



# ADVANTAGE

BAKERY TECHNOLOGY UPDATE

SPRING 1998

## Donut Finishing Techniques – Sugar Coating “Unique Machine Produces Variety”

They say variety is the spice of life, but it creates quite a challenge for donut manufacturers.

Consumer tastes demand a variety of product flavors and sizes. The options are many: powdered or cinnamon sugared cake donuts; granulated sugar for yeast-raised products; full size donuts (2 oz. or larger); mini or gem donuts and donut holes.

How can donut producers meet the challenge, and do so economically?

Moline's automated sugar-coating equipment is designed to handle every combination listed above. Our unique machine is even available in two capacities. The DSM-1000 and DSM-2000 offer nominal capacities of

1000 and 2000 dozen pieces per hour respectively.

No matter the donut size or type, the main sugar coating issues producers face are adhesion and coating shelf life.

Two determining factors for successful adhesion and shelf life are frying fat characteristics and donut temperature at the time of coating application.

Fat on the donut surface must be in a solid state at ambient conditions, yet not be so hard as to sacrifice good taste and eating qualities.

Shortening suppliers offer a variety of products for donut frying to help producers meet this criteria.

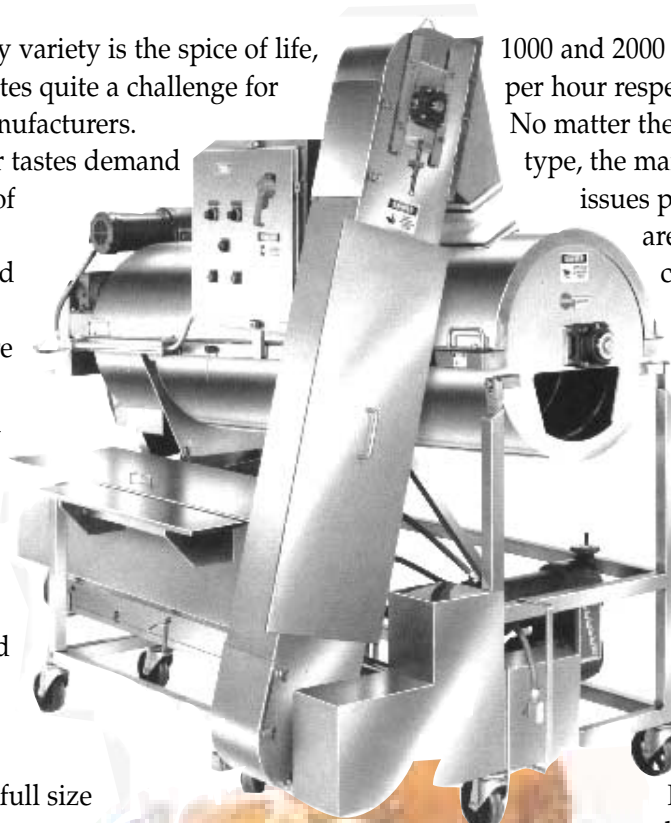
That leaves temperature control. If the donut is too hot when sugar is applied,

*In this issue*

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Positive-Opening limit switches are now standard.
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Discover keys to successful coating.
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a syrup will form on the donut surface resulting in poor appearance, eating quality and shelf life. Conversely, if the donut is too cold, adhesion will suffer.

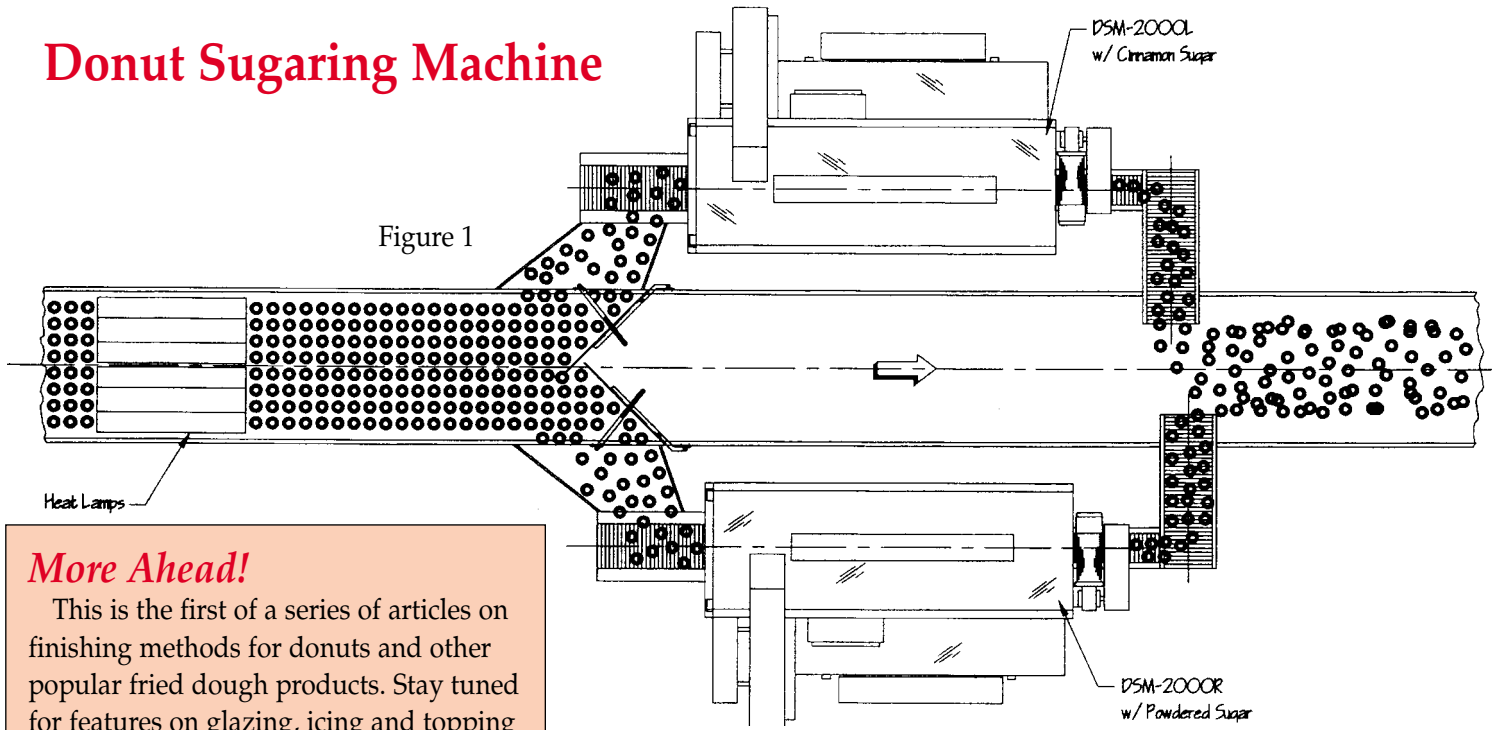
Within the manufacturing plant, an automated donut system must be designed to provide temperature control for sugar coating. Attention must be paid to both the core



See Donut Finishing on Page 2

# Donut Sugaring Machine

Figure 1



## More Ahead!

This is the first of a series of articles on finishing methods for donuts and other popular fried dough products. Stay tuned for features on glazing, icing and topping techniques in upcoming *Advantage* issues.

Donut Finishing *continued from Page 1* temperature and the surface temperature of the donut.

Moline's engineers are experienced in designing conveyor systems to provide proper ambient cooling after frying in high volume applications. A well designed system places the sugar coating process near packaging or freezing operations. At this point, (see Figure 1) Moline often includes a special conveyor equipped with a series of heat lamps located just prior to the DSM machine. The lamps raise the donut's surface temperature above the melting point of the fat just long enough to allow sugar to stick to the donut without dissolving.

Product damage, yield, automation and sanitation are also concerns with a high volume system. Moline's DSM machines

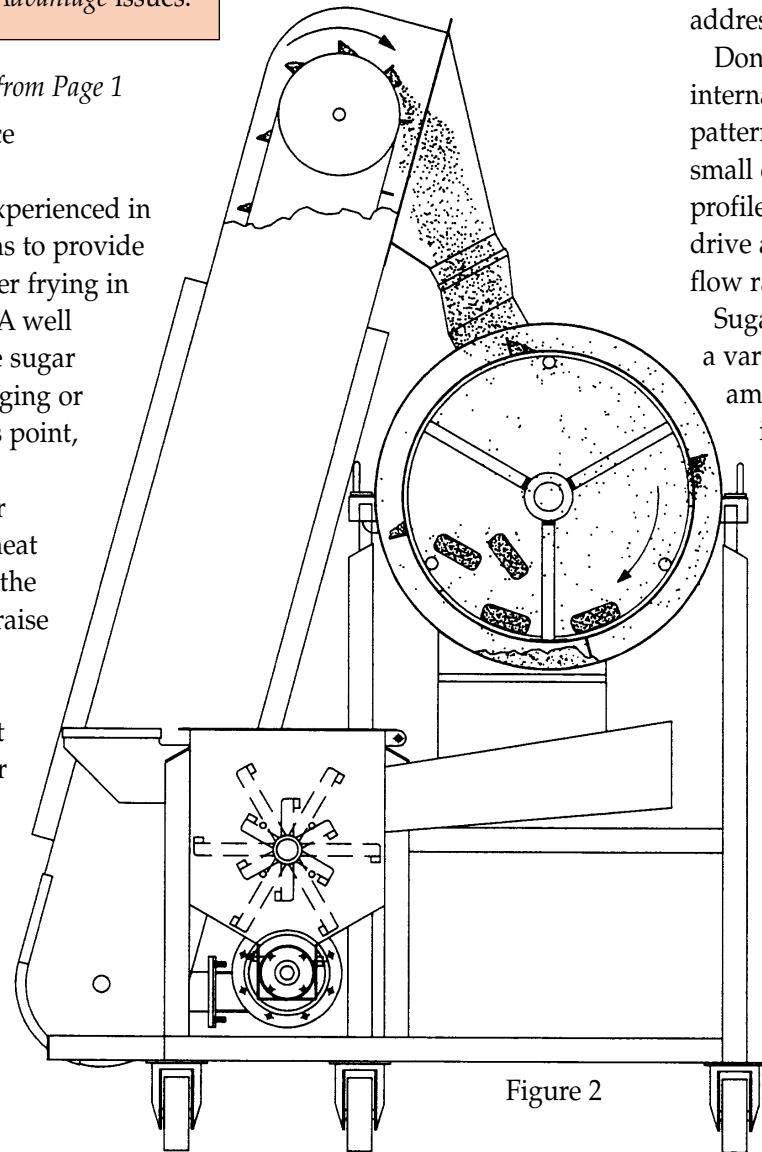


Figure 2

address these critical areas (Figure 2).

Donuts are gently passed through an internal drum that is perforated with a pattern that accommodates large and small donuts as well as flat and round profiles. The drum has a variable speed drive and gentle spiral helix to control flow rate through the tumbling area.

Sugar is delivered to the drum with a variable speed elevator to control the amount of coating on the donut. The internal drum is equipped with paddles that disperse sugar throughout the tumbling area. Strategically placed flipping rods in the product zone constantly turn the donuts to provide complete coverage.

Sugar not used is cycled through a "closed loop" system back to the holding tank which is easily accessed for loading and cleaning. Easy operation reduces skill requirements and minimizes operator training costs.

Meet high volume demand for product variety both efficiently and reliably with donut sugaring technology from Moline.

# MOLINE® Safety Update

"Positive Opening Limit Switches now Standard on Moline Industrial Equipment"

Safety on the plant floor is always a hot topic in production facilities.

Moline's latest effort to ensure safer work areas is the addition of Positive-Opening limit switches as a standard feature on our industrial equipment.

Positive-Opening limit switches are more reliable than previous switches and more difficult to override. The switches are wired to a set of normally closed contacts that drop power to the machine or PLC when the guard is removed or opened. They do not rely on springs within a switch to release

and can overcome welded contacts. Moline uses three types of Positive-Opening limit switches. Figure A shows a cam operated application, Figure B shows a switch with a special key actuator, and Figure C is a

These switches offer the highest level of protection available for guards that must be removable for service, meeting safety standards in North America and Europe. Moline recommends converting existing Moline-made machinery to this new type of switch. Contact our customer service department for details.

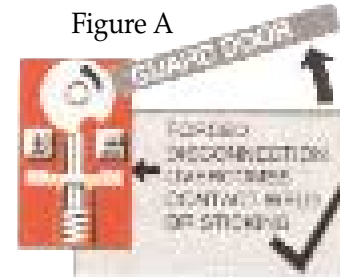


Figure A

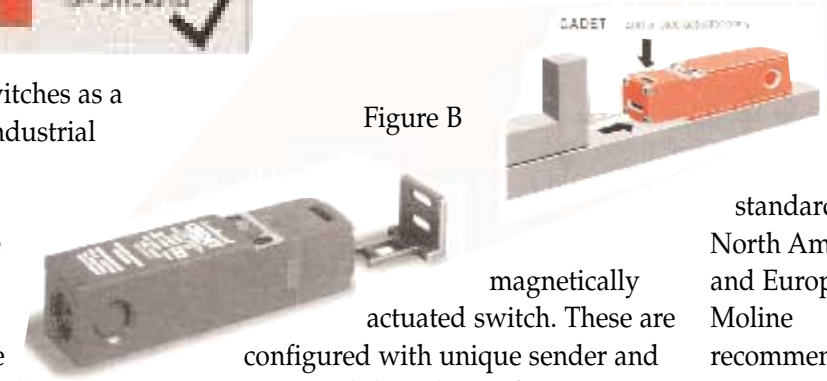


Figure B



Figure C

magnetically actuated switch. These are configured with unique sender and receiver modules. The configuration is used where tolerance to misalignment or vibration is required and/or the switch will be exposed to direct washdown.

## Introducing . . .

Lisa Nelson has joined Moline as a Customer Service Representative. She has over ten years experience in customer service for the travel industry.

Richard Rossi, Project Engineer, earned a mechanical engineering degree from

Michigan Tech. His background includes custom machinery design for

the paper industry.

Russell Lindgren, previously a control systems designer for the oil refining industry, joins us as Electrical Engineer. He is a graduate of the University of Minnesota in electrical engineering.



Lisa Nelson



Richard Rossi



Russell Lindgren

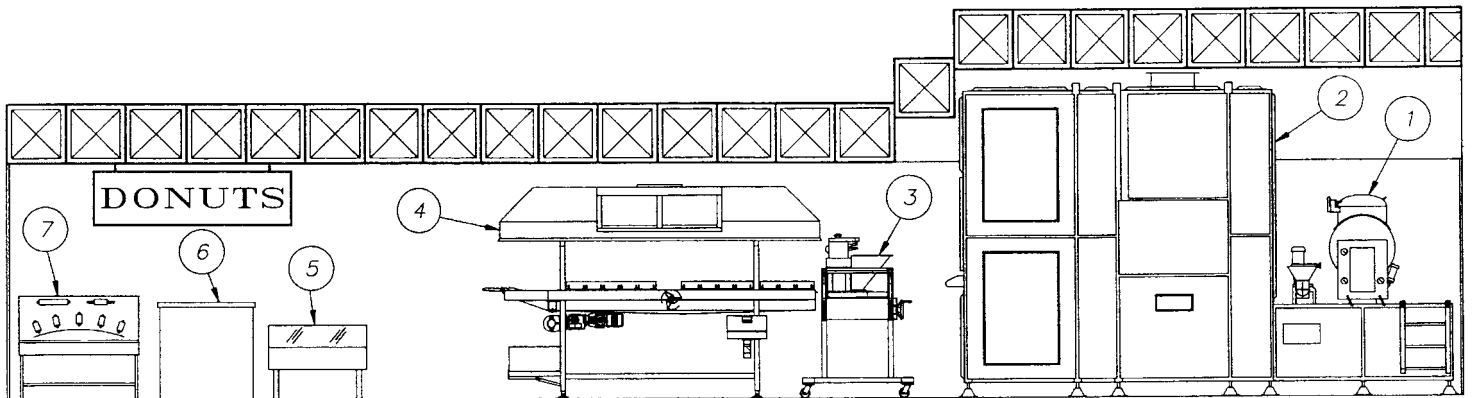


Düsseldorf, Germany  
May 8-14, 1998



**Halle 8**  
**Stand 8-E23**  
**U.S. Pavilion**

# *Moline Brings Industrial Donut Production Technology to the World at IBA 98*



### Legend

- ① Yeast Raised Pressurized Depositor
- ② Continuous Proofer
- ③ "DonutKing" Cake Donut Depositor
- ④ "InterFry" Electric Fryer
- ⑤ Fresh Donut Display
- ⑥ Reception and Literature
- ⑦ Variety Donut Cutter Display

