

# Technical Article Series

Circular screen helps noodle manufacturer maintain high quality flavor.

**KASON CORPORATION**

67-71 East Willow St.  
Millburn, NJ 07041-1416  
USA  
Tel: 973-467-8140  
Fax: 973-258-9533  
E-mail: [info@kason.com](mailto:info@kason.com)

**KASON CORPORATION,  
EUROPE**

Units 12 & 13  
Park Hall Business Village  
Park Hall Road  
Longton  
Stoke-on-Trent ST3 5XA  
UNITED KINGDOM  
Tel: (+44)1782 597540  
Fax: (+44)1782 597549  
E-mail:  
[sales@kasoneurope.co.uk](mailto:sales@kasoneurope.co.uk)

**SEPARATOR ENGINEERING LTD.**

2220 Midland Ave., #85  
Scarborough, Ontario M1P 3E6  
CANADA  
Tel: 416-292-8822  
Fax: 416-292-3882  
E-mail:  
[info@separatorengineering.com](mailto:info@separatorengineering.com)



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# Automated process refines ancient Chinese culinary art

REPRINTED FROM FOOD PROCESSING

Pneumatic conveyors feed noodle ingredients to vacuum sifter and high speed blenders

ROBERT VEE, Owner Wing Hing Noodle Co  
ROBERT F. ELLIS, Senior Associate Editor.

Chinese cuisine has become very popular, and with this popularity has come an increased demand for the ingredients used in preparing such meals. Noodles, of course, are a staple in Chinese cookery. To increase its share of this expanding market, the Wing Hing Noodle Co. of Los Angeles, CA, recently installed technically advanced equipment for its noodle processing operations. The goal was to increase productivity while retaining all the quality controls the company had when noodles were made by hand.

Working closely with consulting engineers, plant management developed an automated system which assures plant cleanliness, hands-off processing, and accurate blending of ingredients. Here is an overview of the installation.

Vacuum conveying is used throughout the system. Large tank trucks pneumatically load bulk quantities of flour into two 50-ft tall, 12-ft diameter silos. The silos are equipped with pulse-jet vent filters to assure fast, dust-free loading.

Silos hold up to 120,000 lb, and each stores a different type of flour. Two other flour varieties also are added to the final mix but in relatively small quantities.

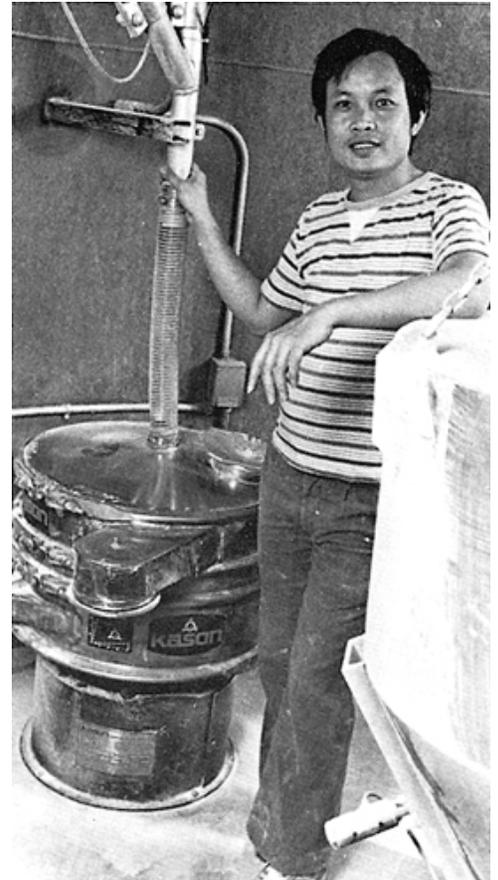
At the base of each silo is a 300-lb capacity electronic hopper scale. Stored flour from the two silos is fluidized and fed through a special slide valve into each hopper. Bags of the other two flours are dumped into flexible screw feed conveyors which discharge into a 25-lb capacity electronic hopper scale.

Flour from each of these sources is separately conveyed under vacuum to a Kason 24" diameter, stainless steel Blo-Thru circular vibrating separator. This high performance, single deck pressure/vacuum sifter is specially designed for use in dilute phase pneumatic conveying systems.

The unit includes a 12-mesh circular screen separator which prevents caked flour, oversize particles or other extraneous materials from entering the batch blenders. Screening protects noodle quality, ensuring a smooth textured product. Flour flows through the vacuum sifter at approximately 3500 lb/hr.

A 5 hp motor powers the pneumatic conveyors, developing 12" of vacuum throughout the system. The choice of a vacuum, rather than a more commonly used pressure system, was made because it is more versatile and results in cleaner working conditions.

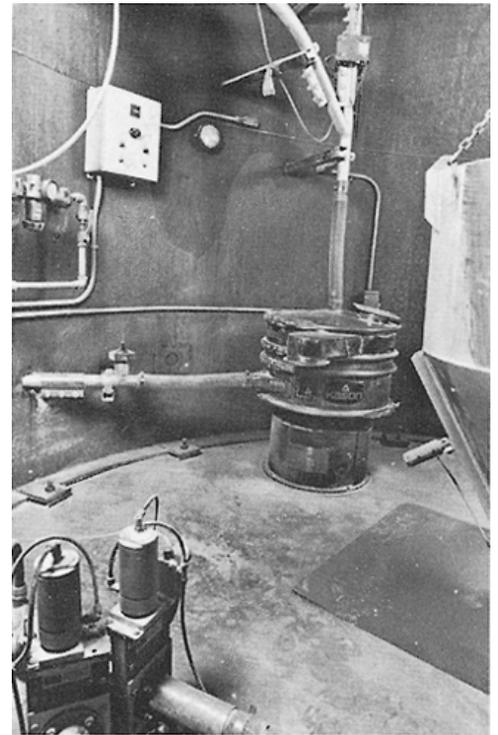
Flour from each of the hoppers is fed sequentially through the vacuum sifter, then to either of two 300-lb capacity vacuum receivers mounted on the plant roof above the blenders. Product conveying lines from each hopper are routed through diverter valves and ultimately merge into a common conveying line. All operations are microprocessor controlled.



*Production supervisor Zuhn Nan Vu demonstrates vibratory sifter used to remove extraneous materials from flour. Equipment is housed in base of flour storage silo*

Measured quantities of each flour are delivered by gravity discharge to the designated blender. Water and any other liquid ingredients are then added to the mixture. Most batches are 300 lbs or less, and about four batches per hour can be prepared in each blender.

By switching from manual addition of ingredients to an automated system, the Wing Hing Noodle Co. has gained several advantages. It now buys flour at a lower cost since bulk deliveries by truck cost less than bagged flour. Fewer bags need to be handled, saving on labor. The plant itself is much cleaner because negative pressure in the vacuum tubes prevents product leakage. Most importantly, the system provides new levels of quality control, assuring a continuous flow of homogeneous product.



*Microprocessor-operated slide valves, shown at lower left, regulate proportions of each flour sent to sifter. Automated system makes extensive use of vacuum conveyors*