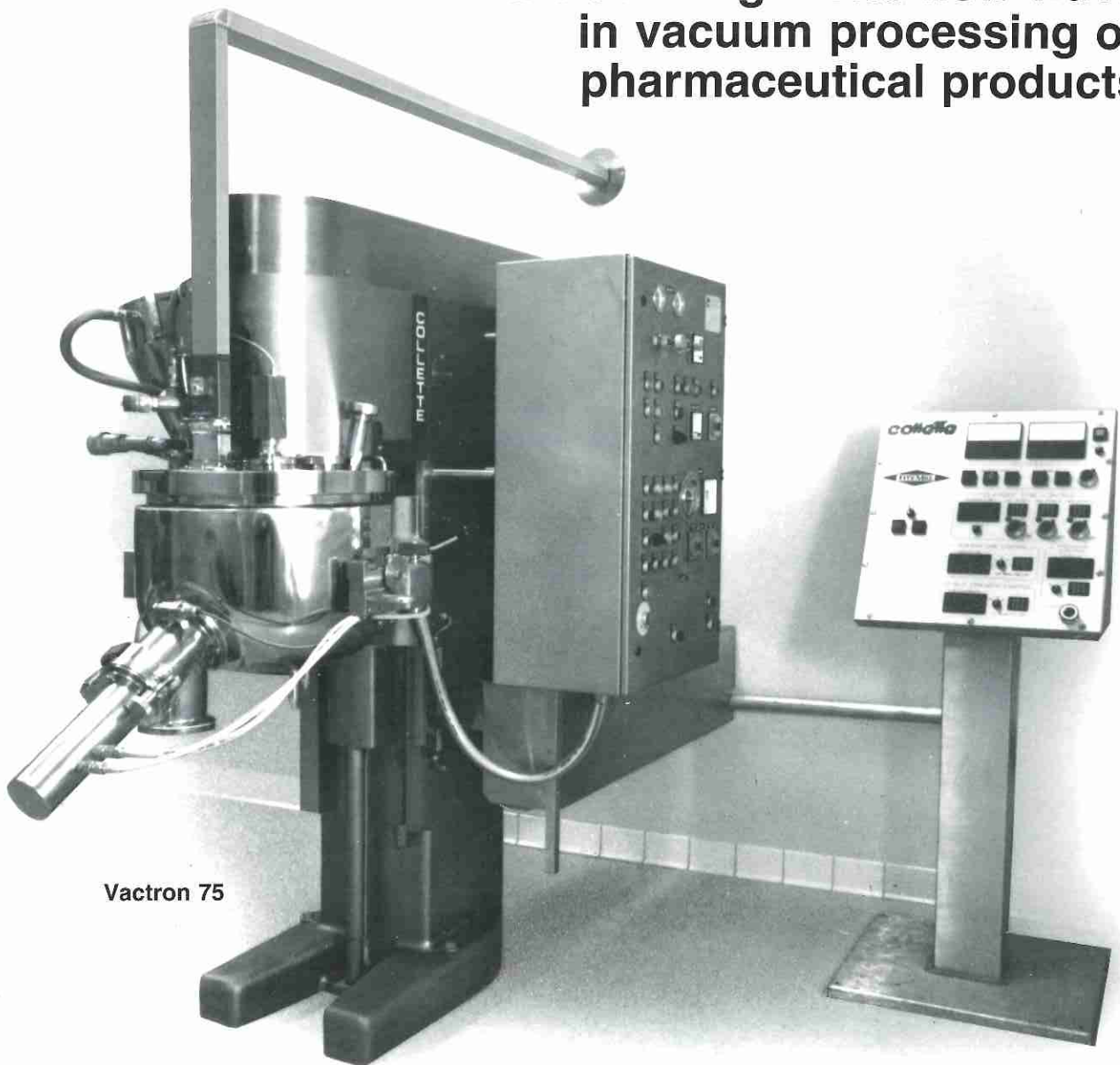


Introducing: The new wave  
in vacuum processing of  
pharmaceutical products



Vactron 75

## **VACTRON**

A new mixer-granulator with **microwave drying**,  
designed and constructed for the pharmaceutical industry.

MACHINES

**collette**



# VACTRON

## A Vacuum Processor with Microwave Drying and Solvent Recovery

The microwave vacuum drying process is a unique processing and drying technique which offers many advantages compared to more conventional processing. The MICROWAVE DRYING process is VACUUM DRYING using MICROWAVES as an additional energy source. Consequently, VACTRON incorporates the many advantages of the one step, or single vessel vacuum drying process.

Microwave/vacuum processing is the most suitable method for handling harmful and toxic products, especially when working with aqueous granulations. Other significant advantages of this process, which make the VACTRON a viable alternative over more conventional drying processes, such as fluid bed, include:

- GMP design facilitates thorough, verifiable cleaning.
- Quick turn-around.
- Automatic product loading with vacuum.
- Programmable operation.
- Controlled emissions.
- Operator safety.
- Efficient materials handling.
- Reproducible results.
- Easy installation.
- Space savings.
- Solvent recovery

Vacuum drying, although an attractive drying process, has always been limited to solvent type granulations or those with little water. This limitation is overcome in the VACTRON since, unlike conventional heating methods, microwaves travel freely through a vacuum and penetrate deeply into the moist product.

The effect of the addition of microwave energy on the drying time of a wet granulation is shown in Figure 1.

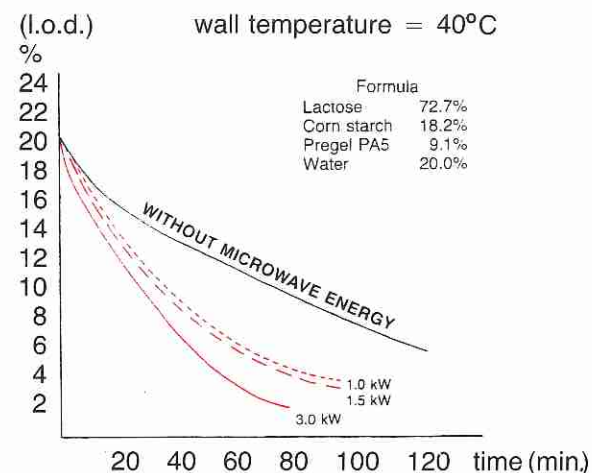
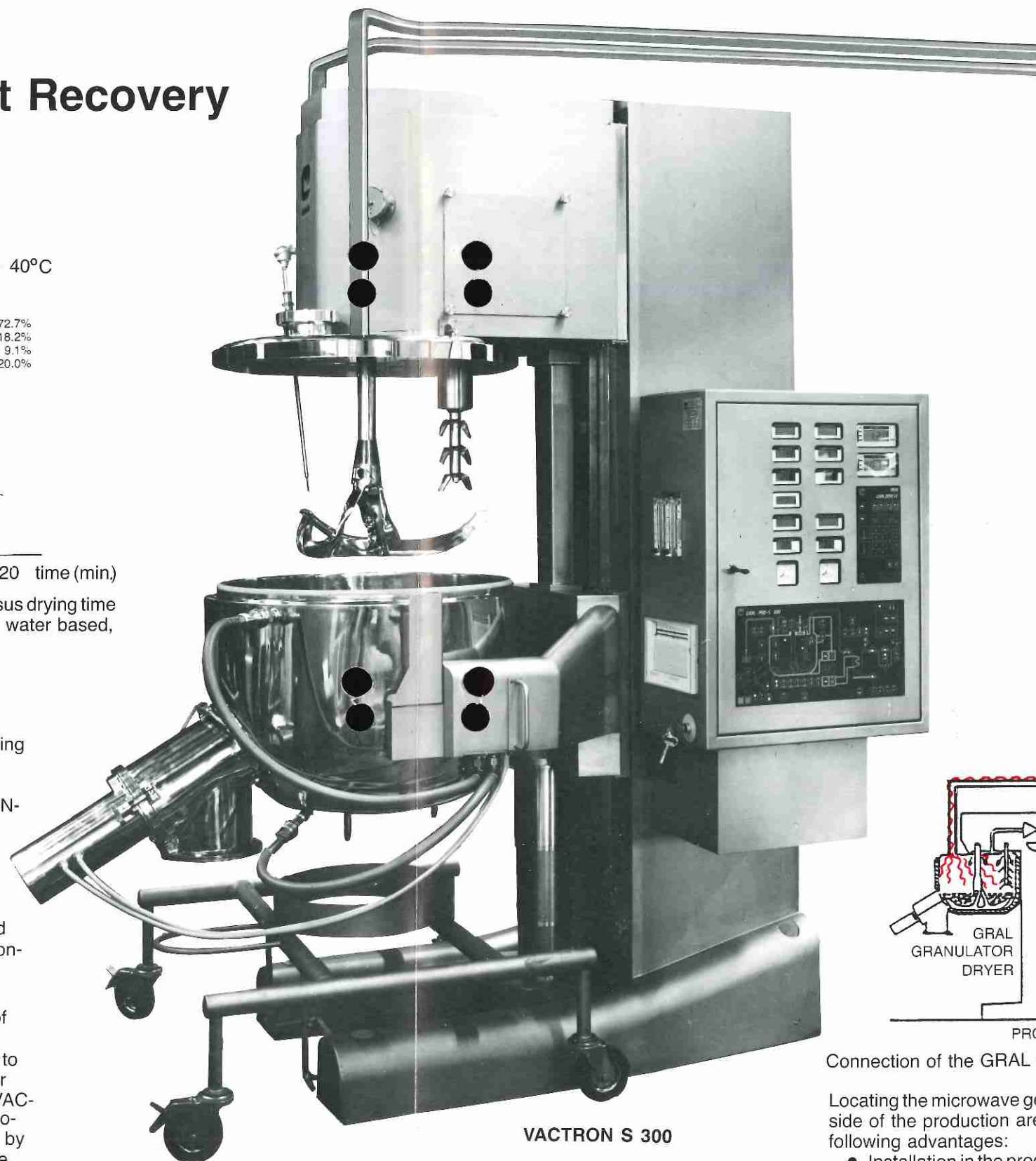


Figure 1: Loss on drying (l.o.d.) versus drying time and microwave energy input, of a water based, wet granulate.

A typical wet granulation process using VACTRON could be as follows:

1. Load the VACTRON bowl, dust free, by means of the VACTRON-FILLOMATIC Vacuum Loading System.
2. Two minutes of dry mixing to assure batch homogeneity.
3. Addition of granulation liquid while mixing, using optional End Point Detection and Computer Control. (GRALOMATIC and MINI-GRALOMATIC System)
4. Drying of the batch by means of Vacuum, using both hot wall energy and Microwave Energy to vaporize the liquid. Water and/or solvent are condensed in the VACTRON Condenser. The drying process is automatically controlled by a Microprocessor monitoring the E-field (unabsorbed energy) and product temperature.\*



VACTRON S 300

5. After drying, the lubricants are added to the batch, again by means of the automated FILLOMATIC Vacuum Loading System.
6. The batch is unloaded into a product container (or sized through a screening unit, if necessary).

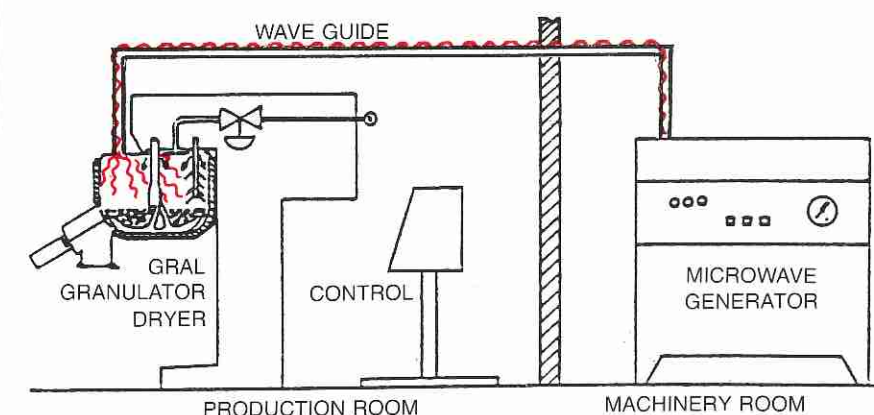
\*NOTE: Microwave controls designed by THE FITZPATRICK COMPANY, Elmhurst, IL, U.S.A.

### INSTALLATION OF VACTRON IN THE PRODUCTION AREA.

The production area is to be divided into a Production Room and a Machinery Room.

Only the GRAL-GRANULATOR-DRYER and condenser are installed in the production room. The microwave generator, vacuum pump, chiller, heating group and electrical cabinet are installed in the machinery room. Microwaves are directed from the generator to the bowl by means of Wave Guides.

Figure 2 shows a typical VACTRON installation layout:



Connection of the GRAL GRANULATOR DRYER to the Microwave Generator.

Locating the microwave generator outside of the production area offers the following advantages:

- Installation in the production room is simple and compact.
- The high voltage microwave

generator is remote from the operator and the production area.

- It is possible to retrofit the microwave equipment and controls to existing GRAL PROCESSORS.



## TECHNICAL DATA

VACTRON	VACTRON 75	VACTRON 300	VACTRON 600	VACTRON 1200
Gross capacity	75 L	300 L	600 L	1200 L
Net capacity	50 L max.	200 L max.	400 L max.	800 L max.
Mixer blade speed	Variable	Variable	Variable	Variable
Chopper speed:	1500 & 3000 rpm	1500 & 3000 rpm	1500 & 3000 rpm	1200 & 2400 rpm
Jacket heating cap.	9 kW	18 kW	20 kW	24 kW
Microwave frequency	2450 MHz	2450 MHz	2450 MHz	2450 MHz
Microwave heating cap.	5 kW	12 kW	24 kW	36 kW

We are constantly endeavoring to improve our products. Therefore, models and specifications are subject to change without notice.

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