Special issue!

EXTRU-TECH, INC.

The Extru-Technician

Celebrating five years of sharing extrusion expertise in 2012

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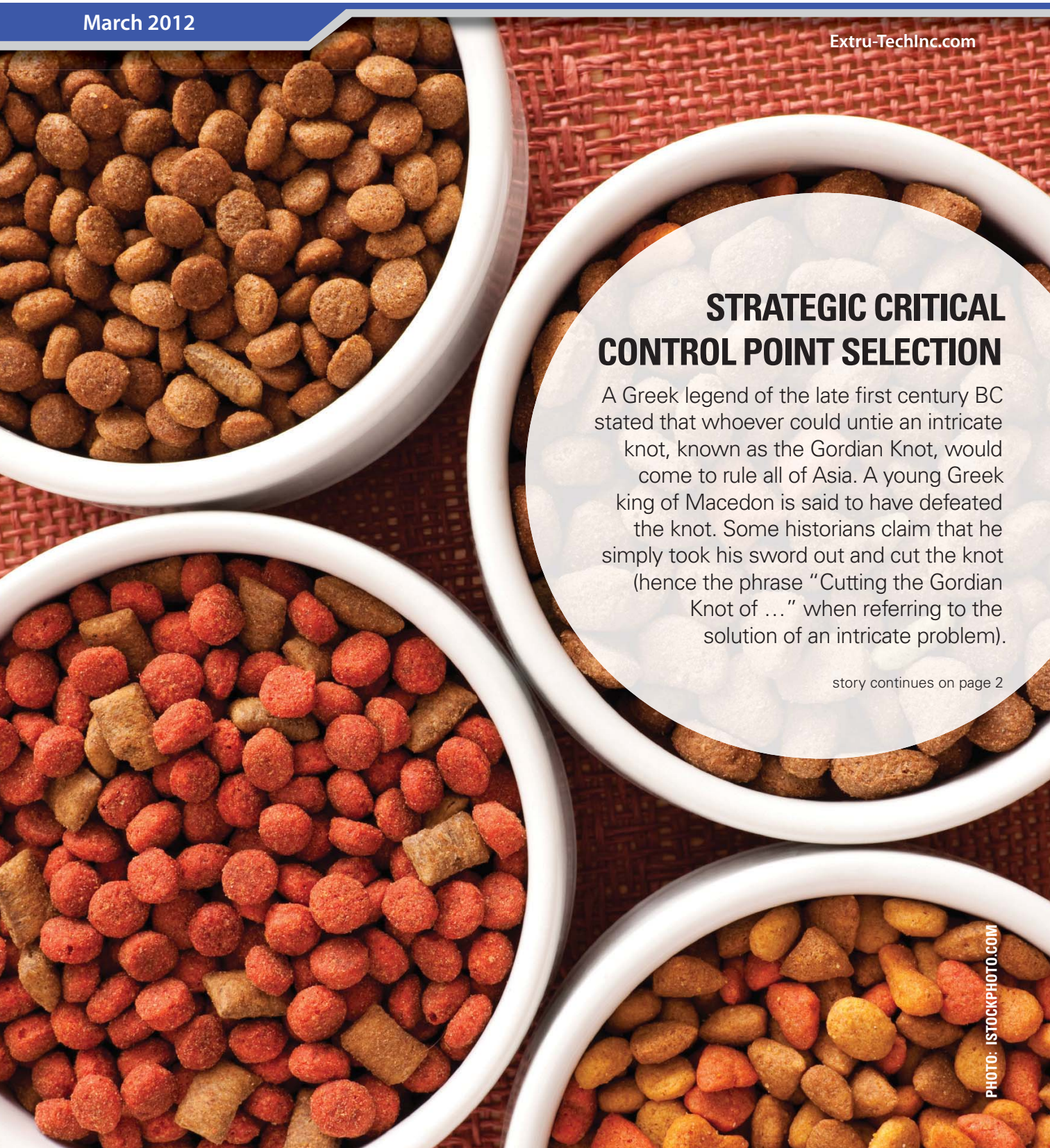
Extru-TechInc.com



STRATEGIC CRITICAL CONTROL POINT SELECTION

A Greek legend of the late first century BC stated that whoever could untie an intricate knot, known as the Gordian Knot, would come to rule all of Asia. A young Greek king of Macedon is said to have defeated the knot. Some historians claim that he simply took his sword out and cut the knot (hence the phrase "Cutting the Gordian Knot of …" when referring to the solution of an intricate problem).

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STRATEGIC CRITICAL CONTROL POINT SELECTION

(continued from cover)

However, other legends claim that after a lengthy study of the knot, he selected a single strand and with a slight pull released the knot in its entirety. This young king, also known as Alexander the Great (Alexander III of Macedon, 356 - 323 BC), went on to create the largest empire of ancient times.

Like Alexander, you should take care in selecting the appropriate critical control points (CCPs) for your extrusion process. In most cases, you are presented with two options: preconditioner discharge and extruder discharge. For this issue, we will focus on the preconditioner discharge.

Preconditioner discharge

By design, the preconditioner is the better vehicle in terms of managing both product temperature and residence time. As well, residence time distribution (scientific analysis regarding uniform resident time of raw materials, also referred to as first-in first-out, or FIFO) allows for the accurate predictability necessary for scientific validation correlation.

Unfortunately, the level of performance in regard to these metrics are primarily biased by the overall mechanical design of the preconditioner, with a symmetrical design (such as with the Extru-Tech Dual Conditioning Cylinder) having measurable benefits over a non-symmetrical design.

CCP concerns

Two primary deficiencies of selecting the preconditioner as a food safety hazard CCP can be categorized under raw materials and hazard event corrective actions, such as the following.

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EXTRU-TECH, INC.

CORPORATE OFFICE
PO Box 8, 100 Airport Road,
Sabetha, KS 66534
+1.785.284.2153 Tel
+1.785.284.3143 Fax
extru-techinc@extru-techinc.com
www.extru-techinc.com

ADMINISTRATIVE STAFF
LaVon Wenger President/CEO
Don Wenger Executive Vice President
R. Scott Krebs Executive VP/COO

EQUIPMENT SALES STAFF
Bill Huseby
Director of North America Sales
billh@extru-techinc.com +1.913.522.9014

Bob Annan Director of European Sales
boba@extru-techinc.com +1.785.284.2153

Osvaldo Munoz
Director of Latin America Sales
osvaldom@extru-techinc.com
+56.2.955.25.74 Santiago–Chile

Enzhi Michael Cheng, PhD,
Director of Asia Sales
michaelc@extru-techinc.com
+1.785.285.0703

Doug Coverdale Sales Engineer
dougc@extru-techinc.com
+1.785.284.2153

MARKETING & EDITORIAL STAFF
Norm Schmitt Corporate Sales Manager
norms@extru-techinc.com
+1.785.284.2153

Will Henry Technical Sales Engineer
willh@extru-techinc.com
+1.785.284.2153

EXTRU-TECH, INC. PART SALES STAFF
Darryl Becker
darrylb@extru-techinc.com
+1.785.284.2153

Mike Dunlap
miked@extru-techinc.com
+1.785.284.2153

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Temperature control is critical for effective hazard management and defines the temperature limits at which the process must operate. For the most part, a single hazard (*Salmonella*, for example) will most likely maintain a similar thermal inactivation limit for most of your products.

However, this temperature constraint may be destructive to the processing requirements of some of your raw materials. For example, 78 degrees C is commonly used as the kill temperature for *Salmonella*. If a product mix is high in potato starch, operating at these temperatures would cause the product to become too sticky for proper processing.

In terms of corrective actions for a preconditioner CCP violation, you must place yourself in the production environment to see possible issues. Mandated by regulation, the affected product of a CCP violation must be removed from the process and quarantined—assuming that it is contaminated product.

At this point in the process, we have an under-processed, free-flowing grain containing particles that could migrate freely throughout the air system and into other processing zones. So your challenge at this point would be to facilitate the transport and handling of this potentially endangering product out of the processing area without adding risk to the local or adjoining process zones.

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CORPORATE OFFICE
P.O. Box 8 • 100 Airport Road
Sabetha, KS 66534, USA
Phone: 785-284-2153
Fax: 785-284-3143
extru-techinc@extru-techinc.com
www.extru-techinc.com

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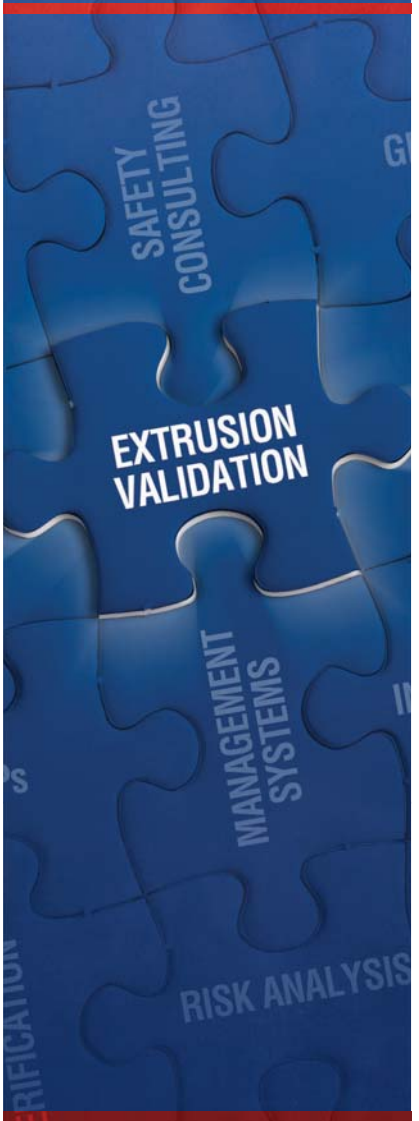

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