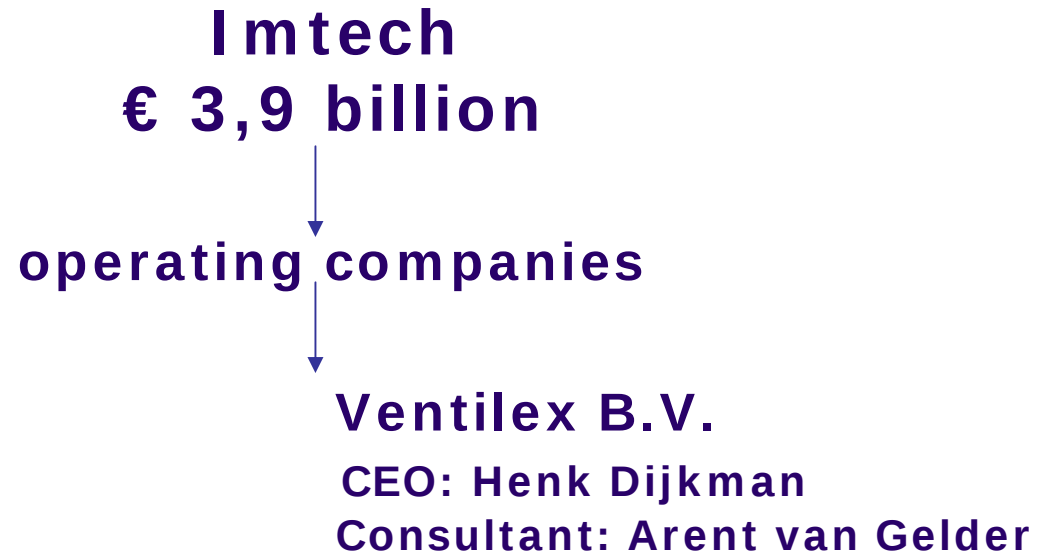
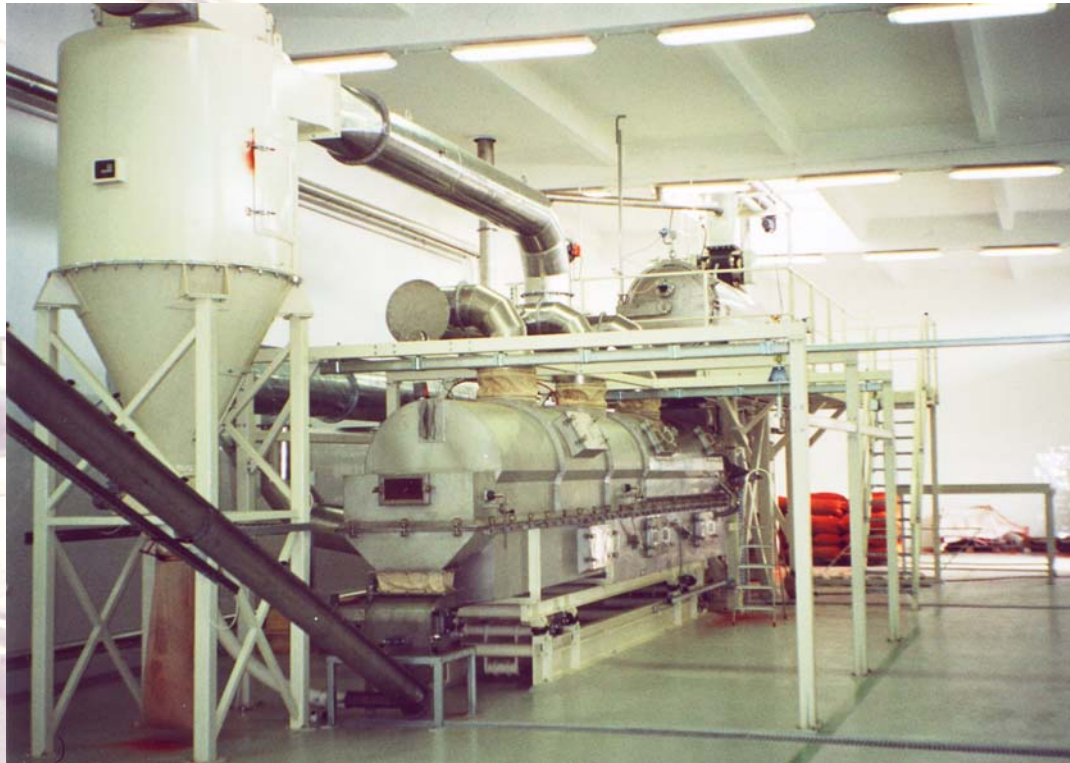
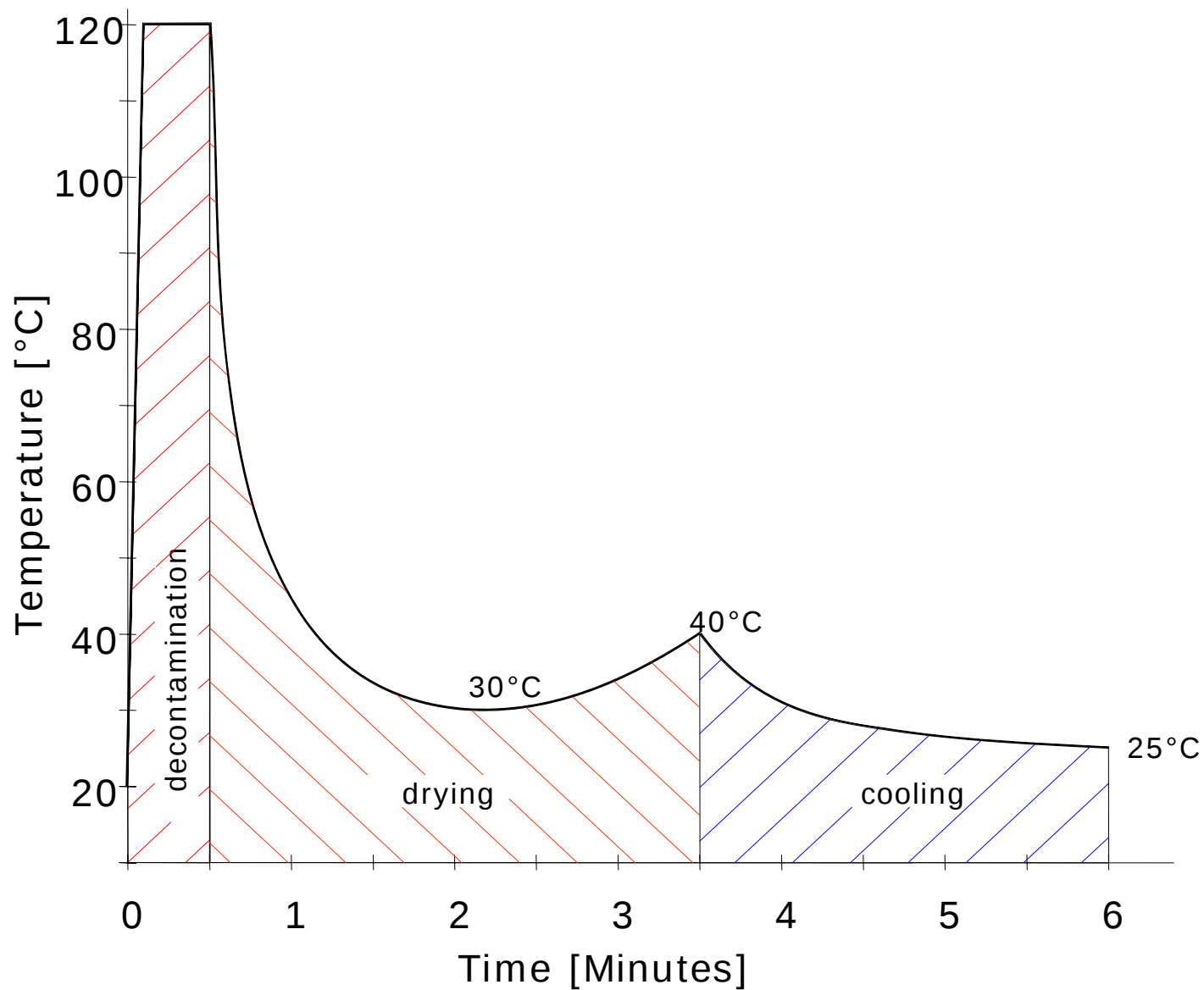


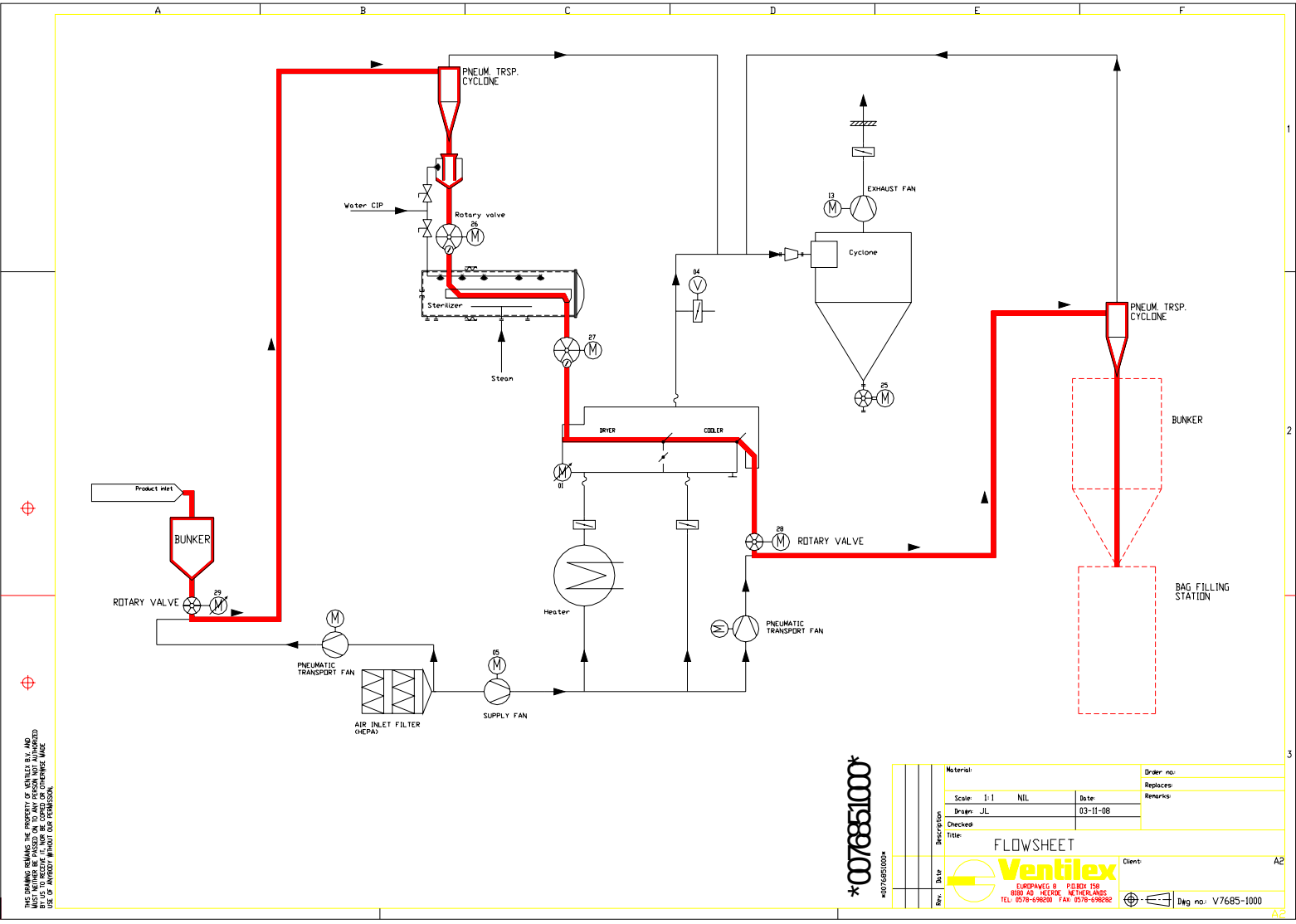


“Food Safety versus Food Quality”
“Innovation in natural decontamination”

Ventilex B.V.



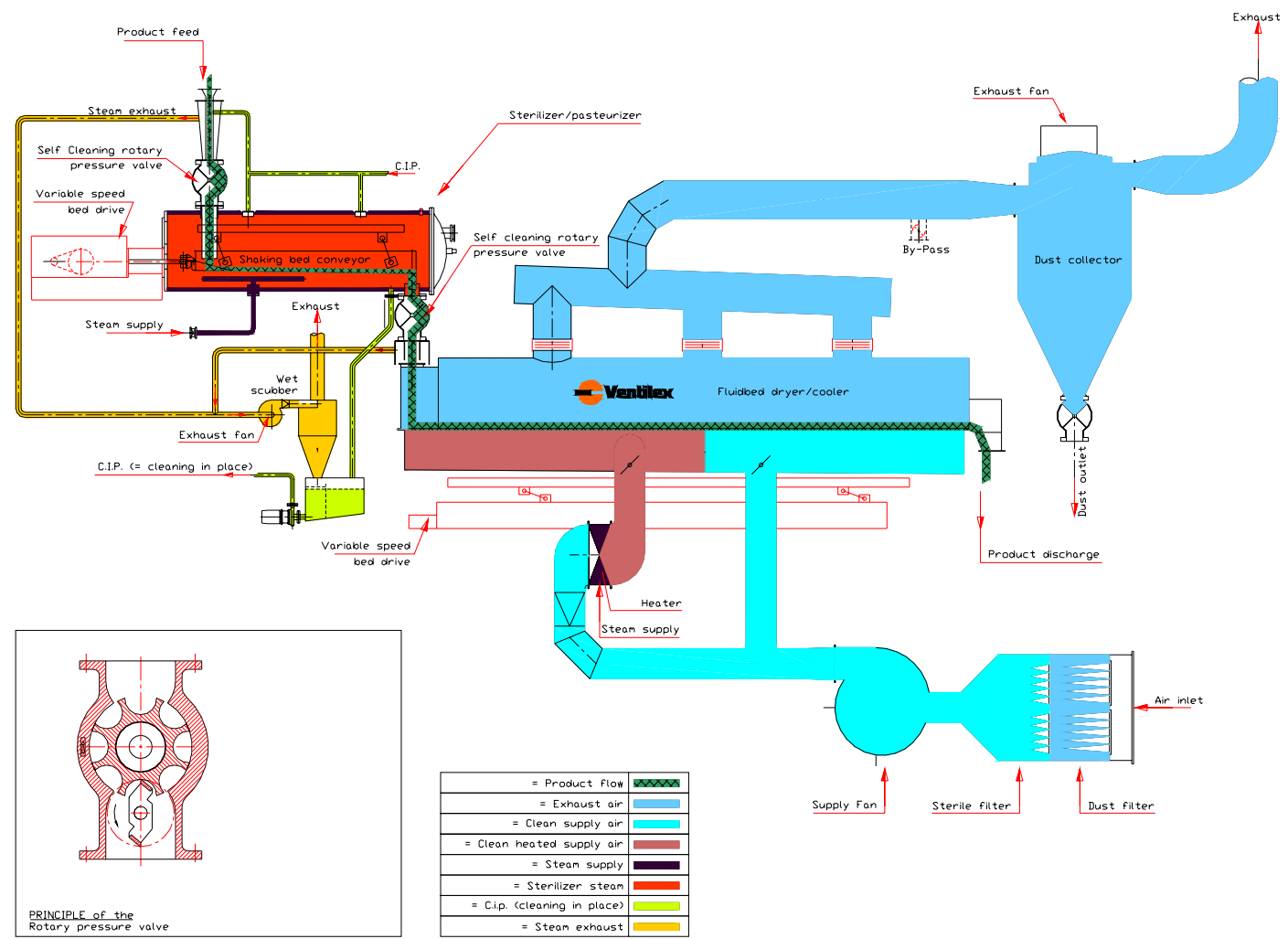




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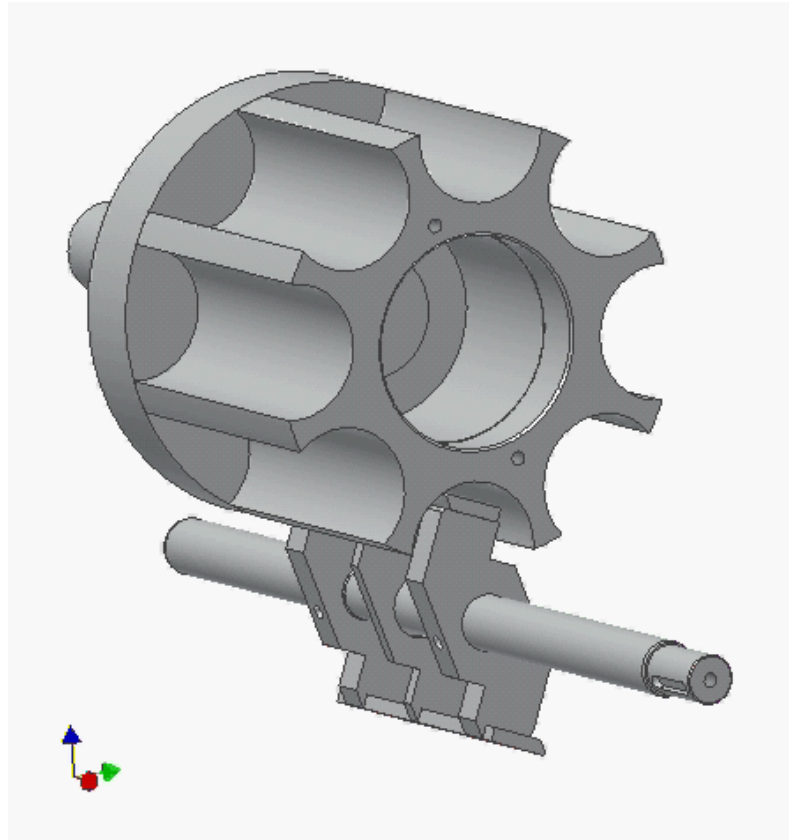
0076851000
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Rev.	Date	Description	Material:		Order no:	
			Scale: 1:1 NIL		Replaces:	
			Drawn: JL		Remarks:	
			Checked:		Date: 03-11-08	
Title: FLOWSHEET			Client:			
Ventilex			A2			
EUROPAWEG 8 P.O. BOX 158 8180 AD HEERLE NETHERLANDS TEL: 0376-696200 FAX: 0376-696202			Dwg no.: V7685-1000			

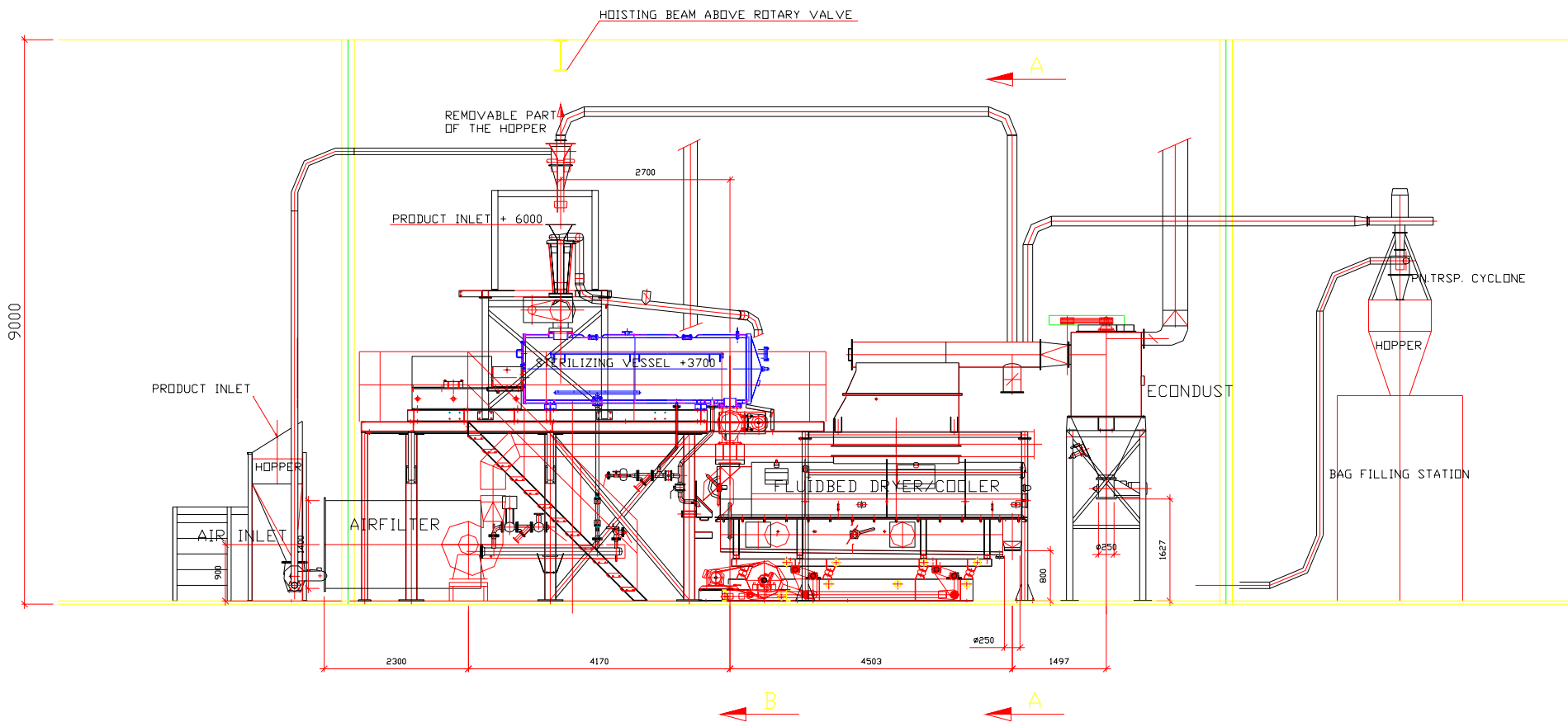


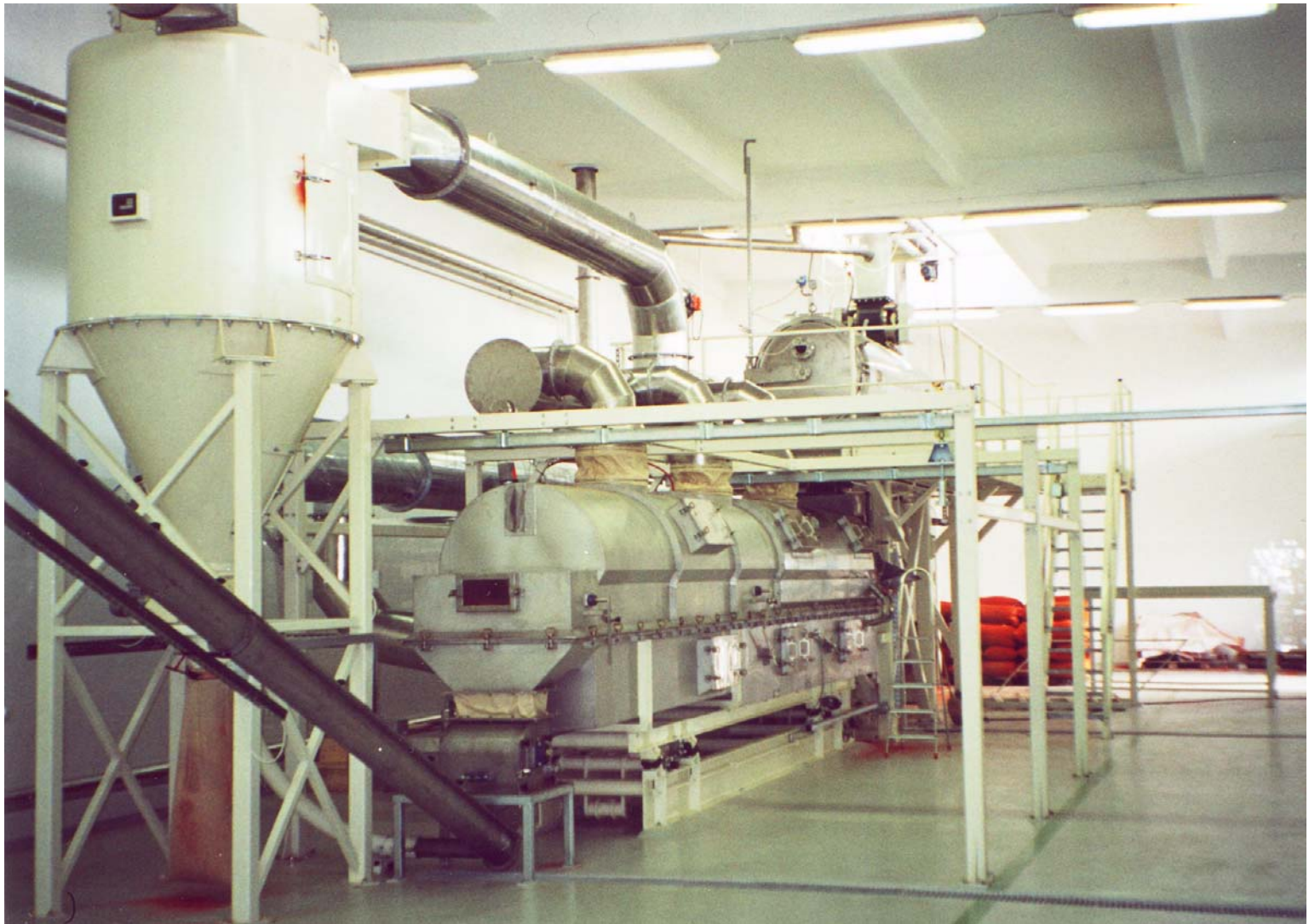
Continuous Decontamination System
for Spices, Seeds and Herbs

Rotating steam valve – high pressure

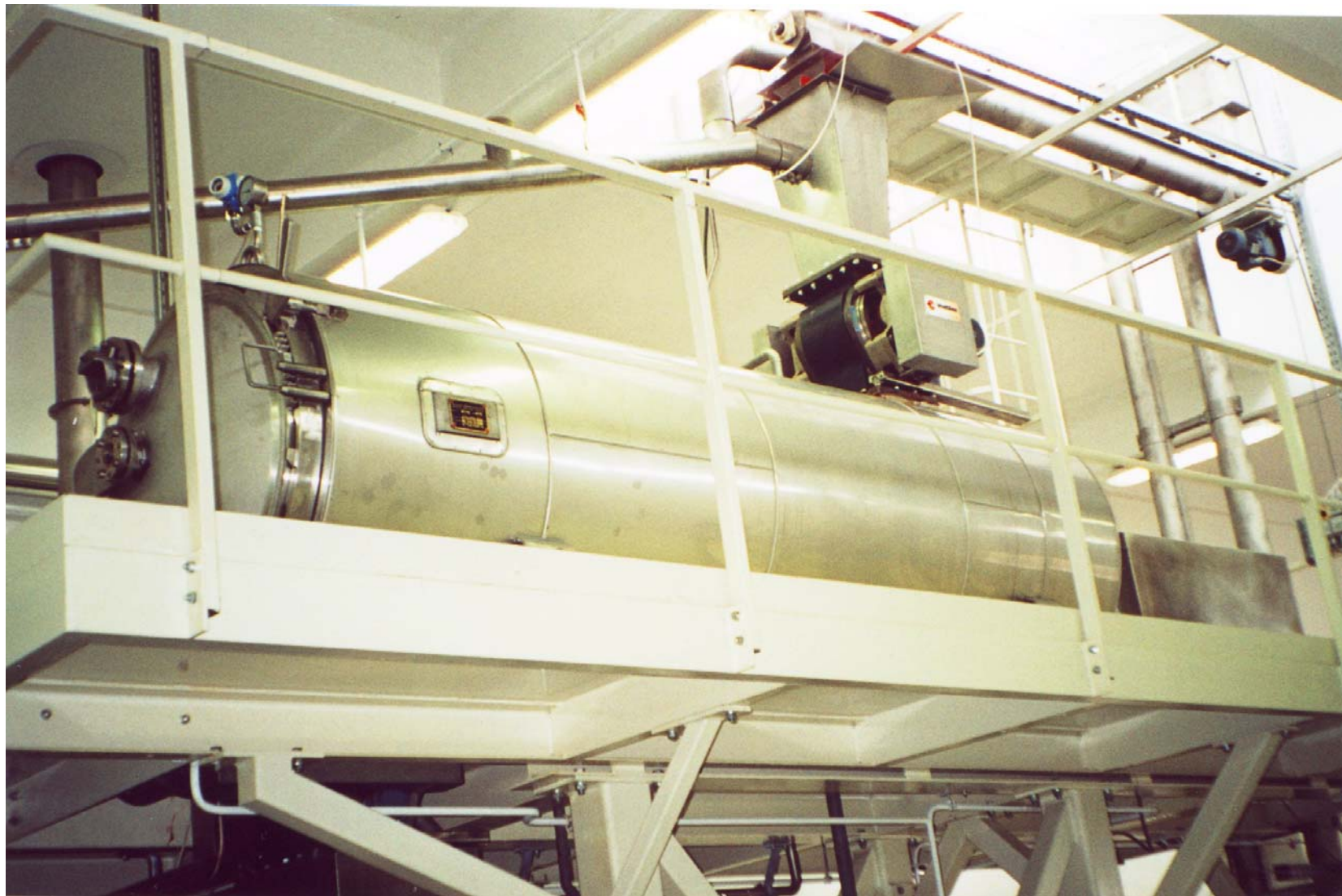


Principle rotary valve



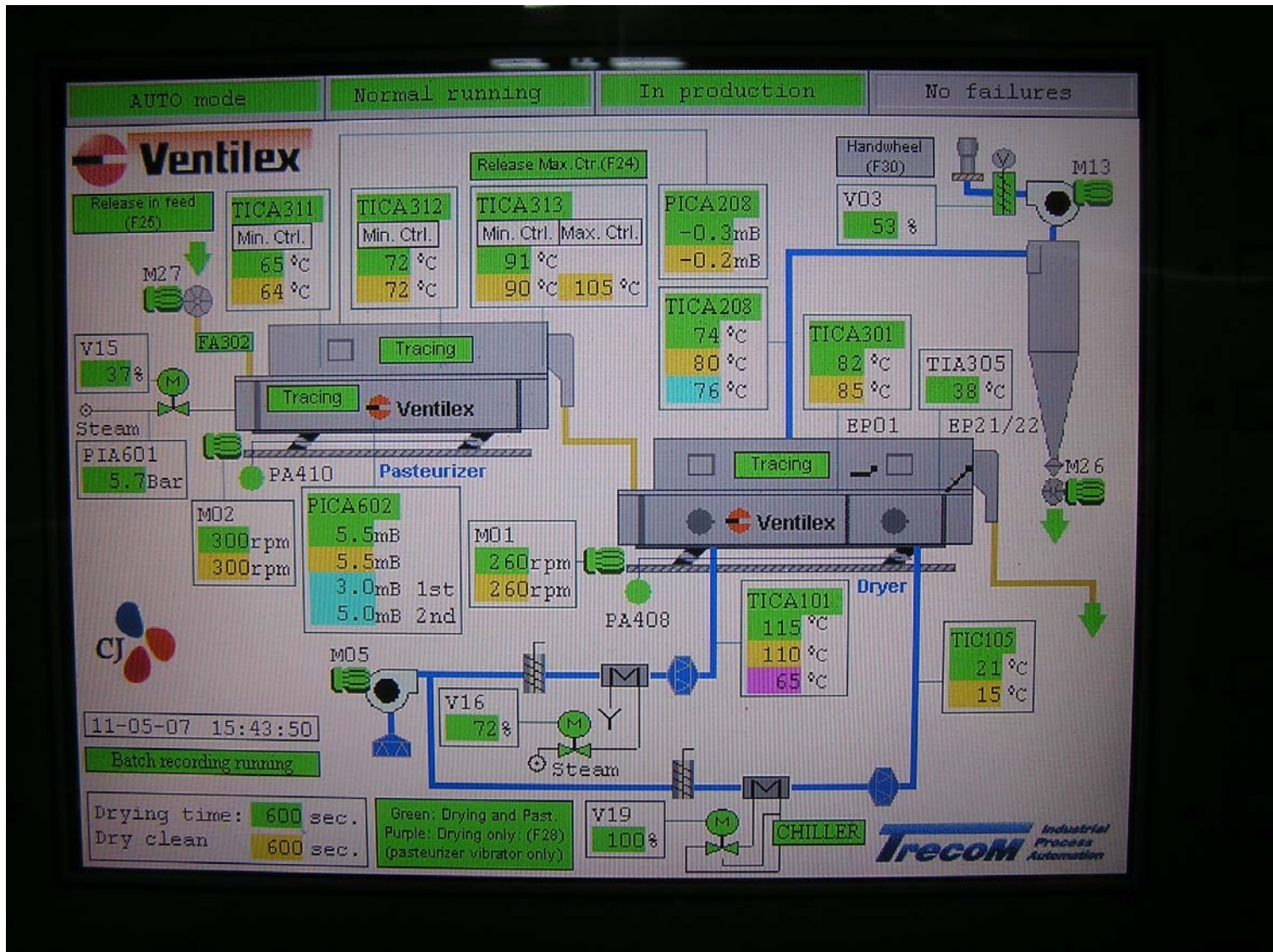


Decontamination plant

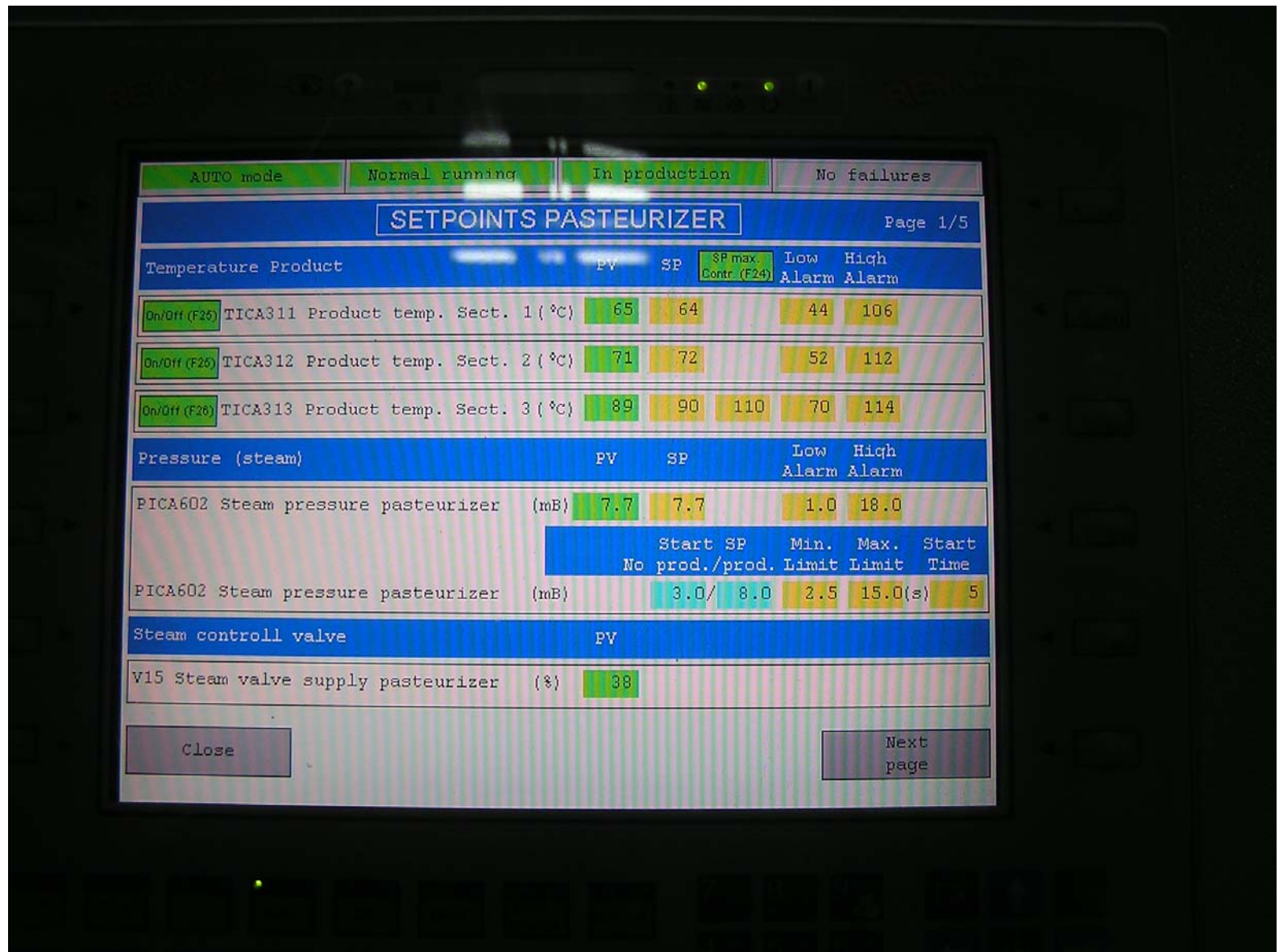


Sterilizer with product inlet valve

Control panel



Operator panel



General quarantees for microbiological quality of products treated in a Ventilex continuous decontamination plant for spices and herbs.

- Total count: less than 100.000 and often less than 10.000 or 1.000
- Enterbacteria: less than 10 gram
- Salmonella: absent in 50 gram
- Molds and yeast: less than 100/gram
- Bacterie spores:
 - bacillus cereus < 100/gram
 - clostridium perfringens < 100/gram
 - stafylococcus aureus < 100/gram
- Enzymactivity: peroxydase negative or very light positive

Publication by Ventilex customer

Product	Total Count		Entero's		Molds		Yeasts	
	untreated	treated	untreated	treated	untreated	treated	untreated	treated
whole black pepper	6.000.000	40.000	100.000	<10	20.000	<100	80.000	<100
whole white pepper	70.000	500	500	<10	40.000	<100	500	<100
ground coriander	800.000	6.000	30.000	<10	10.000	<100	2.000	<100
oregano	100.000	4.000	5.000	<10	8.000	<100	1.000	<100
parseley	5.000.000	20.000	70.000	<10	50.000	<100	100	<100
paprika	3.000.000	20.000	7.000	<10	100.000	<100	<100	<100
curry	10.000.000	30.000	200.000	<10	100.000	<100	<100	<100
nut meg	600.000	40.000	10.000	<10	10.000	<100	<100	<100
basilicum	10.000.000	500	20.000	<10	20.000	<100	<100	<100

Product	T.P.C. mesophile aerobic bacteria cfu / gr	Yeast cfu / gr	Mould cfu / gr	Enterobacteria cfu / gr	Aerobe spores cfu / gr	Bacillus cereus cfu / gr	Color (ASTA-units)	Volatile oil ml / 100gr
Sweet paprika <i>before</i> treatment	1.300.000	400	200	7.000	1.300.000	10.000	95	Not tested
Sweet paprika <i>after</i> treatment	1.000	n.d.	n.d.	n.d.	1.000	< 100	93	Not tested
Maggiplant (lavas) pieces, <i>before</i> treatment	14.000.000	2.800	400	480.000	10.000.000	Not applicable	Not applicable	0,7
Maggiplant (lavas) pieces, <i>after</i> treatment	< 100	< 100	< 100	< 100	< 100	Not applicable	Not applicable	0,7
Cut rosemary, <i>before</i> treatment	360.000	1.000	20.000	56.000	280.000	Not applicable	Not applicable	2,0
Cut rosemary, <i>after</i> treatment	< 100	n.d.	n.d.	n.d.	n.d.	Not applicable	Not applicable	1,5

product	TPC (cfu/gram)		V.O. / ASTA	
	before treatment	after treatment	before treatment	after treatment
basil	440.000	40.000	V.O. 0,96	V.O. 0,9
marjoram	500.000	5.000	V.O. 1,96	V.O. 1,8
black pepper	3.800.000	50	V.O. 4,00	V.O. 3,97
flax seeds	100.000	2.500		
ground pepper	10.000.000	47.000	V.O. 2,5	V.O. 1,8
onion flakes	10.000	3.000		
paprika ground	800.000	390	ASTA 76	ASTA 74
coriander	2.500.000	<10		
flax seed	170.000	780		
psyllium powder	9.300	<50		
psyllium husk	620	<10		
caraway seed	260.000	70		
garlic flakes	1.800	170		
paprika ground	1.300.000	1.000	ASTA 95	ASTA 93

Cost of installation

4,5 m ³ / hr	€ 775.000,--	€ 875.000,--
(up to 2500 kg / hr)		

2,5 m ³ / hr	€ 650.000,--	€ 725.000,--
(up to 1200 kg / hr)		

Cost of operation (variable costs)

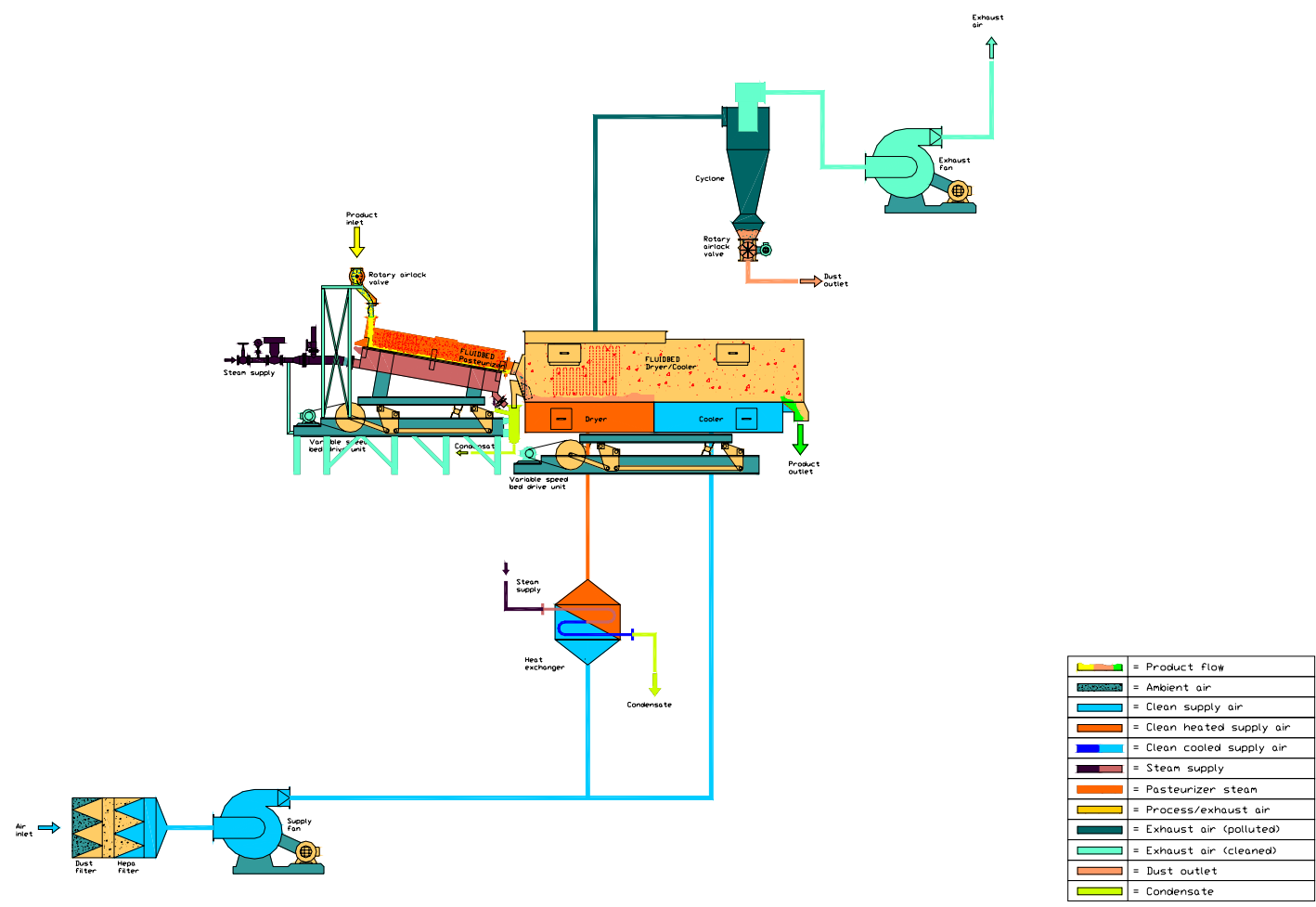
e.g. for 2500 kg black pepper berries per hour:

steam per hour	450 kg	€ 6,--
electric power consumption per hour	40 kWh	€ 350,--
labour – one person / operator		€ 20,-- / hr
maintenance (4000 production hours/year)		€ 14.000 / year
maintenance per hour		€ 350,-- / hr
processing costs for pepper		€ 33,00 / hr
		€ 0,014 / kg

Remark:

the costs per kg of product will depend on bulk density.

Costs for processing chilli powder are € 0,03 / kg



Principle Scheme
Pasteurisation Unit

Pasteurizer 11T/hr



Dryer Cooler





Continuous steam pasteurizer in China for the decontamination of onion flakes and garlic flakes.

References

CLIENT	COUNTRY	NUMBER	PRODUCT
Euroma B.V.	Holland	1	spices & herbs
A.V.T. McCormick	India	1	spices & herbs
Gyma	France	1	spices & herbs
P.B.P.-Son Ha Spices	Vietnam	1	spices & herbs
Spice Tec	U.S.A.	1	spices & herbs
S&B Foods	Japan	1	spices & herbs
House Food	Japan	1	curry powder
Pepper Marketing Board	Sarawak	1	pepper
Kräuter Mix	Germany	1	spices & herbs
Kalocsa Spice Paprika Co.	Hungary	1	paprika & spices
Ned Spice	Vietnam	1	pepper & spices
Ottogi Corporation	Korea	1	spices & herbs
Kamis Przyprawy S.A.	Poland	1	spices & herbs
Fuchs Agro Brasil	Brasil	1	paprika powder
California Nut Co.	USA	1	almonds
Paramount	USA	1	almonds
Sanfilippo, John B.	USA	1	almonds
CRM	USA	1	seeds
Linwood Bakery and Dairy	N. Ireland	1	organic seeds
Eastern Condiments Ltd.	India	1	spices & herbs
C.J. Foods Co. Ltd.	China	1	dried vegetables
Tomi Herb Ltd.	Bulgaria	1	farmaceutical herbs
Olam International Ltd.	Vietnam	1	spices

