableting challenges as well as the best practices found industry wide.

We look forward to welcoming you to our facilities in St. Charles, Missouri and encourage you to register early as space is limited and we anticipate the course to fill up quickly.



*Dale Natoli, President*



## Who Should **Attend?**

This course is designed for anyone in the tableting compression industry including pharmaceutical, veterinary, nutritional, confectionery, and industrial. It will benefit tooling technicians, tablet press operators, tablet press maintenance technicians, QC/QA personnel, research and development, and their supervisors. Attendees will receive invaluable hands-on experience that cannot be learned from textbook or webinars.

## Learning **Objectives**

Participants of the Tablet Manufacturing Process will finish with an understanding of fundamental concepts including:

- Basics of tablet shapes and designs
- Tablet press setup and operation: **cause and effects**
- General background of tooling options and steel types
- Formulation and granulation overview
- Tool inspection discussion
- Introduction to Natoli's TIM-II tool inspection system
- Hands-on tool reworking and polishing

## DAY 1

8:00am *Arrival/Welcome*8:30am **Natoli Plant Tour**10:30am *Break*10:45am **Tablet Press Setup, Operation and Maintenance***Doug Kirsch*

- History of compression machines
- Rotary tablet press
- Tablet press setup and common errors
- Scale up to production issues
- Primary causes for press failures
- Cam wear
- Proper tooling installation
- Feeder setup

12:30pm *Lunch*1:30pm **Tablet Press Setup, Operation and Maintenance** (continued)

- Maintenance and mechanics
- **Factors affecting tablet quality**
- Operation/troubleshooting
- Standard operation procedures
- Multi-tip tooling
- Achieving optimum performance

2:30pm *Break*2:45pm **Powder Compaction & Compression***Robert Sedlock*

- Common industry tableting machines
- Rotary tablet press process including die filling, **compression events, ejection and take off stage**
- Identifying material deformation characteristics and the impact to the compaction process
- Tablet development case studies
- Critical scale up parameters and examples
- Importance of data normalization

5:15pm **Depart Natoli for Evening Events***Complimentary Event**TBD*

## DAY 2

8:00am *Arrival/Refreshments*8:30am *Group Photo*8:45am **Tablet Design Basics***Bill Turner*

- Importance of communication
- Product characteristics
- Drawing request form
- Proper tablet terminology
- Tablet shapes
- Cup configuration
- Tablet size
- Establishing compressed density
- Logos and common engraving cuts
- Bisects

10:15am *Break*10:30am **Rotary Tablet Press Tooling***Dale Natoli*

- Tooling basics
- Standards
- Tool configurations
- Die segments
- Dwell time
- Punch heads
- Troubleshooting common compression problems
- Picking, Sticking, Capping, etc.
- Die wear
- Fixtures for tool defect samples

12:15pm *Lunch*1:15pm **Rotary Tablet Press Tooling** (continued)

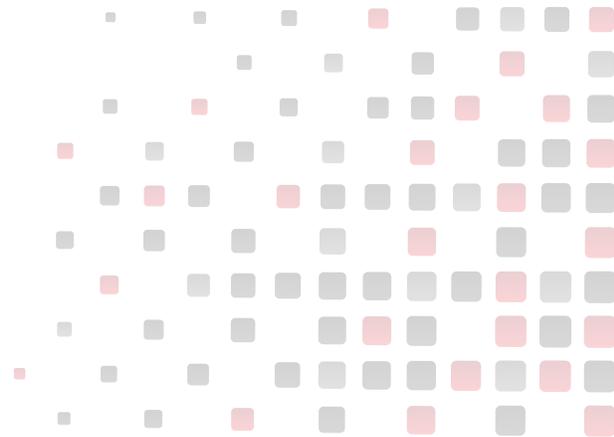
- Understanding the TSM specifications
- Tooling options

2:45pm **Breakout Hands-On Sessions: Ultra-Sonic Cleaning Process***Stephen Natoli***Visual Inspection***Stephen Natoli***Tablet Press Setup including Tooling Installation***Doug Kirsch***Lubrication and Storage***Stephen Natoli***Polishing Station***Dave Perry***Compact Measurement***Robert Sedlock***TM-II / LVS***Robert Caruso***TabletCAD***Bill Turner***RD-10A Lab Press Demo***Robert Sedlock*4:45pm *Closing Statements in Classroom*

**DAY 3**

<p>8:00am <i>Arrival/Refreshments</i></p> <p>8:30am <b>Tablet Compression Tooling: Steel Types and Coatings</b> <i>Dave Holleran</i></p> <ul style="list-style-type: none"> <li>▪ Material recommendations</li> <li>▪ Steel types</li> <li>▪ Advantages to electroslag remelting</li> <li>▪ Steel quality reports</li> <li>▪ Steel chemistry</li> <li>▪ Punch coating types</li> <li>▪ Premium die steels/materials</li> <li>▪ Tooling options</li> </ul> <p>9:30am <b>The Natoli Institute at Long Island University</b> <i>Jon Gaik</i></p> <ul style="list-style-type: none"> <li>▪ Understanding industrial pharmacy problems</li> <li>▪ Sticking and picking investigations</li> <li>▪ Tabetl scale up challenges</li> </ul>	<p>10:00am <i>Break</i></p> <p>10:15am <b>Multi-tip Tooling</b> <i>Bill Turner</i></p> <ul style="list-style-type: none"> <li>▪ Increasing tablet production</li> <li>▪ Typical multi-tip tools</li> <li>▪ Concerns and considerations</li> <li>▪ Punch designs</li> <li>▪ Punch and die steels</li> <li>▪ Compression and ejection forces</li> <li>▪ Press setup</li> <li>▪ Modification to processes and validation</li> </ul> <p>11:30am <i>Lunch</i></p> <p>12:15pm <b>Continued Hands-On Session</b> <i>Natoli Engineering Course Instructors</i></p> <p>2:30pm <b>Closing Statements/End of Program</b> <i>Natoli Engineering Course Instructors</i></p> <ul style="list-style-type: none"> <li>▪ Q&amp;A</li> <li>▪ Certificates</li> <li>▪ Evaluations completed</li> </ul>
---	---

*Topics and times are tentative and are subject to change.*



**BE THE “GO-TO” PERSON ON YOUR TEAM**

We’re confident your learning experience will be a positive one, expanding your knowledge of tablet manufacturing while gaining valuable technical experience and skills that will immediately start saving your company time and money. This course is also a career accelerator, making you the go-to person on your team.



**BILL TURNER** is the Technical Service Manager for the Tooling and Tablets division at Natoli Engineering Company, Inc. With over 40 years in the industry, all of it with Natoli, Mr. Turner's previous positions included tablet designer, tool designer, and hob manufacturing. He served as Engineering Manager for 20 years and a Technical Customer Service Representative for 15 years. He educates and trains Natoli sales and service staff and conducts industry training seminars regarding tablet design, tool design, and troubleshooting of tablet designs and tooling.



**JONATHAN GAIK** received his B.S in Chemistry from the Missouri University of Science and Technology. Mr. Gaik, has worked in solid oral dosage formulation and process development in the pharmaceutical and food industries. Mr. Gaik has various patent applications for his work combating the opioid crisis via abuse-deterrent dosage forms. His current interest is driving the development of continuous manufacturing and first principles sources of solid oral dosage formulation related issues during processing. Mr. Gaik is currently co-director of the Natoli Institute for Industrial Pharmacy Research and Development at the Arnold and Marie Schwartz School of Pharmacy and Long Island University.



**DOUG KIRSCH** is the Technical Service Manager for the Tablet Press division at Natoli Engineering Company, Inc. Mr. Kirsch has more than 50 years of experience in the tablet compression industry, 35 of those years have been spent with Natoli. Mr. Kirsch has trained press operators and maintenance technicians world-wide. He began his career training in the U.K. with Manesty tablet presses. He also served as th Maintenance Manager for tablet compression at the General Nutrition Corporation.



**ROBERT SEDLOCK** is the Director of Technical Training and Development of Natoli Engineering Company. Mr. Sedlock, is a leading expert in the tablet compression industry with over 18 years of experience and has authored numerous technical articles for Pharmaceutical Technology and American Association of Pharmaceutical Scientists. Mr. Sedlock is responsible for global solid dosage customer support, training seminars, contract compression services and continuous research at the Natoli Institute of Industrial Pharmacy located at the Long Island University AMS College of Pharmacy and Health Sciences in Brooklyn, New York.

## TRAINING BEYOND TEXTBOOKS

Natoli Technical Training Center courses offer a valuable training experience extending well beyond textbooks and webinars. These seminars consist of well-balanced combination of presentations, group discussions, Q&A sessions, and hands-on exercises, resulting in much more valuable experience.



**DAVE HOLLERAN** is the Director of Customer Service at Natoli Engineering Company, Inc., Over seeing all international accounts. He has more than 10 years of experience in the tablet press compression industry, including Process Engineering Manager and Quality Assurance Manager. Mr. Holleran conducts training for tablet manufacturers worldwide focusing on troubleshooting and technical support in tablet design, tool design, tool inspections, as well as steel types and tool coatings.

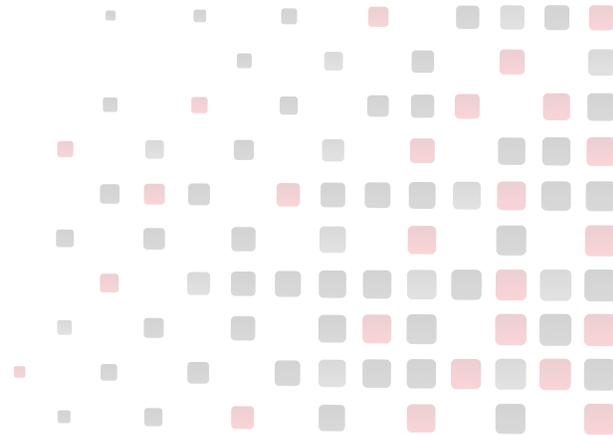


**DAVE PERRY** is an Assistant Plant Manager for Natoli Engineering Company, Inc., Mr. Perry has been with the company for more than 30 years. He started working at Natoli at the age of 18 serving in a variety of capacities: stock polishing, overseeing the buffing department, hob production, and running various manufacturing equipment and working as a department manager.



**ROB CARUSO** graduated from the University of Missouri with a B.A in Computer Science and currently provides software support for Natoli Engineering Company, Inc. Mr. Caruso has been with Natoli Engineering since 1992, serving in a wide range of areas, including Customer Service, Work Order Production, Accounting, Shipping and Tool Inspection. Since 1998, Rob has overseen the development of the Natoli Tool Management II (TM-II) inspection and tool control system, and has been involved in a number of related specialty areas, including: software design and development, installation and customer support.

*Speakers may be subject to change*



## KNOWLEDGE IS POWER

During the seminar, attendees will have the opportunity to tour the Natoli complex for a closer look at the manufacturing process of punches and dies from design to completion. Attendees are also able to get hands-on experience with punch inspection and tool management systems, as well as tool reworking and polishing.

# COURSE REGISTRATION

## Basics of Tablet Manufacturing & Troubleshooting

Natoli Technical Training Center | St. Charles, Missouri 63305

Individual Course Fee: \$1,095.00 per person

Group Course Discount: \$995.00 per person (two or more people from your organization)

### Space is Limited! Early Registration is Recommended!

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

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

Street Address: \_\_\_\_\_ City: \_\_\_\_\_

State/Province: \_\_\_\_\_ Zip: \_\_\_\_\_ Country: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_ Email: \_\_\_\_\_

Special needs and/or dietary requests: \_\_\_\_\_

How did you learn about this course? \_\_\_\_\_

### 4 Easy Ways to Enroll!

**1** Register online  
[HERE!](#)

**2** Complete this form  
and mail to: 28  
Research Park  
Circle, St. Charles,  
MO 63304 Attn:  
Training Coordinator

**3** Complete this  
form and email  
the PDF to:  
training@natoli.  
com

**4** Complete this  
form and fax to:  
1 (636) 926-8910  
Attn: Training  
Coordinator

### Payment Methods

Full payment in **US currency** is due no later than two weeks prior to the event. If payment has not been received, a credit card will be required to secure payment for course attendance.

Invoice Company: \_\_\_\_\_  P.O Number: \_\_\_\_\_

Check - Please make check payable to Natoli Engineering Company

Credit Card:  Master Card  Visa  American Express

Card#: \_\_\_\_\_ Exp. Date: \_\_\_\_\_ Security Code: \_\_\_\_\_

#### General Information:

*Cancellations/Substitutions:* Substitutions will be accepted at any time prior to the course without penalty. To receive a full refund, please notify the training coordinator no later than seven business days prior to the course. All cancellations received inside of seven business days will be subject to a \$125.00 cancellation fee. No-shows are ineligible for a refund.

*Course Fees Includes:* Course materials, three continental breakfasts, breaks with refreshments, three lunches, reception with food and beverages and course certificate.

*Course Confirmation:* A course confirmation will be e-mailed to participants upon receipt of their reservation. Final course details including a timed agenda and maps will be e-mailed approximately 14 days prior to the event. The course will be conducted in English.

*Travel Information:* Information regarding discounted hotel accommodations, airport transportation, and more, will be sent via email with the course confirmation.

*Please Note:* Natoli Engineering Company does not anticipate any changes to this course, but we reserve the right to alter the program and/or speakers without prior notice. In the unlikely event of course cancellation, Natoli's liability is limited to refunding only the course registration fee.

# HOTEL RESERVATION

## Basics of Tablet Manufacturing & Troubleshooting Training Course

2019 | Natoli Technical Training Center | St. Charles, Missouri 63304

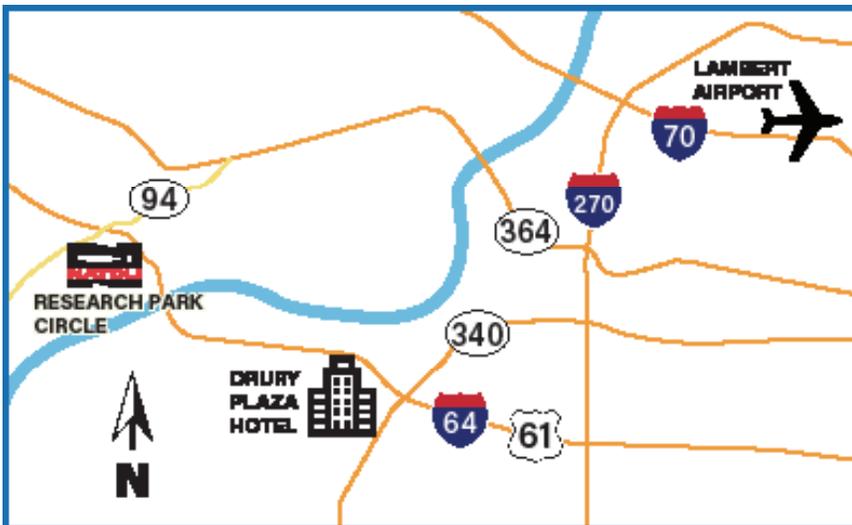
***Book Your Room Early! Rooms and Rates are Limited!***

### DRURY PLAZA HOTEL

355 Chesterfield Center, Chesterfield, MO 63017

To make reservations, guests can call the reservations department at +1.800.325.0720 and request the negotiated rate for Natoli Engineering. You may also make reservations online using the link provided in your confirmation email.

Please make your reservations as early as possible to assure you receive the group rate, as rooms available at this rate are limited.



## Questions? Comments?

Do you have a question or comment that you would like to be addressed about this event? Please email Natoli's Travel and Events Coordinator at [training@natoli.com](mailto:training@natoli.com)