

# A new flexible and gentle steam sterilization system for herbs and spices by “REVTECH”

REVTECH company in France has developed a new highly efficient **continuous steam sterilization system** ideally adapted to aromatic herbs and spices. The process is based on the use of an electrically heated stainless steel tube through which products flow by vibration. Steam is injected into the tube in order to decontaminate the product.

The industrial process uses much less steam than competing technology with as a result a **significantly improved product quality**. Steam is produced at atmospheric pressure in a REVTECH boiler that requires only simple maintenance and presents no security risks. Typical steam consumption is well under 80kg/h for a product flow rate of 1500kg/h and final decontamination levels well **under 10<sup>4</sup> germs/g**.

	Total plate count		Enterobacteria		Yeasts & molds	
	Before	After	Before	After	Before	After
<b>Black pepper</b>	1 10 <sup>7</sup>	500	1 10 <sup>4</sup>	<10	1 10 <sup>4</sup>	<10
<b>Cumin</b>	1.9 10 <sup>6</sup>	5 10 <sup>3</sup>	1.7 10 <sup>4</sup>	<10	3 10 <sup>3</sup>	<10
<b>Coriander</b>	1.4 10 <sup>5</sup>	570	2.7 10 <sup>3</sup>	<10	2 10 <sup>3</sup>	<10
<b>Marjoram</b>	4.9 10 <sup>6</sup>	380	-	-	1.5 10 <sup>3</sup>	<10
<b>Oregano</b>	2.6 10 <sup>5</sup>	350	4.5 10 <sup>3</sup>	<10	2 10 <sup>3</sup>	<10
<b>Parsley</b>	2.2 10 <sup>5</sup>	80	5.5 10 <sup>3</sup>	<10	4 10 <sup>2</sup>	<10



*DUCROS industrial units : 1300kg/h of black pepper*

Revtech produces a range of **complete autonomous steam sterilization units between 300 kg/h and 2000 kg/h**. Each unit is supplied with all necessary auxiliary equipment such as boilers, cooling and filtration equipment, hoppers, feeders etc. and requires only an electrical connection and a water supply. Overall power consumption is **between 60 W/kg and 100 W/kg**. Each unit is completely assembled and tested in our French plant before being shipped to our customers.

Robust and efficient design means that **maintenance costs are negligible** when compared to competing technology. No complicated or dangerous operations are required to keep the unit running 24 hours per day 365 days per year.

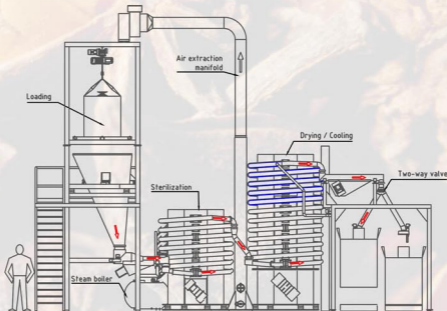
**Ducros**, the major French herb and spice distributor uses a complete steam sterilization system designed and built by REVTECH. Ducros, now a subsidiary of the **McCormick** group, made the ambitious gamble to invest in the innovative RÈVE process over five years ago when concerns first arose about the future in Europe of processes involving radiation. The industrial unit installed includes two REVE devices for the sterilization under superheated steam, and the drying and cooling to ambient temperature of a wide range of spices and aromatic herbs.

The drying and cooling section of the REVTECH system allows rapid and efficient stabilization when compared to competing technologies. Dry air is used at atmospheric pressure, eliminating variations due to climatic conditions, while the amount of drying required is significantly lower due to the small amounts of steam used for sterilization. The final cooling step uses a double shell system with a water/ethylene glycol mix to obtain consistent quality.



*FENIOUX industrial units :  
250kg/h of medicinal plants*

*Process diagram for typical steam sterilization unit*



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