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Executive Q&A: Dale Natoli, Director, Natoli Engineering Company

Dale Natoli, director of Natoli Engineering Company, Inc., has more than 31 years of worldwide experience in the tablet compression industry. He has a long-term affiliation with, and focus on educating, the pharmaceutical industry. In June 2004, he opened the first non-commercial technical training center in the United States solely dedicated to educating the tablet compression market.

Natoli has published many articles for major pharmaceutical trade publications and wrote the chapter on tablet compression tooling for the *Encyclopedia of Pharmaceutical Technology*. In addition, he chaired and served as a board member for revisions in the 3rd Edition of the *Tablet Specification Manual* (formerly known as the *IPT Manual*), sponsored by the American Pharmaceutical Association for use as a teaching tool with pharmacy schools and manufacturing businesses. Recently, he authored the chapter on tooling for pharmaceutical processing for the 3rd Edition of *Pharmaceutical Dosage Forms*, which will be published later this spring.

Currently, Natoli presents lectures for universities, pharmaceutical associations, and tablet manufactures in the United States, Europe, and Asia. His topics of expertise include tablet design, tool configurations, and troubleshooting.

Please give us a little background on Natoli and the products it offers the pharmaceutical industry.

Our current president, Carmelo Natoli, founded Natoli Engineering Company, Inc. in 1973. His philosophy then and now was simple – to provide a quality tablet compression tool at a fair price with exceptional customer service. Continuing to maintain a sharp focus and steadfast dedication to this philosophy has made Natoli the company it is today.

Natoli not only provides punches and dies, but we are also dedicated to providing support equipment to help maintain tablet quality. Last year we opened our newest facility, in

Chesterfield, MO, which is dedicated to manufacturing replacement turrets for all makes and models of tablet presses. We also manufacture tablet replacement parts and software management products, and we provide a comprehensive accessories catalog dedicated to the tablet compression industry.

What is unique about Natoli's offerings? What differentiates them from other solutions on the market?

Exceptional customer service, technical support/troubleshooting capabilities, and pricing structure make Natoli unique. What differentiates us is that our staff has the knowledge and expertise to understand and meet our customers' exact requirements and requests. We also offer competitive pricing by maintaining highly organized manufacturing facilities.

Our products also make us unique – perhaps our most interesting product is the Natoli TM-II punch inspection and tool management system. This efficient inspection system utilizes non-contact laser technology and accommodates multi-tip tooling. It also features a database that manages critical tooling information related to vendor inspection, measurements, wear analysis, tablet production history, purchase orders, drawings, steel and machine type, storage locations, and much more.

What are the biggest current trends you see in the design of tablet compression technology?

One trend is that today – more than ever – there are more tool steel options, resulting in better product release, wear, and durably. Another trend is the renewed interest in ceramic line dies with newly engineered ceramic conditions. Ceramic lined dies can reduce the coefficient of friction throughout the many cycles of tablet compression. They do not corrode or wear, utilizing a wear liner that can increase the life of the die by 5 to 10 times.

However, the biggest trend is that the demand for multiple-tip tooling has significantly increased over the past several years. Many multinational pharmaceutical companies and high-volume tablet producers now favor multiple-tip tools. Multiple-tip punches allow tablet manufactures to increase production by maximizing the number of punch tips that will fit onto a particular tool type. Compressing three tablets instead of one greatly enhances tablets per minute and reduces the need for additional equipment and labor.

What should someone look for when evaluating tablet compression technology?

Formulations and granulations are unique and have their own compressing characteristics. Tablet manufactures need to communicate these unique characteristics to assist the tool manufacturers in selecting a steel type more suited to the application. Sticking, picking, abrasiveness, cohesiveness, and product density are just some of the characteristics that are considered.

In reference to multiple-tip tooling, you should look for consistency within working lengths of all tips. Inconsistent tips will result in variation of tablet hardness, thickness, and weight.

In 2005, Natoli unveiled the first non-commercial training center dedicated solely to the tablet compression industry. What was the motivation behind opening the center?

Natoli is dedicated to educating the pharmaceutical industry. We identified a need in the tablet compression industry for training that was not provided by universities or textbooks. To meet this need, we set out develop – and continue to develop – the most influential and useful tablet compression training center in the United States. The center's training curriculum is structured around hands-on training, theories, case studies, processes, and techniques of tablet compression. Better understating the dynamics of tablet compression provides the ability to operate a more efficient tablet compression process.

How have the courses evolved since you first started the training center?

Today, Natoli offers a greater variety of courses than ever before. The instruction has even expanded into other areas of tablet manufacturing, such as tablet coating. In order to this broad range of topics, we invite guest experts from other companies to lecture. Some of the companies that have participated include Fette, Colorcon, Vector, Courtoy, and others.

Can you give us a preview of some of the training course topics that will be covered in 2008?

Training course topics for 2008 include: cGMP, tablet technology, understanding data acquisition systems, tooling training, tablet press set up/maintenance, tablet manufacturing, tablet coating, mixing/blending, and more. Our August *Pharmaceutical Tablet Technology* training course is designed to train a wide range of individuals involved in the design, formulation, manufacturing, quality control, and quality assurance of pharmaceutical tablets. Tablet press operators, tablet press maintenance technicians, granulation technicians, QC/QA personnel, and supervisors with experience and/or backgrounds in chemistry, biology, engineering, and pharmacy will benefit from participating in this course. All of our technical training courses take place at our facilities in St. Charles, MO.

The increase in international equipment suppliers has significantly changed the landscape of the pharmaceutical manufacturing industry. What has Natoli done – and what does it plan to do – to stay competitive in this environment?

We have strategically placed a great number of Natoli divisions/distributors throughout the world to increase our international market penetration. For instance, in conjunction with Casburt TMS Limited, we recently launched our newest division, Natoli Europe,

which covers all aspects of tablet production, including training and production optimization through the development of a U.K. based “Center of Excellence.”

What significant initiatives are on the horizon for Natoli?

Our focus is to increase our research and development in areas such as steel types, punch coatings, and tooling. Like many of our customers, we believe that every dollar spent in research and development is a dollar well invested.

What does the future hold for tablet compression technology?

I think that we will continue to see equipment tooling manufacturers develop new and innovative solutions that address important issues such as operator safety, product containment, increased production, and product yield.

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