AMUT

presents

the

Recovery of PET bottles :

TECHNOLOGICAL

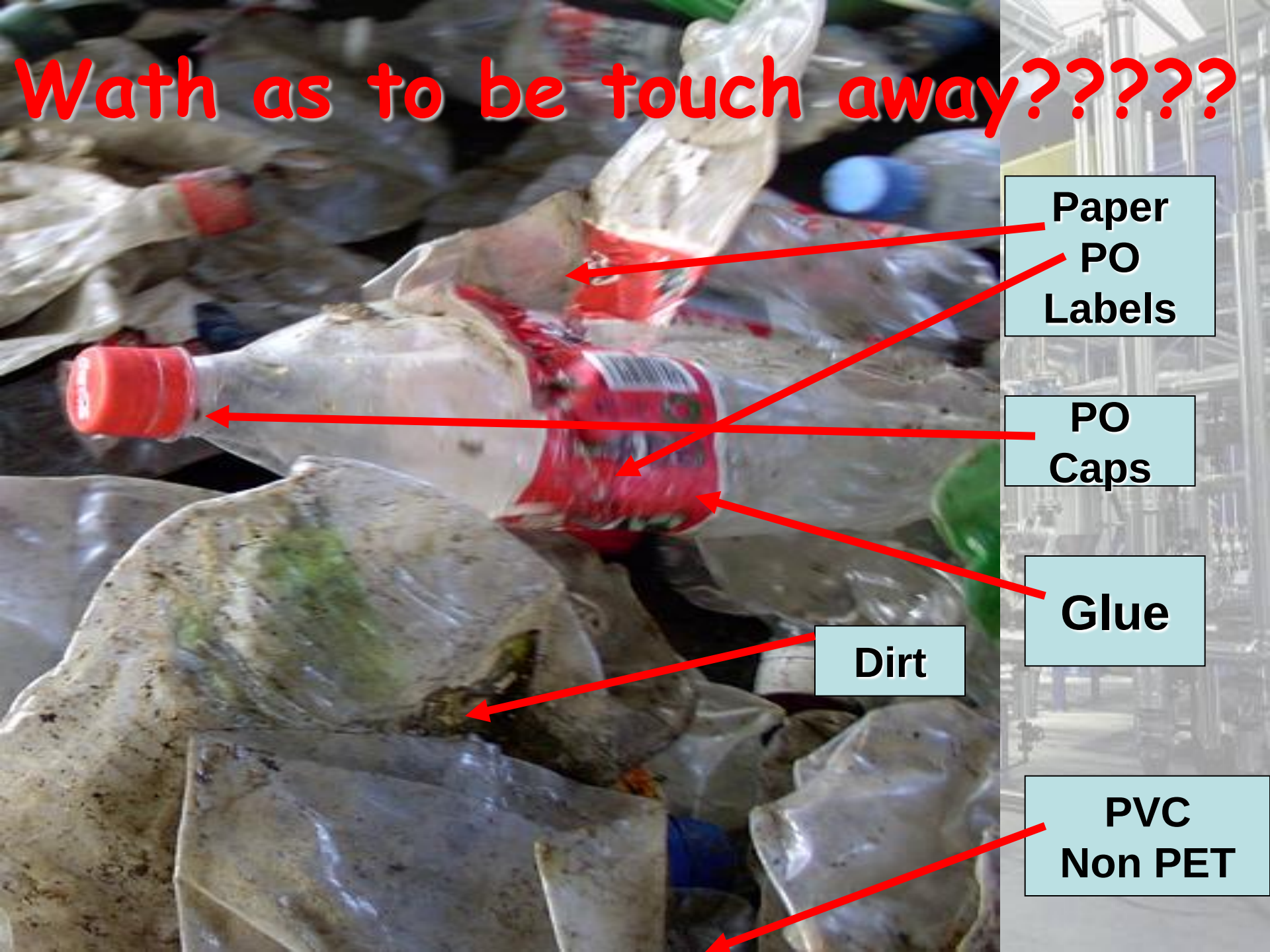
QUALITATIVE

ECONOMICAL

HYGIENIC

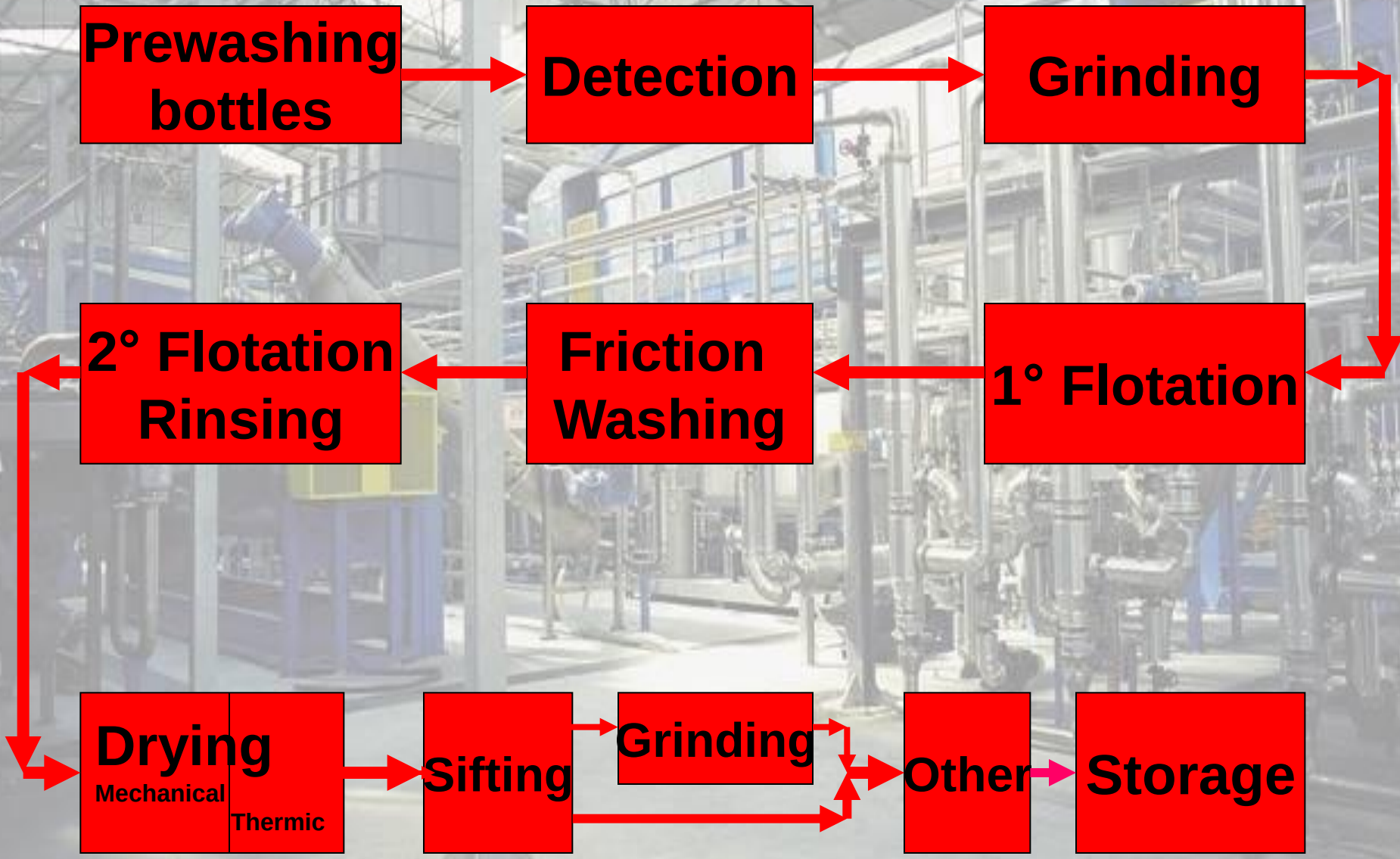
ECOLOGICAL

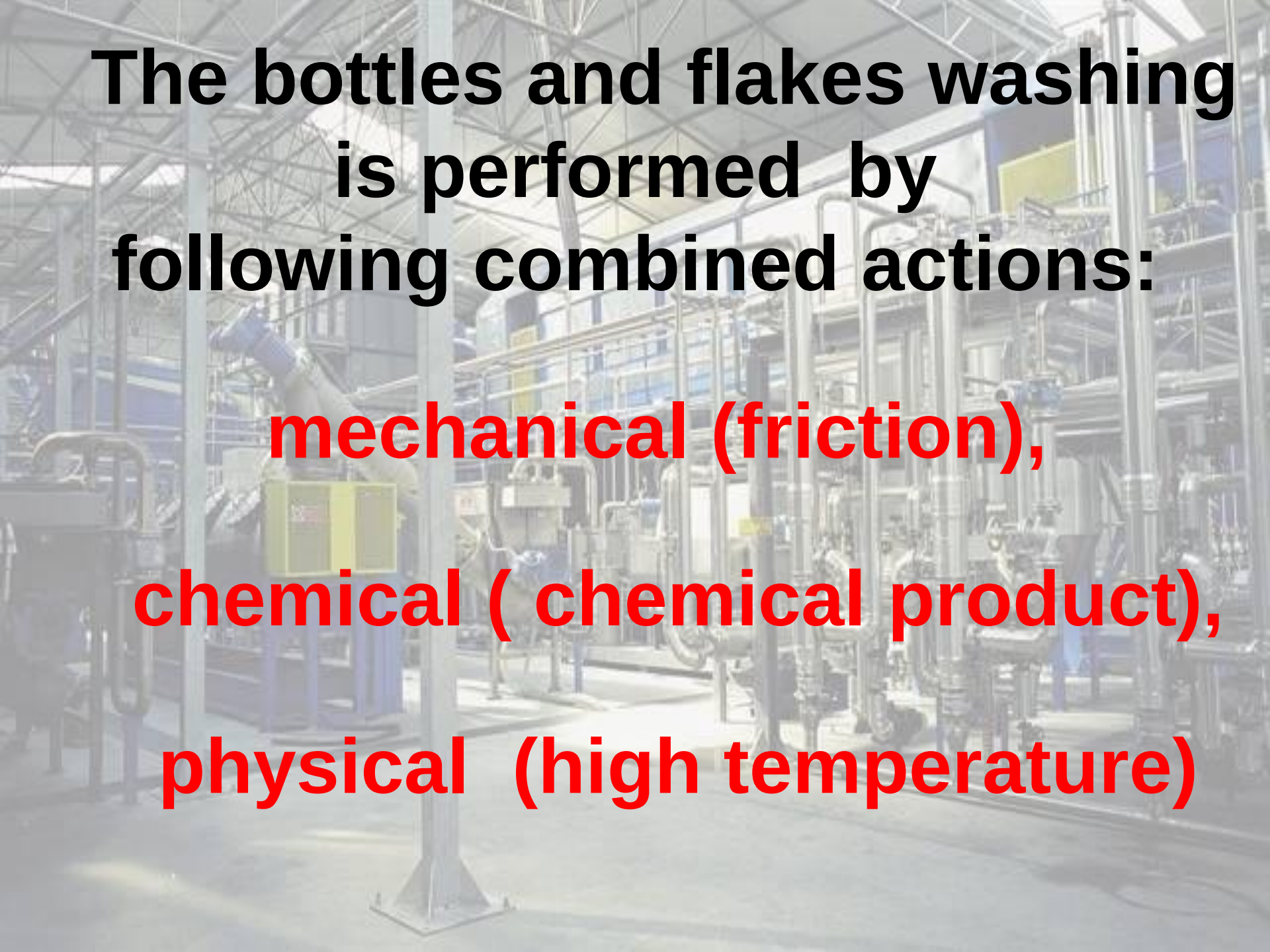

AMUT S. p.A. presents
the
Recovery of PET bottles
TECHNOLOGICAL


Wath as to be touch away?????
Paper
PO
Labels
PO
Caps
Glue
Dirt
PVC
Non PET

After accurate study
of physics and chemistry
of the washing process,
AMUT
has setup a
recycling system
tested in various plants.

Washing Process – Flow-sheet -





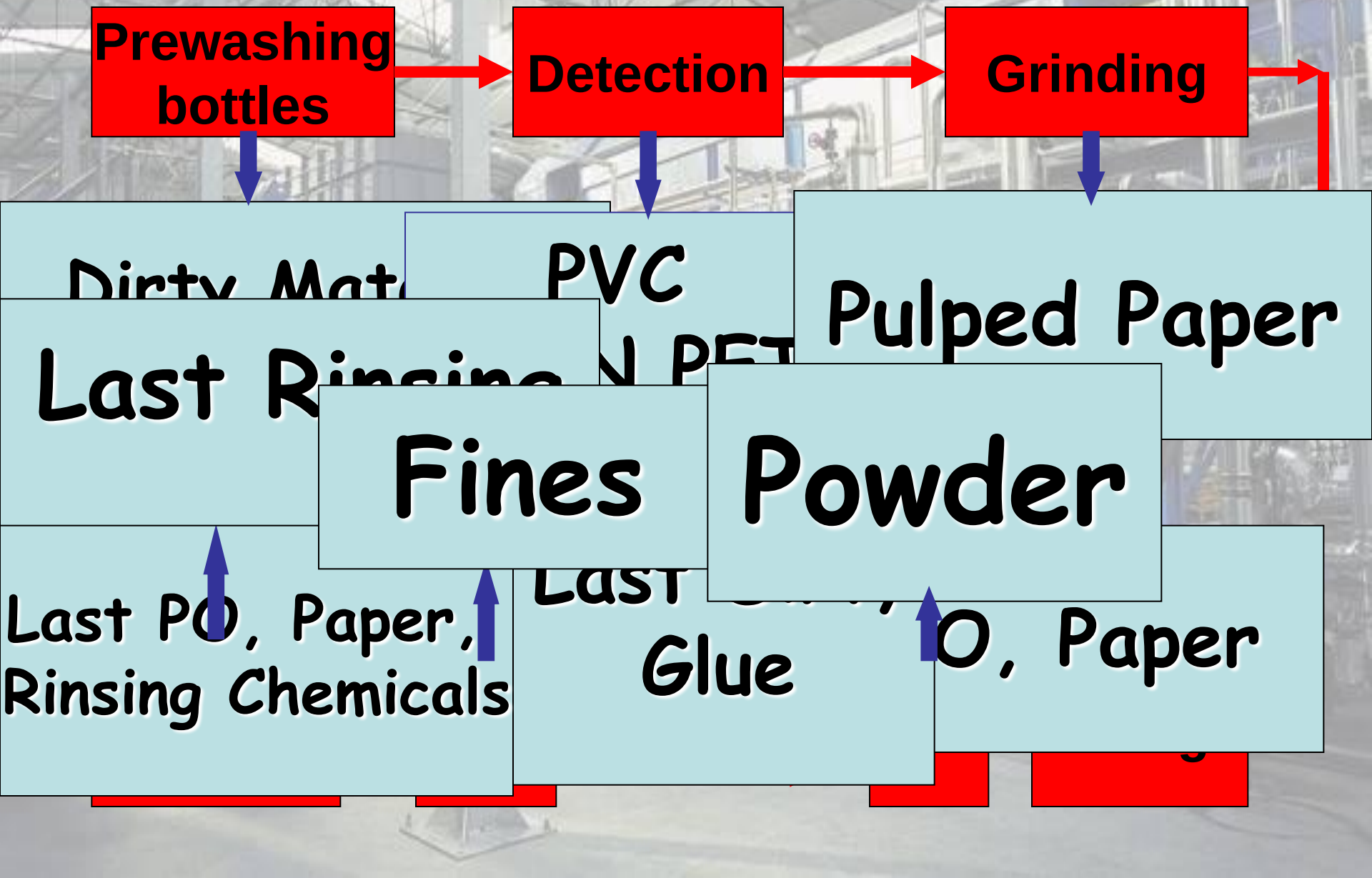
The bottles and flakes washing is performed by following combined actions:

mechanical (friction),

chemical (chemical product),

physical (high temperature)

Washing Process – Flow-sheet -

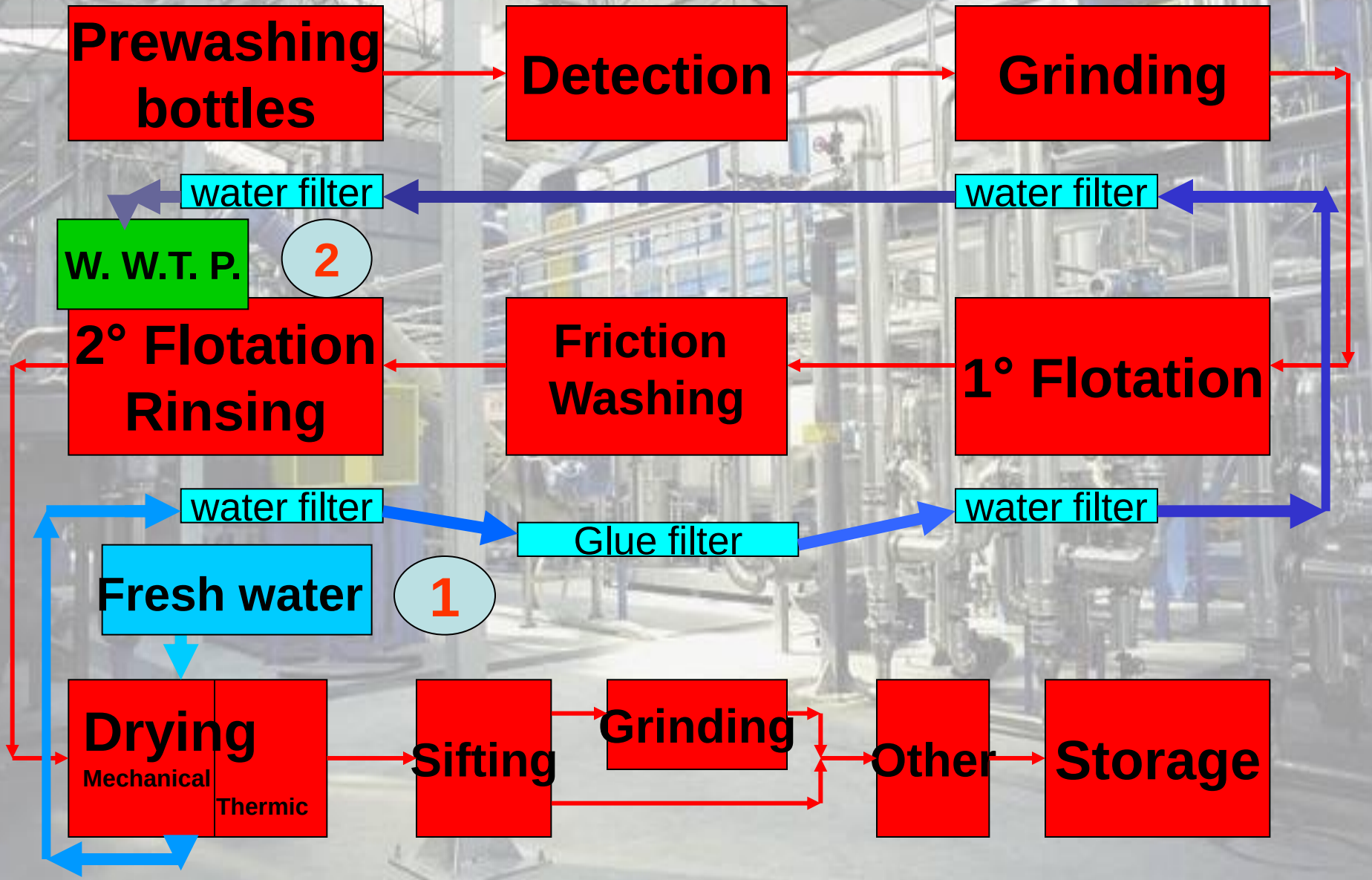


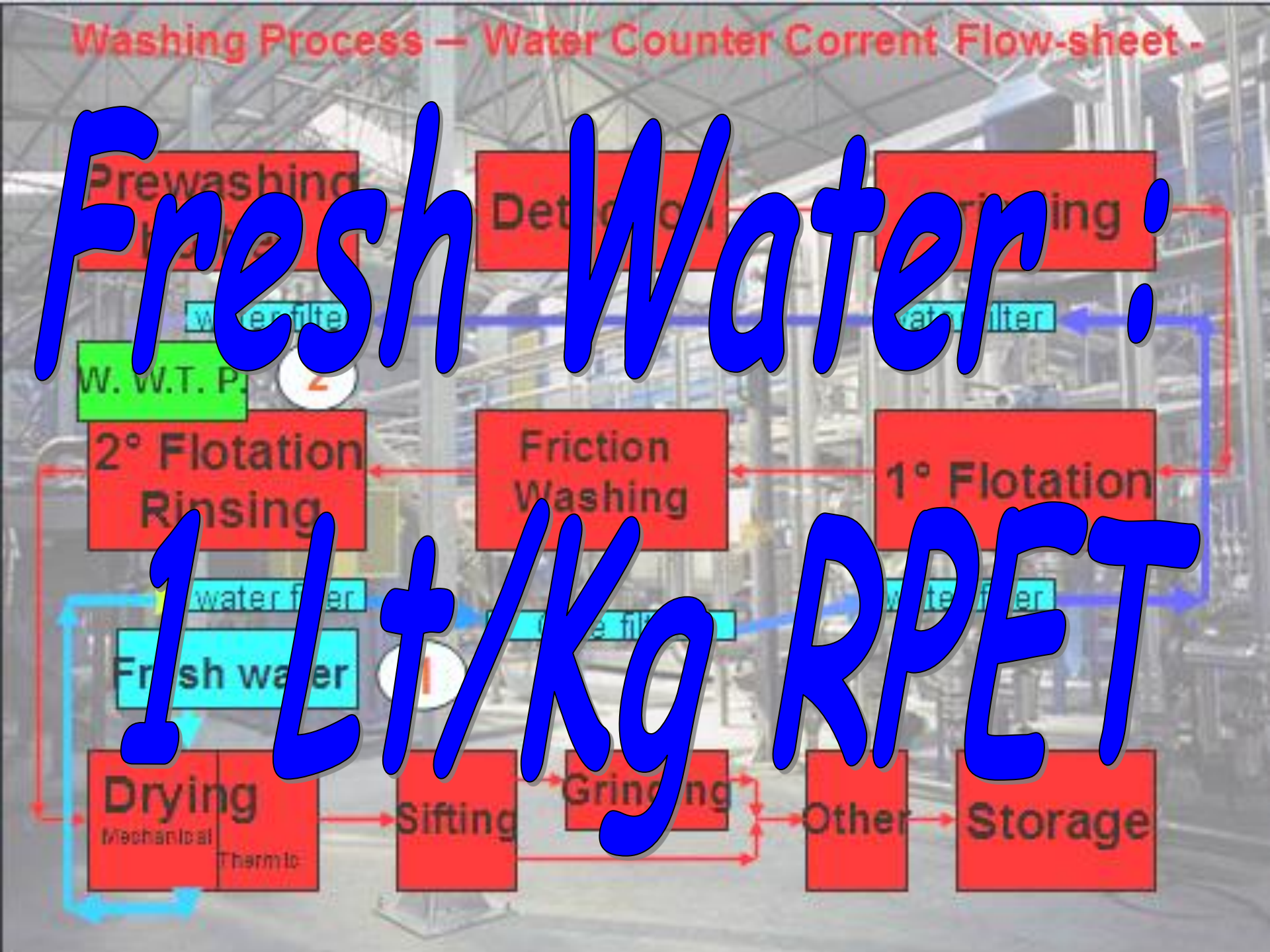
The continuous Recycling of the Process Water though Filter is made in all Washing Steps.


Washing Process – Process Water Flow-sheet -
N. 5 Washing Steps
N. 2 Heating Points
N. 4 Rinsing Steps
Rewashing bottles
1
Detection
Grinding
2
water filter
2° Flotation Rinsing
5
Friction Washing
4
1° Flotation
3
water filter
water filter
Glue filter
Drying
Mechanical
Thermic
Sifting
Grinding
Other
Storage

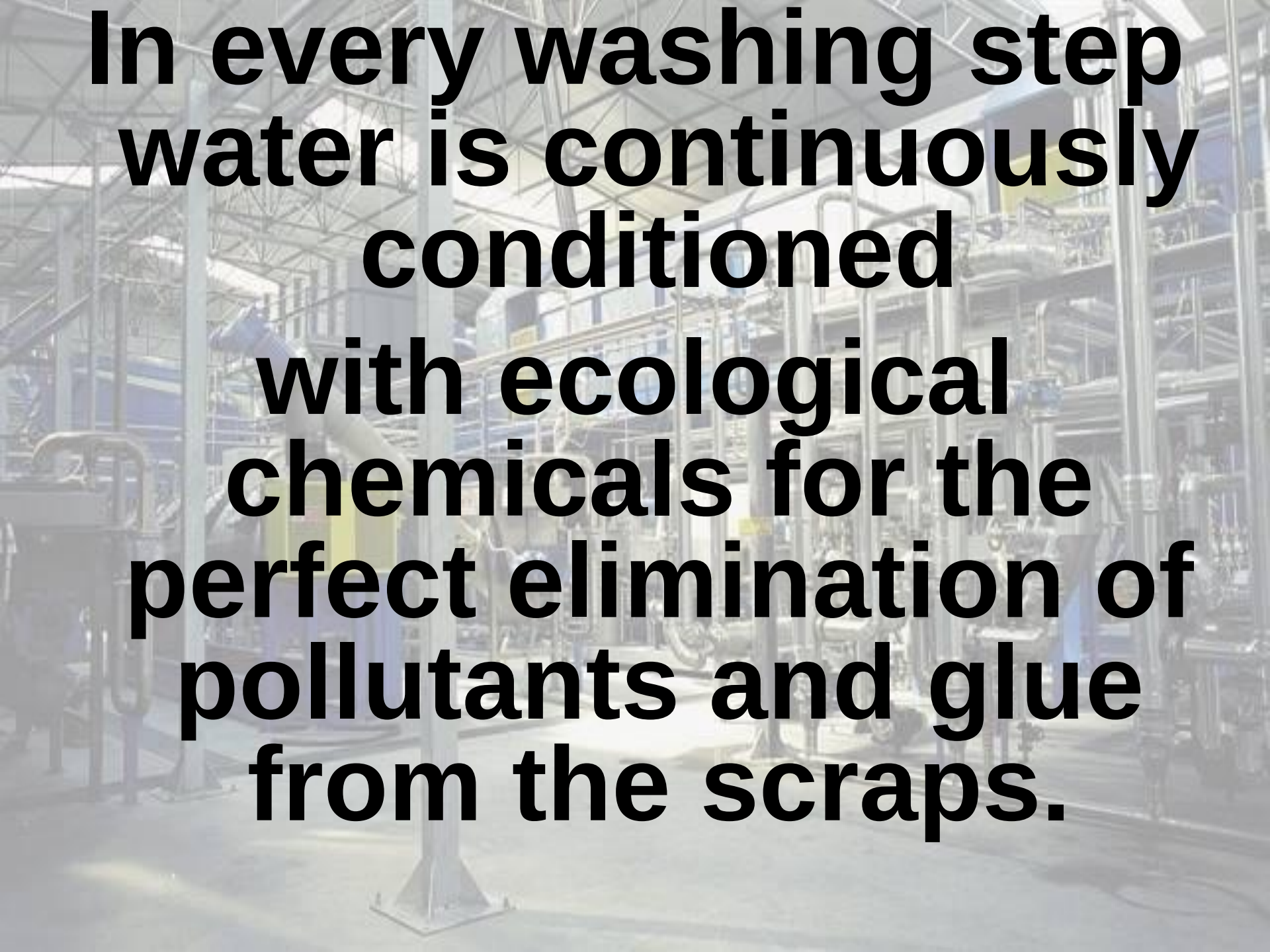
In every washing step, water is continuously renewed by inlet in the final point of fresh water, which goes back in counter current until the starting point.

Washing Process – Water Counter Corrent Flow-sheet -



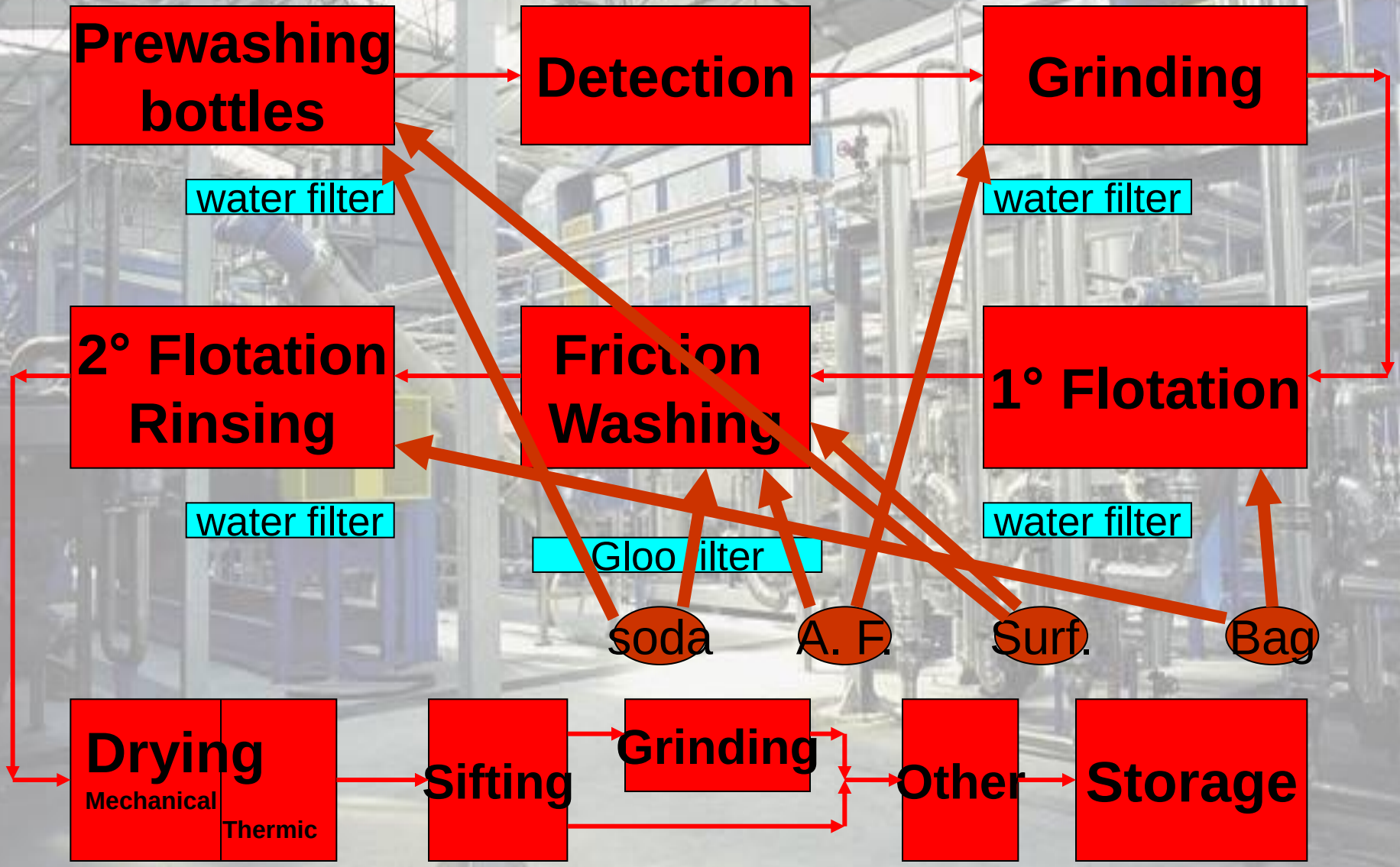

Washing Process – Water Counter Corrent Flow-sheet -
Fresh Water :
1 Lt/Kg RPET
Prewashing
Detergent
Rinsing
W. W.T. P.
2° Flotation Rinsing
Friction Washing
1° Flotation
Fresh water
Drying
Mechanical
Thermic
Sifting
Grinding
Other
Storage

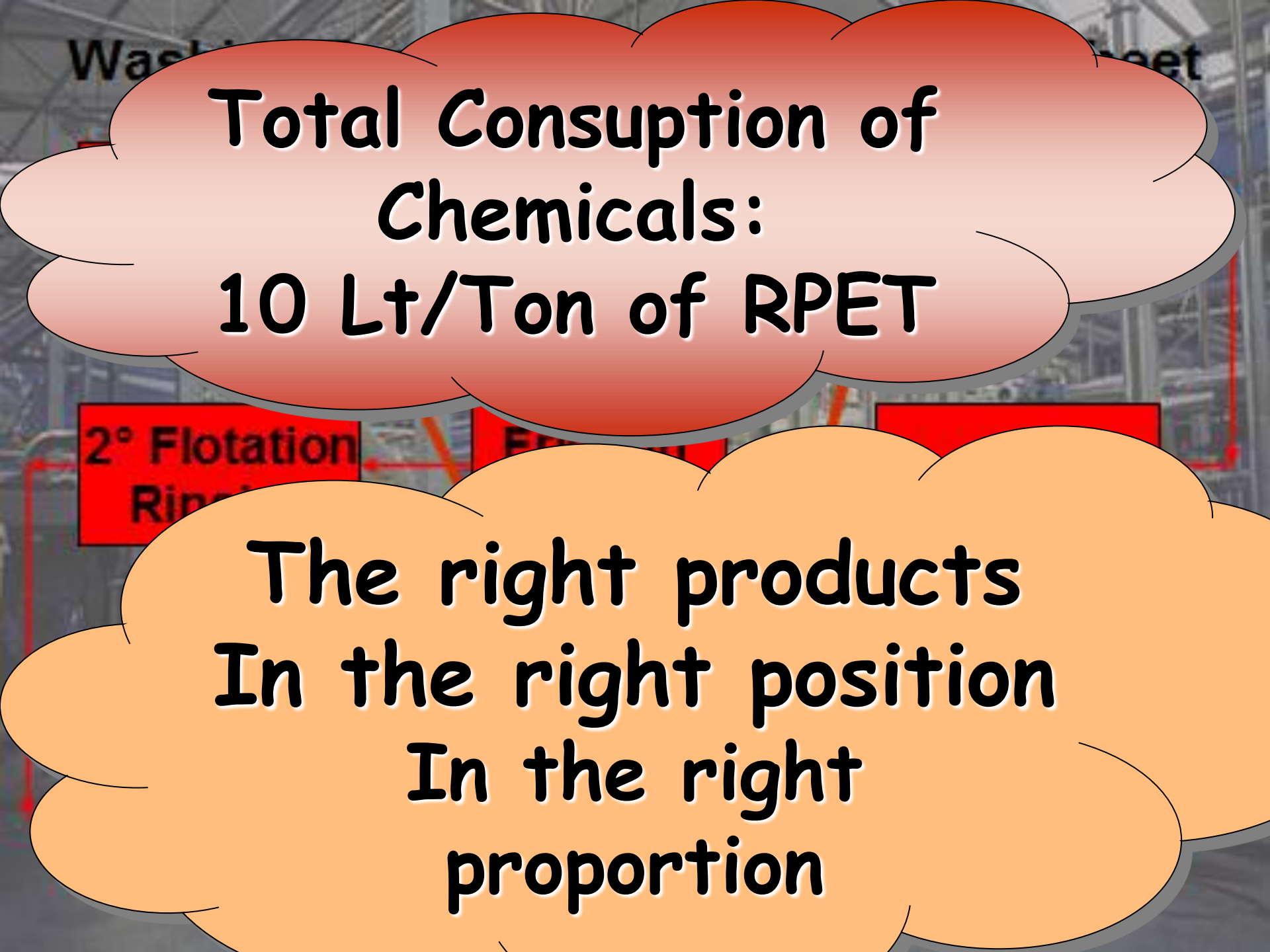

Washing Process – Water Counter Corrent Flow-sheet -
water filter
water filter
W. W.T. P.
2
Flotation
Friction
water filter
Glue filter
water filter
Fresh water
1
Drying
Storage
Waste Water to Treatment Plant :
0,8 Lt/Kg RPET

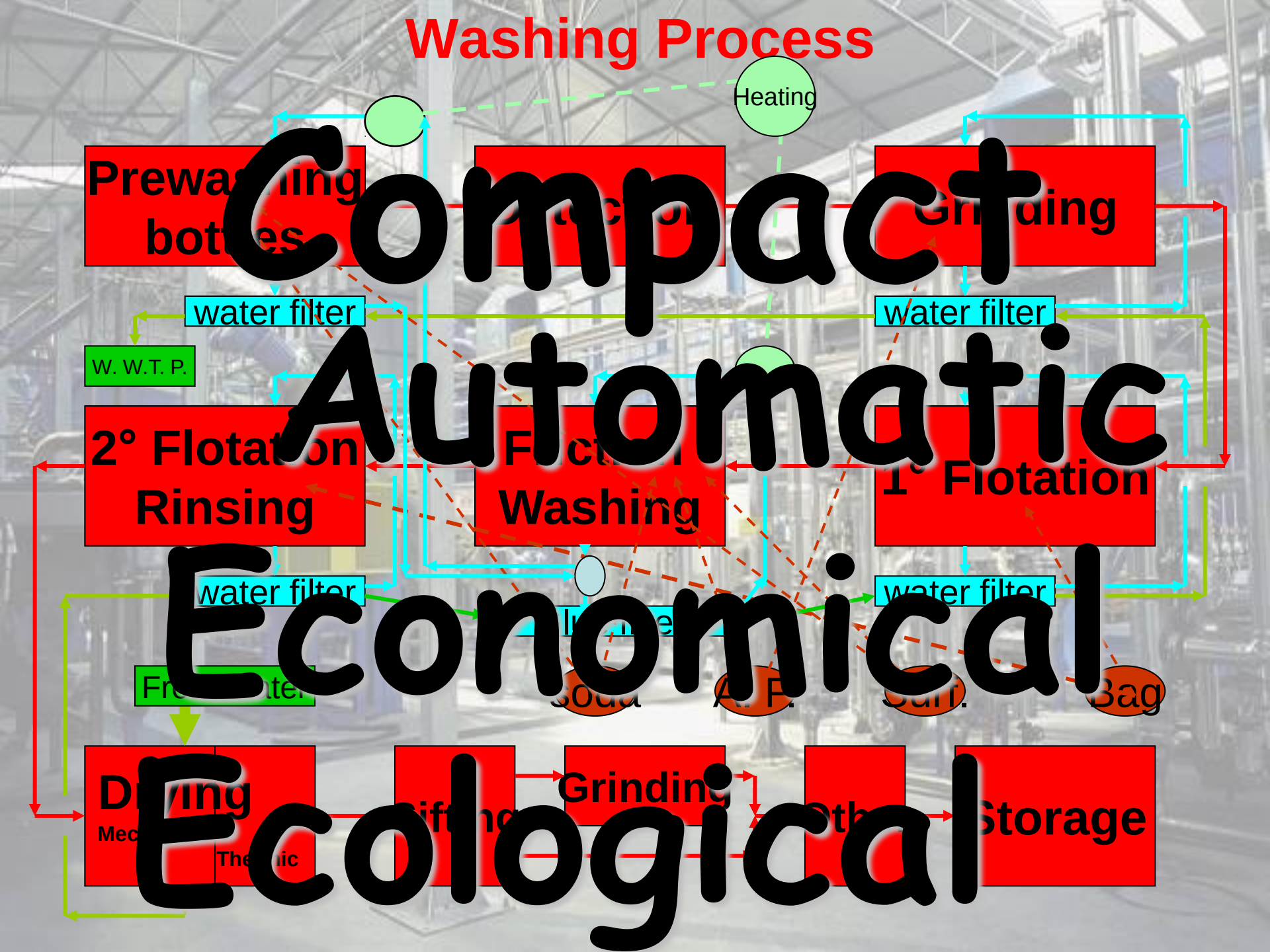


In every washing step water is continuously conditioned with ecological chemicals for the perfect elimination of pollutants and glue from the scraps.

Washing Process – Chemicals Flow-sheet




Total Consuption of Chemicals:
10 Lt/Ton of RPET
The right products
In the right position
In the right proportion


Washing Process
Heating
Grinding
water filter
water filter
W. W.T. P.
2° Flotation
Rinsing
1° Flotation
water filter
water filter
Grinding
Storage
Compact
Automatic
Economical
Ecological

Washing Process

Prewashing bottles → Detection → Grinding → 1° Flotation → Friction Washing → 2° Flotation Rinsing → Drying → Other → Storage

Pit for Feeding Bottles in Bales

Automatic controll of feeding

Washing Process

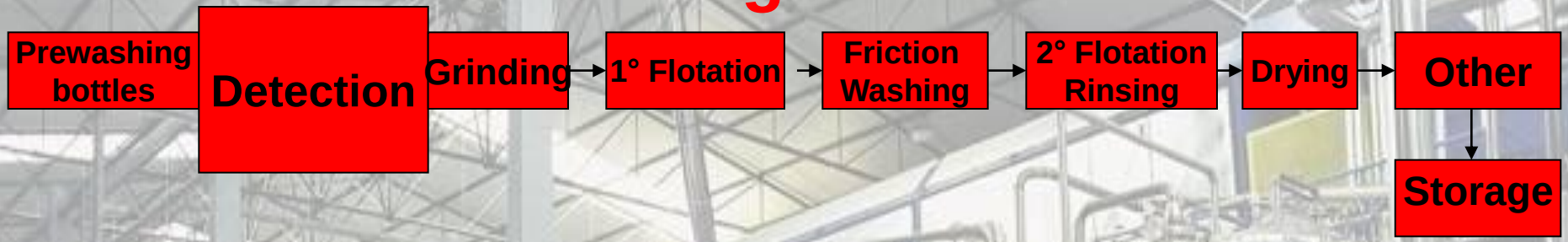
Prewashing bottles → Detection → Grinding → 1° Flotation → Friction Washing → 2° Flotation Rinsing → Drying → Other → Storage

Prewashing Trommel

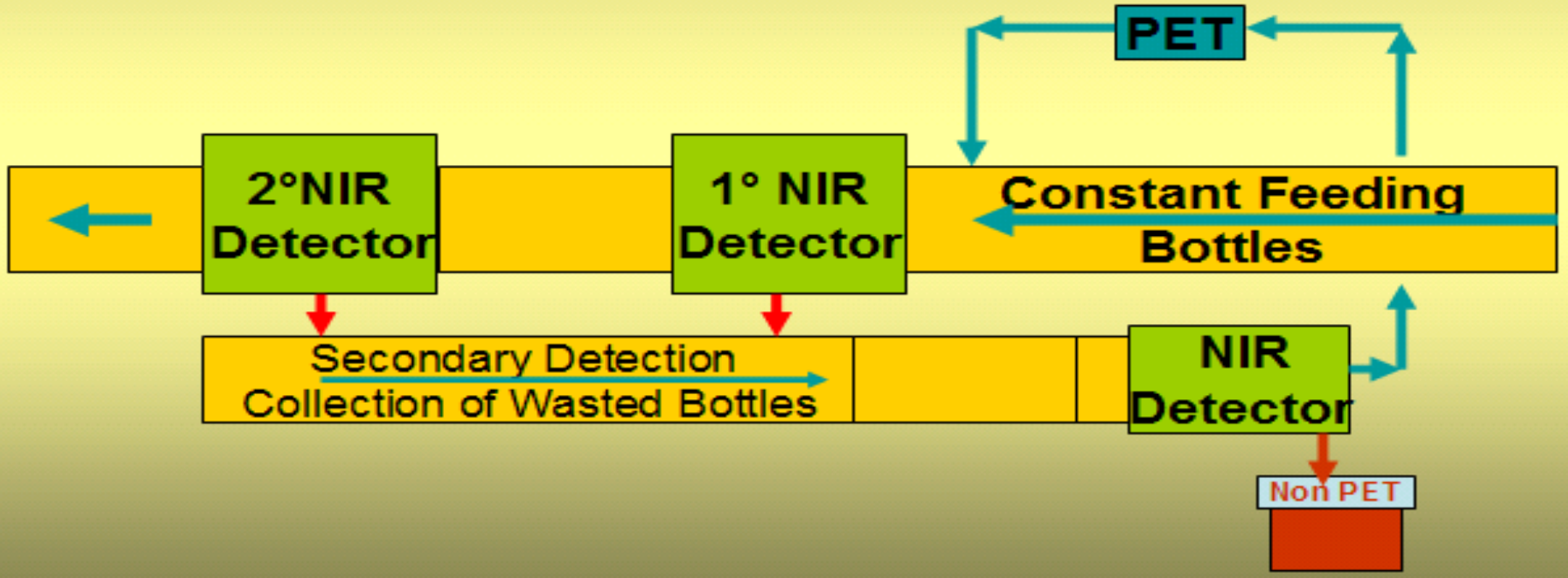
Continuous process

No need of Balesbraeker

Washing Process



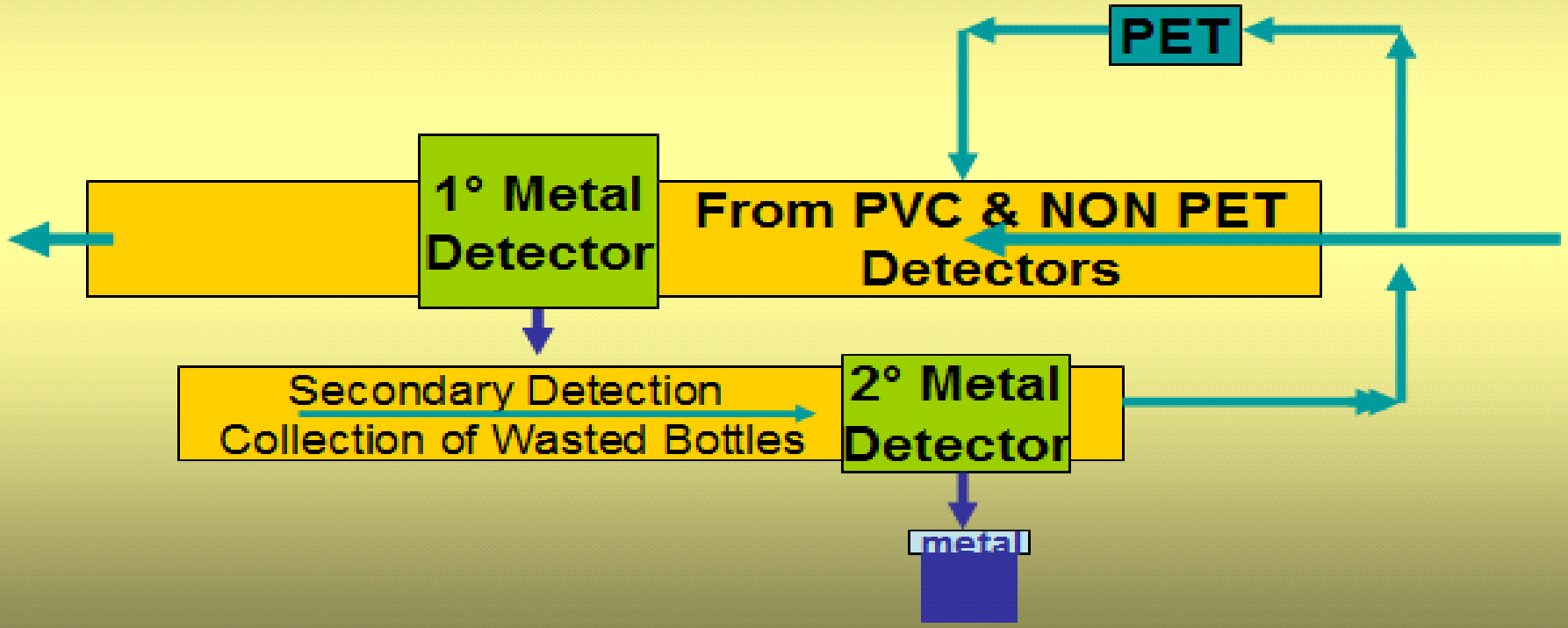
Automatic PVC e Non PET Detection



Washing Process

Prewashing bottles → Detection → Grinding → 1° Flotation → Friction Washing → 2° Flotation Rinsing → Drying → Other → Storage

Detection Metall



Washing Process

Prewashing bottles → Detection → Grinding → 1° Flotation → Friction Washing → 2° Flotation Rinsing → Drying → Other

Constant Feeding

Controll of Imput

Dosing bottles to Detectors

Washing Process

Prewashing bottles → **Detection** → Grinding → 1° Flotation → Friction Washing → 2° Flotation Rinsing → Drying → **Other** → Storage

Primary Detection
n.2 NIR Detectors

Washing Process

Prewashing bottles → Detection → Grinding → 1° Flotation → Friction Washing → 2° Flotation Rinsing → Drying → Storage

Secondary Detection Metall And NON PET

Washing Process

Prewashing bottles → Detection → **Grinding** → 1° Flotation → Friction Washing → 2° Flotation Rinsing → Drying → Storage

Primary Wet Grinding

Washing Process

Prewashing bottles → Detection → Grinding → Drying → Storage

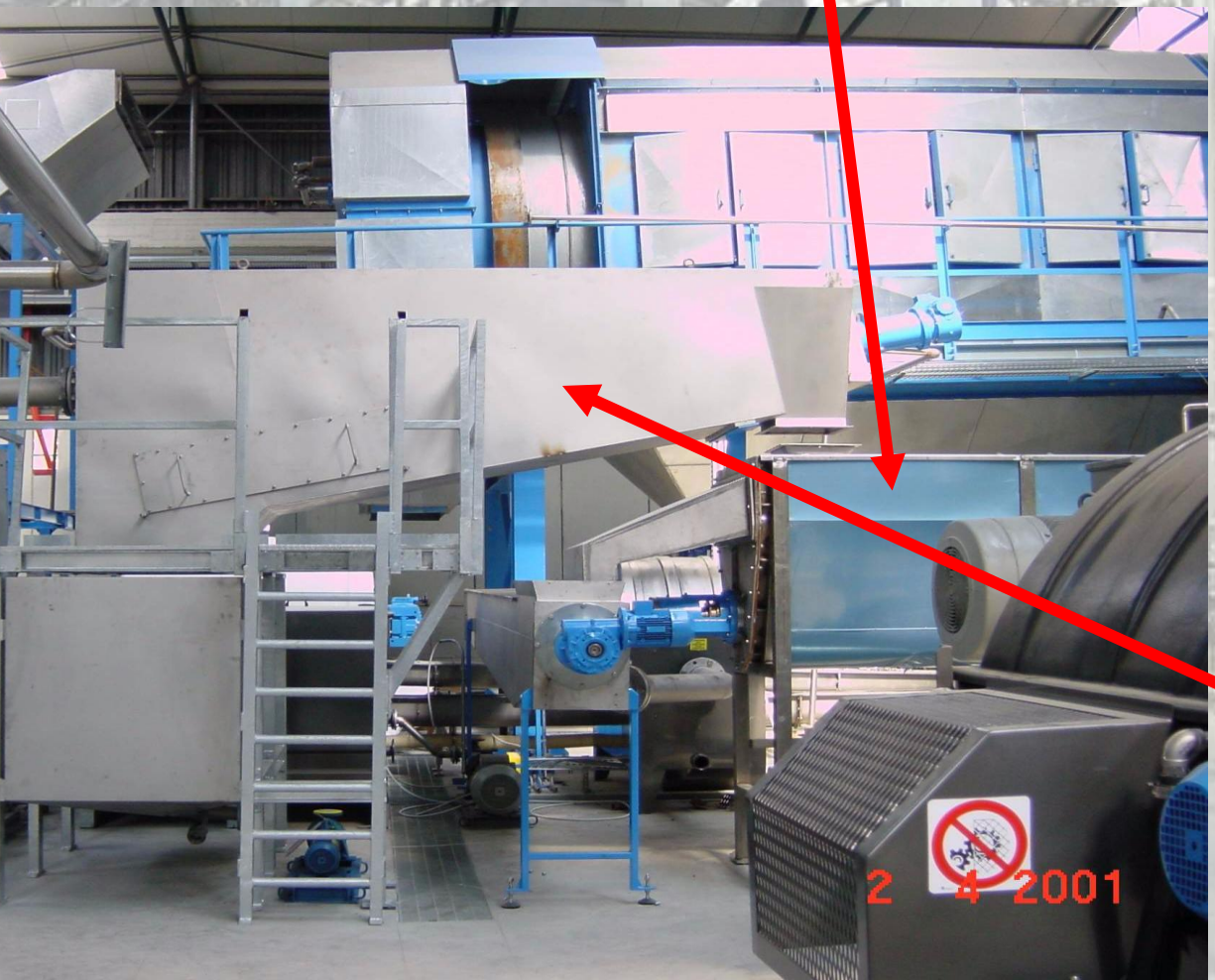
1° Flotation

Friction Washing

2° Flotation Rinsing

Washing Process

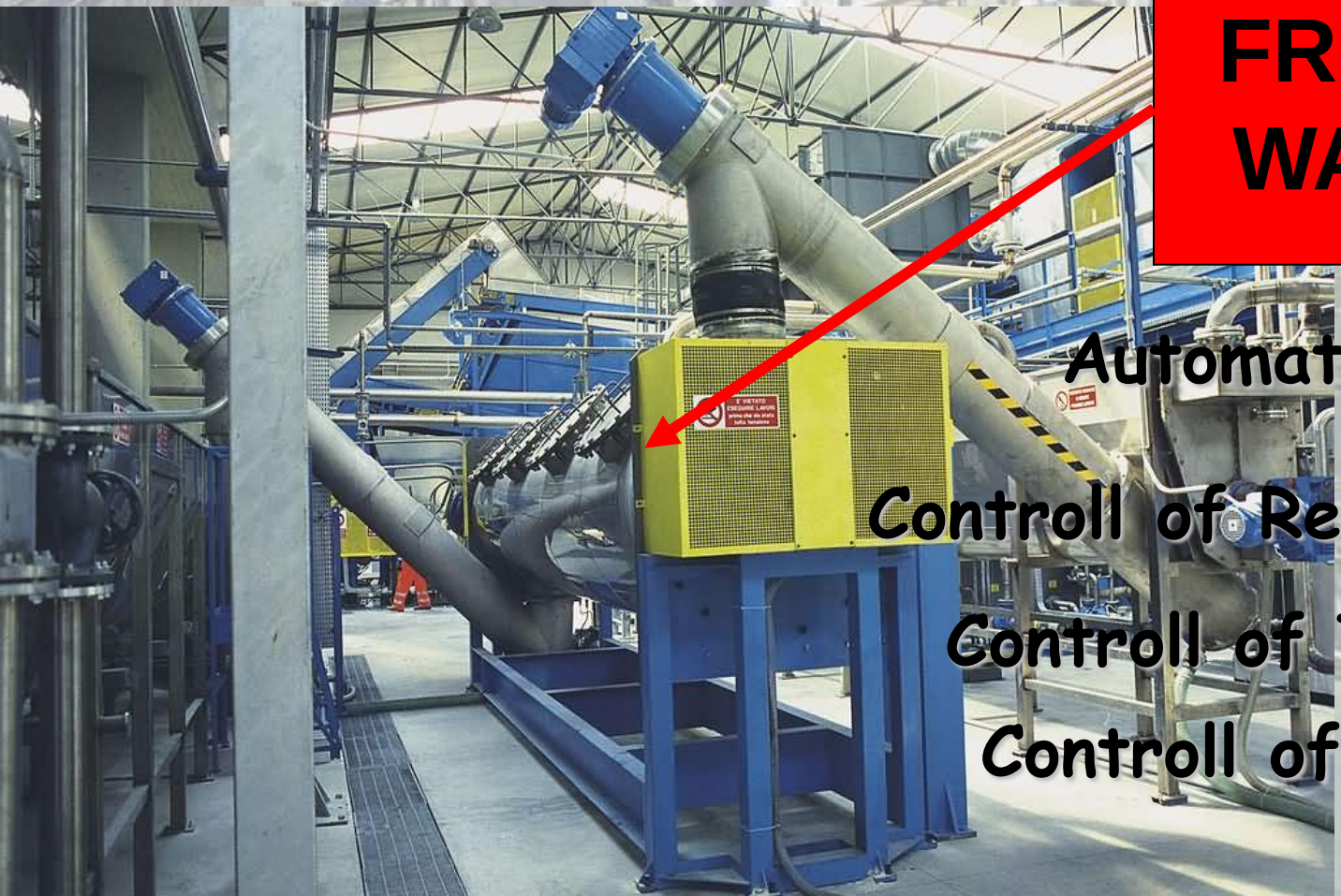
Prewashing bottles → Detection → Grinding → 1° Flotation → Friction Washing → 2° Flotation Rinsing → Drying → Storage



Dewatering screw

Washing Process

Prewashing bottles → Detection → Grinding → 1° Flotation → **Friction Washing** → 2° Flotation Rinsing → Drying → Other → Storage



FRICTION WASHER

Automatic/Continuos

Controll of Residence Time

Controll of Temperatur

Controll of Chemicals

Washing Process

Prewashing bottles → Detection → Grinding → 1° Flotation → **Friction Washing** → 2° Flotation Rinsing → Drying → Other → Storage

Filters for Glue

Washing Process

Prewashing bottles → Detection → Grinding → 1° Flotation → Friction Washing → 2° Flotation Rinsing → **Drying** → Other

Other → Storage

Mechanical Drying

Washing Process

Prewashing bottles → Detection → Grinding → 1° Flotation → Friction Washing → 2° Flotation Rinsing → **Drying** → Other

Other → Storage

Thermic Drying

Washing Process

Prewashing bottles → Detection → Grinding → 1° Flotation → Friction Washing → 2° Flotation Rinsing → Drying → Other → Storage

Deduster
Metal detector

Washing Process

Prewashing bottles → Detection → Grinding → 1° Flotation → Friction Washing → 2° Flotation Rinsing → Drying → Other → Storage

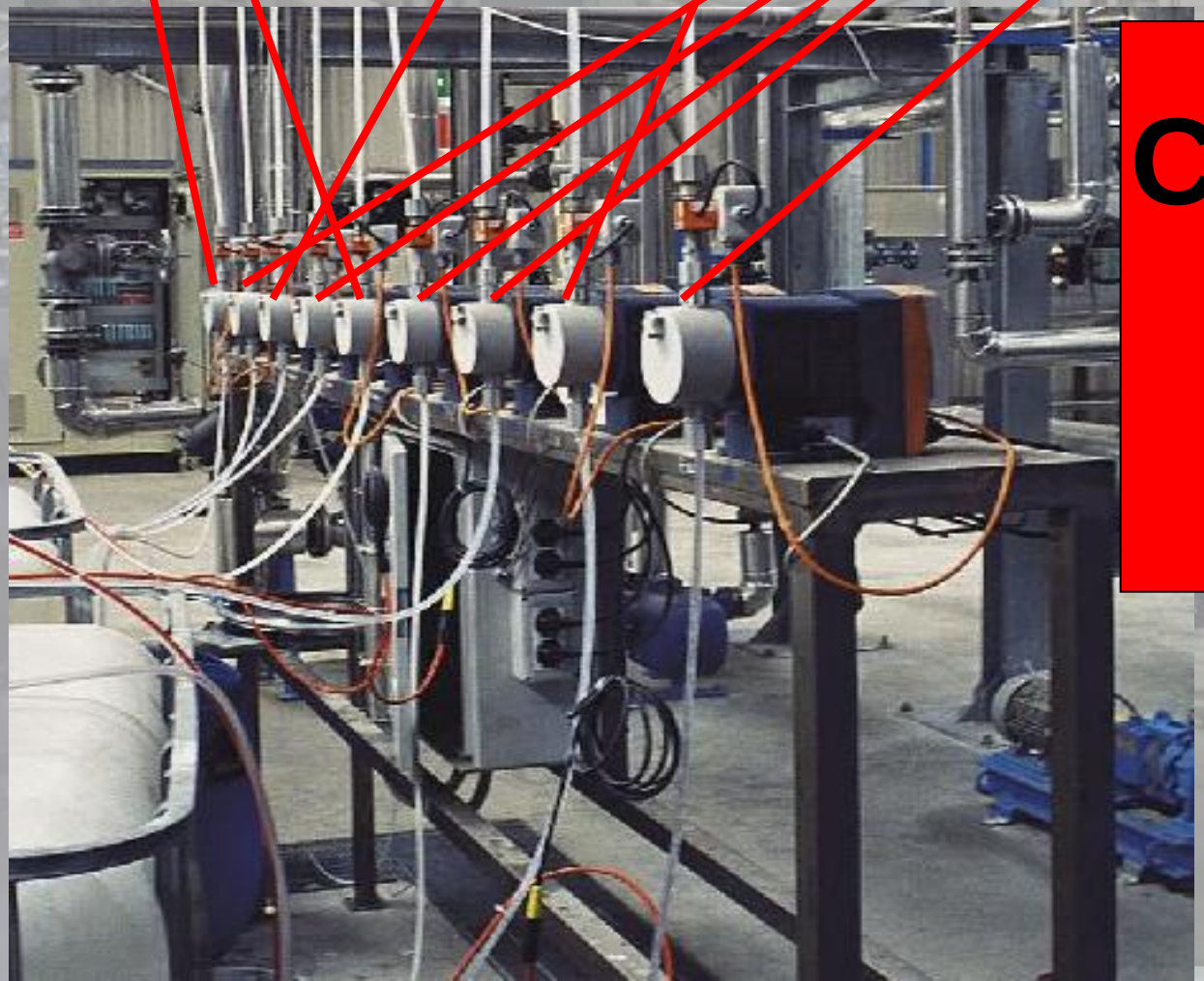
Heat Exchangers

Reduced maintenance

Washing Process

Prewashing bottles → Detection → Grinding → 1° Flotation → Friction Washing → 2° Flotation Rinsing → Drying

Others



Chemicals Dosing Pumps

The right Products
In the right Position
In the right Proportion

Washing Process

Prewashing bottles → Detection → Grinding → 1° Flotation → Friction Washing → 2° Flotation Rinsing → Drying → Other → **Storage**

HOMOGENISER SILOS

Big Bags Filling

AMUT S. p.A. presents
the

Recovery of PET bottles :

QUALITATIVE

PET BOTTLES RECYCLING

FLAKES CHARACTERISTICS

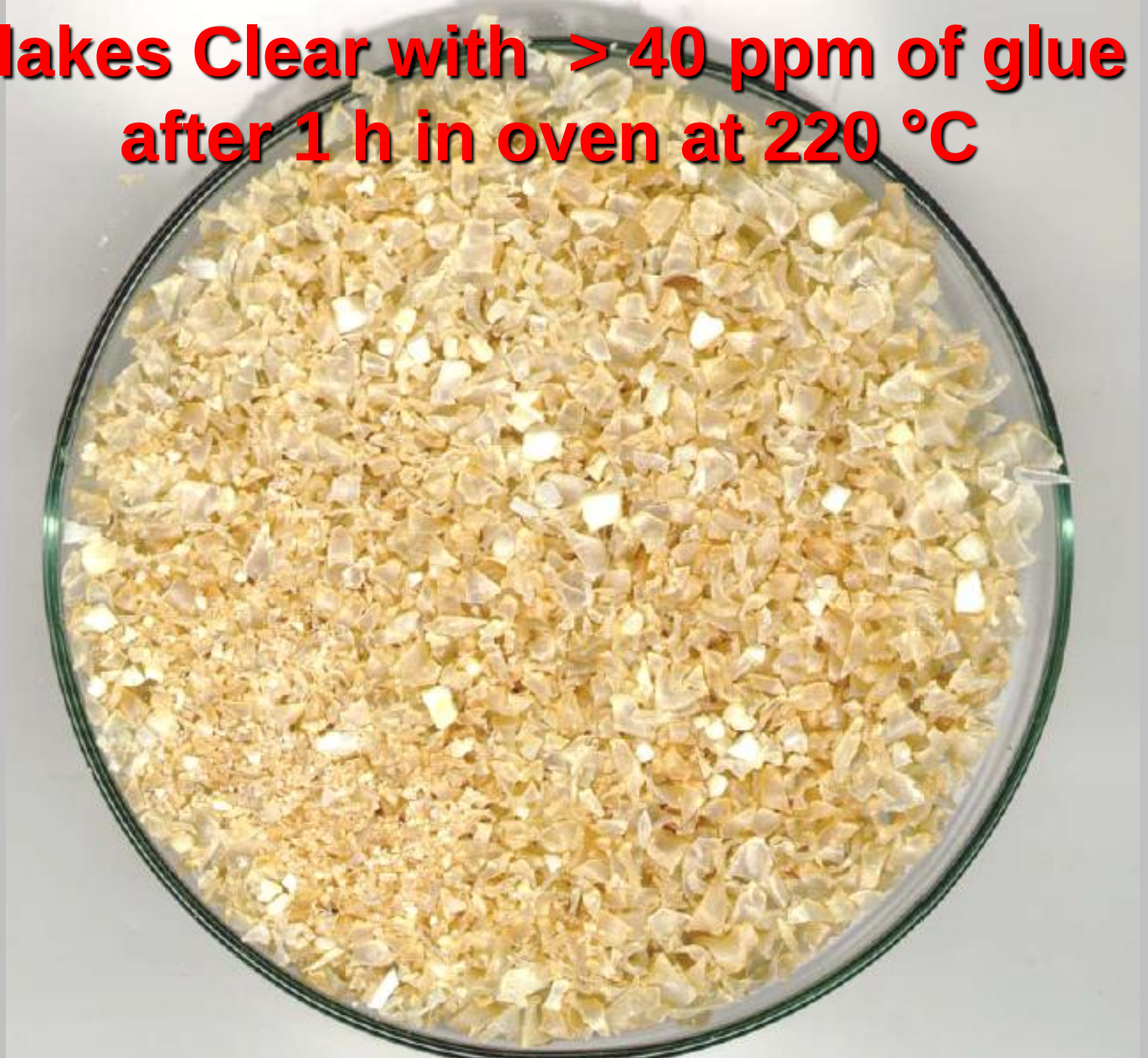
a) Color b	< 2
b) Δ Color b	< 4
c) PVC bottles with double Detector	25 ppm
d) Polyolefines	10 ppm*
e) Paper	10 ppm*
f) Glue	10 ppm
g) PH	< 10
h) Humidity	0,7%
i) Filterability	100bar/h cm²

* The average weight of the flakes is 10 ppm

Recycle for many happy Returns

Flakes Light Blue with 10 ppm of glue after 1 h in oven at 220 °C

Flakes Clear with > 40 ppm of glue after 1 h in oven at 220 °C




The Recovery
of
PET bottles
is
ECONOMICAL
for

PET BOTTLES RECYCLING

EXPECTED CONSUMPTION x kg RPET

Plant 1.250 kg/h

a) Absorbed electric power exc. Storage	0,38 KW
b) Consumption of Water	1,00 Lt
c) Air for detectors PVC /non PET	0,1 N mc
d) Filtering material for main filter.	0,01 Kg
e) Steam	0,85 Kg
f) Conditioning product	
Soda+Detergent+Antifoam	0,010 Kg

PET BOTTLES RECYCLING

EXPECTED CONSUMPTION x kg RPET

Plant 2500 kg/h

a) Absorbed electric power exc. Storage	0,25 KW
b) Consumption of Water	1,00 Lt
c) Air for detectors PVC /non PET	0,1 N mc
d) Filtering material for main filter.	0,01 Kg
e) Steam	0,80 Kg
f) Conditioning product	
Soda+Detergent+Antifoam	0,010 Kg

Recycle for many happy Returns

AMUT

Consumi rilevati su impianto Erreplast

Da Gennaio 2001 a Ottobre 2001

2.000 Kg/h			€/ton
Electric consuption	:	Kw/ton RPET 287 =	34,00
Water	:	lt/Kg RPET 1,08 =	0,001
Soda	:	Kg/Kg RPET 0,005=	1,55
Anti foan	:	Kg/Kg RPET 0,003=	12,30
Surfactant	:	Kg/Kg RPET 0,002=	6,20
Diatomite	:	Kg/Kg RPET 0,009=	8,30
Gas	:	mc/ton RPET 69,3 =	19,00

WASTE QUANTITIES

a) PVC bottles 1%

b) Rejected foreign bodies 20% approx.

c) PET fine, lost 1-2 %

d) Exhausted Water 0,8 lt./Kg RPET

PET BOTTLES RECYCLING

COMSUMPTION of WATER 1,0 litre / Kg RPET

WASTED WATER 0,8 litre / Kg RPET

WASTED WATER characteristics

a) COD / BOD 10.000/5.000 mg/litre

b) S.S. (suspended solid) 30 g/litre

c) Mineral oil present

d) pH Alkaline <0,2% soda

e) Total tension-active < 100 ppm

Recycle for many happy Returns

PLANT with OUTPUT 1.250 Kg/h

- **Output: 1.250 kg/h**
- **Total Hours x year: 8.640 h**
- **Mantenance: 800 h**
- **Total production x year: 9.800 T/y**

OPERATION COSTS OF THE RPET RECLAIMING PLANT			1250 kg/h- 6250 t/y			2500 kg/h -12500 t/y		
A) OPERATION COSTS	costs per unit	€			€/t RPET			€/t RPET
Manpower	23.250	€/y	14	People	52,08	17	People	31,62
Electrical utility	0,098	€/Kwh	360	Kw/t	35,28	250	Kw/t	24,50
Steam	20,64	€/t steam	0,85	t steam/t	17,54	0,80	t steam/t	16,51
Chemicals: Soda+Detergent+Antifoan	1,60	€/l	9,00	l/t	14,40	9,00	l/t	14,40
Filtering material	0,72	€/Kg	9,00	Kg/t	6,48	9	Kg/t	6,48
Rutine mantenance	26,00	€/h	400	h/y	1,66	850	h/y	1,77
Special mantenance	26,00	€/h	800	h/y	3,33	800	h/y	1,66
Grinder knives 120/80	7.000,00	€	3,33	set/y	3,73			
Grinder knives 150/80	7.000,00	€				4,66	set/y	2,61
Grinder risharping120/80	186,00	€	50	Time/y	1,49			
Grinder risharping150/80	217,00	€				70	time/y	1,22
Dumping operation	51,10	€/t	20	%	12,78	20	%	12,78
Waste water	0,05	€/lt	1250	l/h	0,05	2500	l/h	0,05
Spares-unforseen events	50.000,00	€/y			8,00			
Spares-unforseen events	75.000,00	€/y						6,00
	TOTAL				156,82			119,59
B) ROW MATERIAL COSTS	costs per unit							
Bottles	100,00	€			100,00			100,00
Foreign + Lost material (fine)			20+3	%	23,00	20+2	%	23,00
	TOTAL				123,00			123,00
TOTAL RUNNING COST €/Kg RPET				€/t RPET	279,82		€/t RPET	242,59
C) DEPRECIATION COSTS	costs per unit	€			€/t RPET			€/t RPET
Washing plant	3.000.000,00	€	7years	6%	85,99			
Washing plant	4.500.000,00	€				7years	6%	64,49
Wastewater treatment plant	330.000,00	€	7years	6%	9,46			
Wastewater treatment plant	360.000,00	€				7years	6%	5,16
Building	1.000.000,00	€	20years	6%	13,95	20years	6%	6,97
	TOTAL				109,40			76,63
TOTAL COSTS €/KG RPET				€/t RPET	389,22		€/t RPET	319,22

PRODUCTION CAPABILIY			1250 kg/h- 6250 t/y		2500 kg/h -12500 t/y	
A) OPERATION COSTS	costs per unit	€		€/t RPET		€/t RPET
Manpower	23.250	€/y	14 People	52,08	17 People	31,62

MANPOWER LOW COSTS (5 days/week)

The necessary operators for each shift are :

- N.1 for bottle bales feeding
- N.1/2 for manual control
- N.1 Supervisor

The necessary additional operators for the day shift are :

- N.1 for flakes analysis
- N.1 for the produced flakes handling
- N.1 for ordinary maintenance

TOTAL : 12 / 15

PRODUCTION CAPABILITY			1250 kg/h- 6250 t/y			2500 kg/h -12500 t/y		
A) OPERATION COSTS	costs per unit	€			€/t RPET			€/t RPET
Electrical utility	0,098	€/Kwh	360	Kw/t	35,28	250	Kw/t	24,50
Steam	20,64	€/t steam	0,85	t steam/t	17,54	0,80	t steam/t	16,51
Chemicals: Soda+Detergent+Antifoan	1,60	€/l	9,00	l/t	14,40	9,00	l/t	14,40
Filtering material	0,72	€/Kg	9,00	Kg/t	6,48	9,00	Kg/t	6,48
Waste water	0,05	€/lt	1250	l/h	0,05	2500	l/h	0,05

Reduced costs

Electricity: - minimum use of transports
- installed powers optimisations

Steam : - hot water recycling=max. care in the energetic recovery

Chemicals : - steichiometric use of chemicals (100ppm surfactants residual in wasted water)

Filtering Material: - reduction of the glue in powder
- recycling of hot water

Waste water : - limited quantity=reduced water treatment plant
- low Ph
- low consumption of treatment reagents

Production capability		1250 kg/h- 6250 t/y	2500 kg/h -12500 t/y
A) OPERATION COSTS			
	TOTAL	€/t RPET 156,82	€/t RPET 119,59
B) ROW MATERIAL COSTS			
	TOTAL	€/t RPET 123,00	€/t RPET 123,00
TOTAL RUNNING COST €/Kg RPET		€/t RPET 279,82	€/t RPET 242,59
C) DEPRECIATION COSTS			
	TOTAL	€/t RPET 109,40	€/t RPET 76,63
TOTAL COSTS €/KG RPET		€/t RPET 389,22	€/t RPET 319,22

CURRENT PRICES

- RPET CLEAR : 600 € / TON
- RPET LIGHT BLUE 540 € / TON

- PET bottle grade 1.050 € / TON

Programma di supervisione per impianto lavaggio PET

Indice

PARAMETRI

AMUT

MANUTENZIONE

PRELAVAGGIO 1

DETECTION 2

MACINAZIONE IN ACQUA 3

LAVAGGIO 4

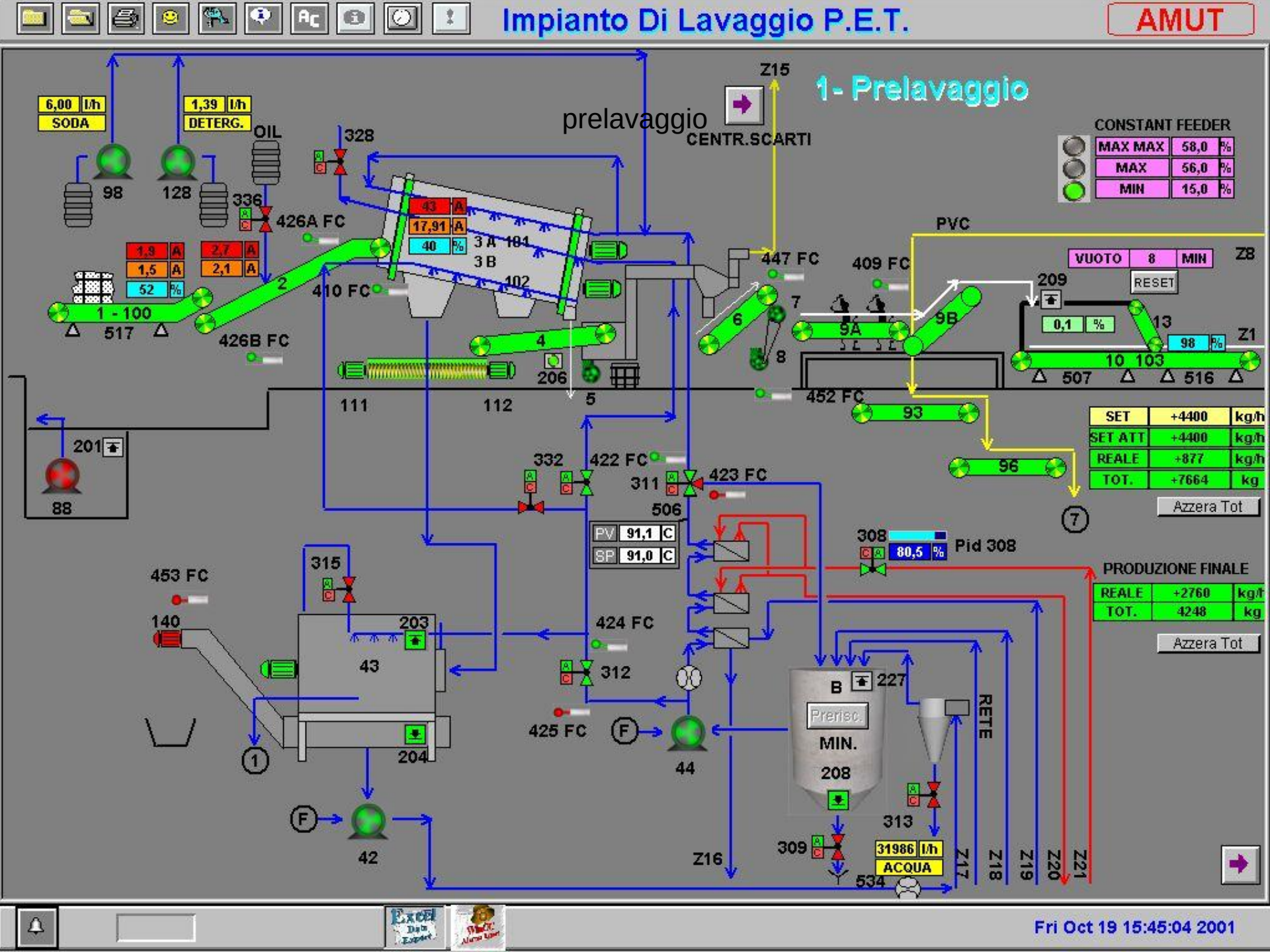
ESSICCAZIONE E MACINAZIONE FINALE 5

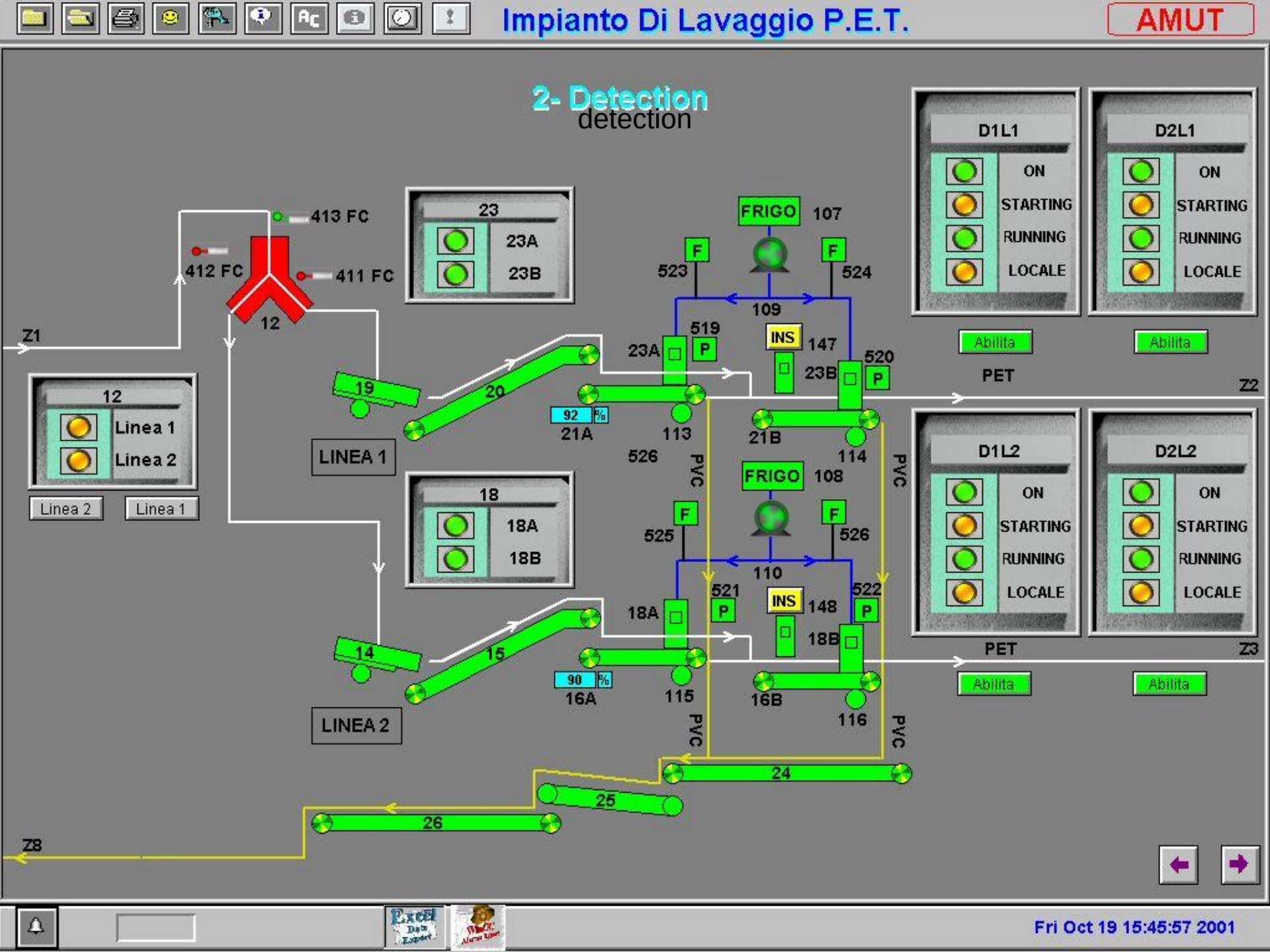
STOCCAGGIO 6

CARICO 7

CENTRALIZZAZIONE SCARTI 8

FILTRAZIONE ACQUA 9


Impianto Di Lavaggio P.E.T.
AMUT
1- Prelavaggio
prelavaggio
CENTR.SCARTI
Z15
6,00 l/h
SODA
1,39 l/h
DETERG.
OIL
98
128
336
426A FC
328
43
17,91 A
40 %
3 A
181
3 B
102
410 FC
1,9 A
1,5 A
52 %
2,7 A
2,1 A
1 - 100
517
2
426B FC
4
206
5
111
112
447 FC
409 FC
PVC
6
7
8
9A
9B
452 FC
93
96
CONSTANT FEEDER
MAX MAX 58,0 %
MAX 56,0 %
MIN 15,0 %
VUOTO 8 MIN
RESET
Z8
209
0,1 %
13
98 %
Z1
10
103
507
516
SET +4400 kg/h
SET ATT +4400 kg/h
REALE +877 kg/h
TOT. +7664 kg
Azzera Tot
7
201
88
332
422 FC
311
423 FC
506
PV 91,1 C
SP 91,0 C
308
80,5 %
Pid 308
PRODUZIONE FINALE
REALE +2760 kg/h
TOT. 4248 kg
Azzera Tot
453 FC
140
315
203
43
204
1
424 FC
312
425 FC
F
44
B
227
Prerisc.
MIN.
208
RETE
313
309
31986 l/h
ACQUA
534
Z16
Z17
Z18
Z19
Z20
Z21
F
42
Fri Oct 19 15:45:04 2001



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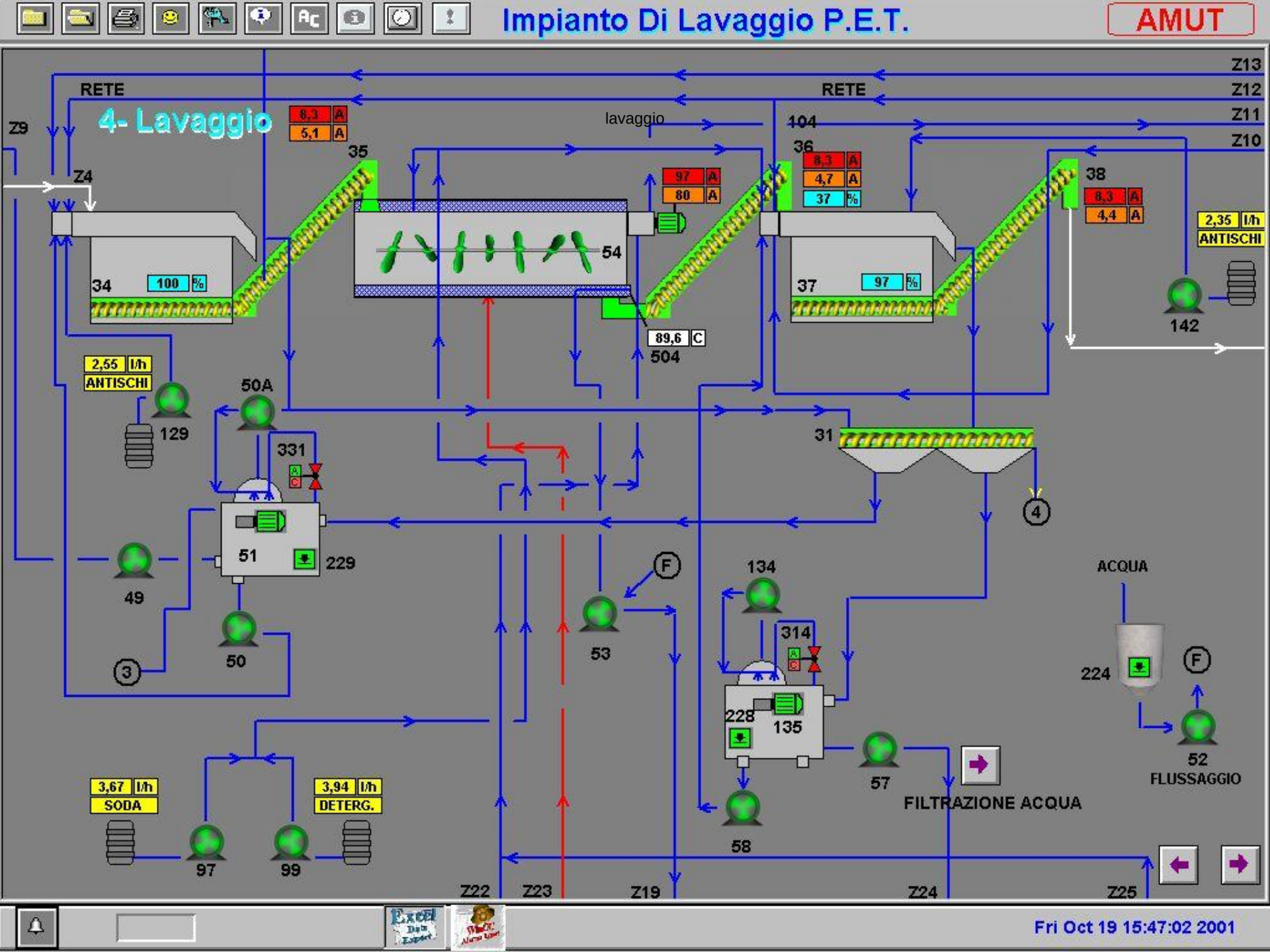
Impianto Di Lavaggio P.E.T.
AMUT
4- Lavaggio
RETE
RETE
lavaggio
Z13
Z12
Z11
Z10
Z9
Z4
104
8,3 A
5,1 A
35
97 A
80 A
36
8,3 A
4,7 A
37 %
38
8,3 A
4,4 A
2,35 l/h
ANTISCHI
34
100 %
54
37
97 %
142
89,6 C
504
2,55 l/h
ANTISCHI
129
50A
331
31
4
51
229
49
50
3
53
F
134
314
228
135
57
58
ACQUA
224
F
52
FLUSSAGGIO
FILTRAZIONE ACQUA
3,67 l/h
SODA
3,94 l/h
DETERG.
97
99
Z22
Z23
Z19
Z24
Z25
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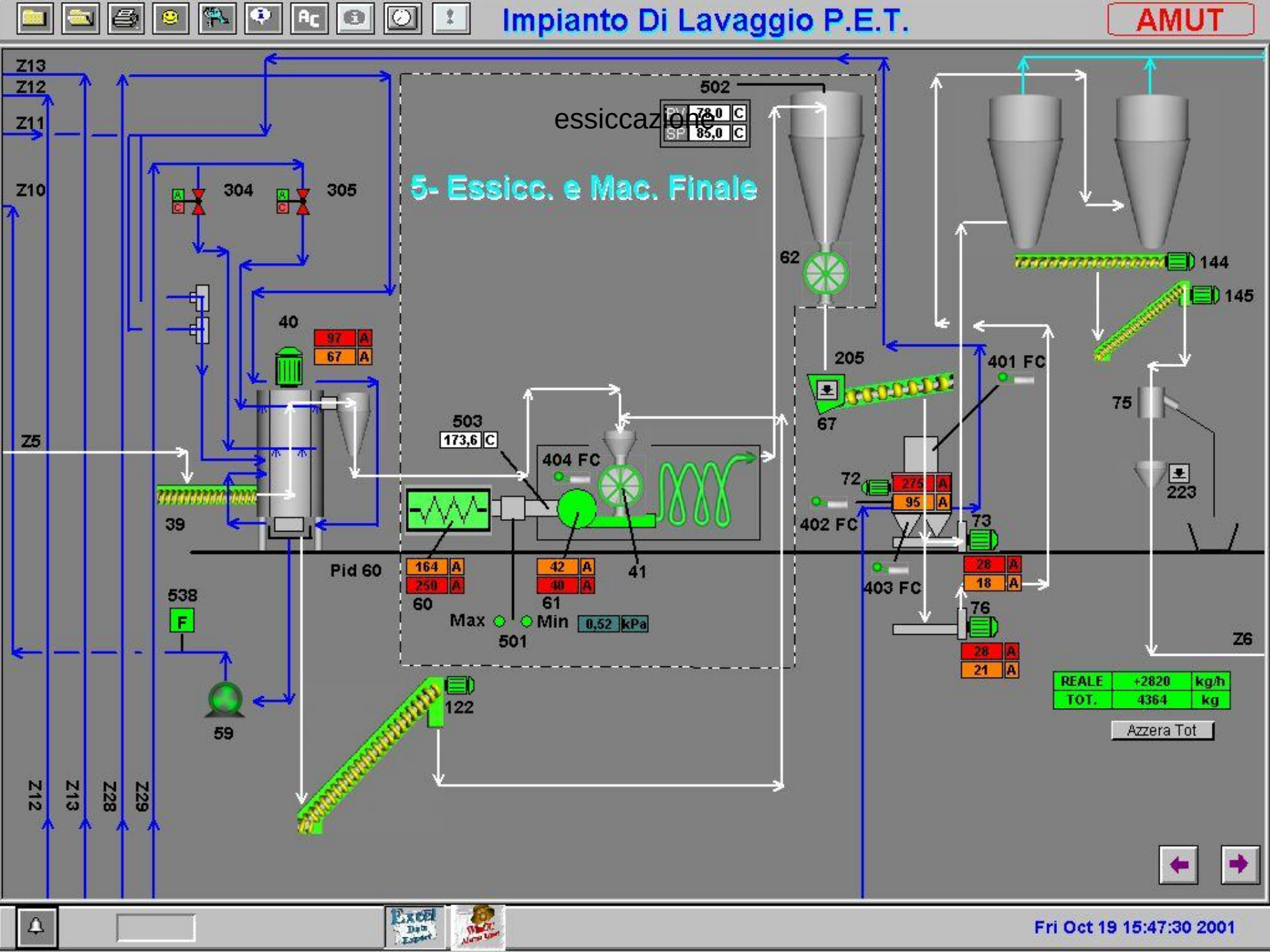
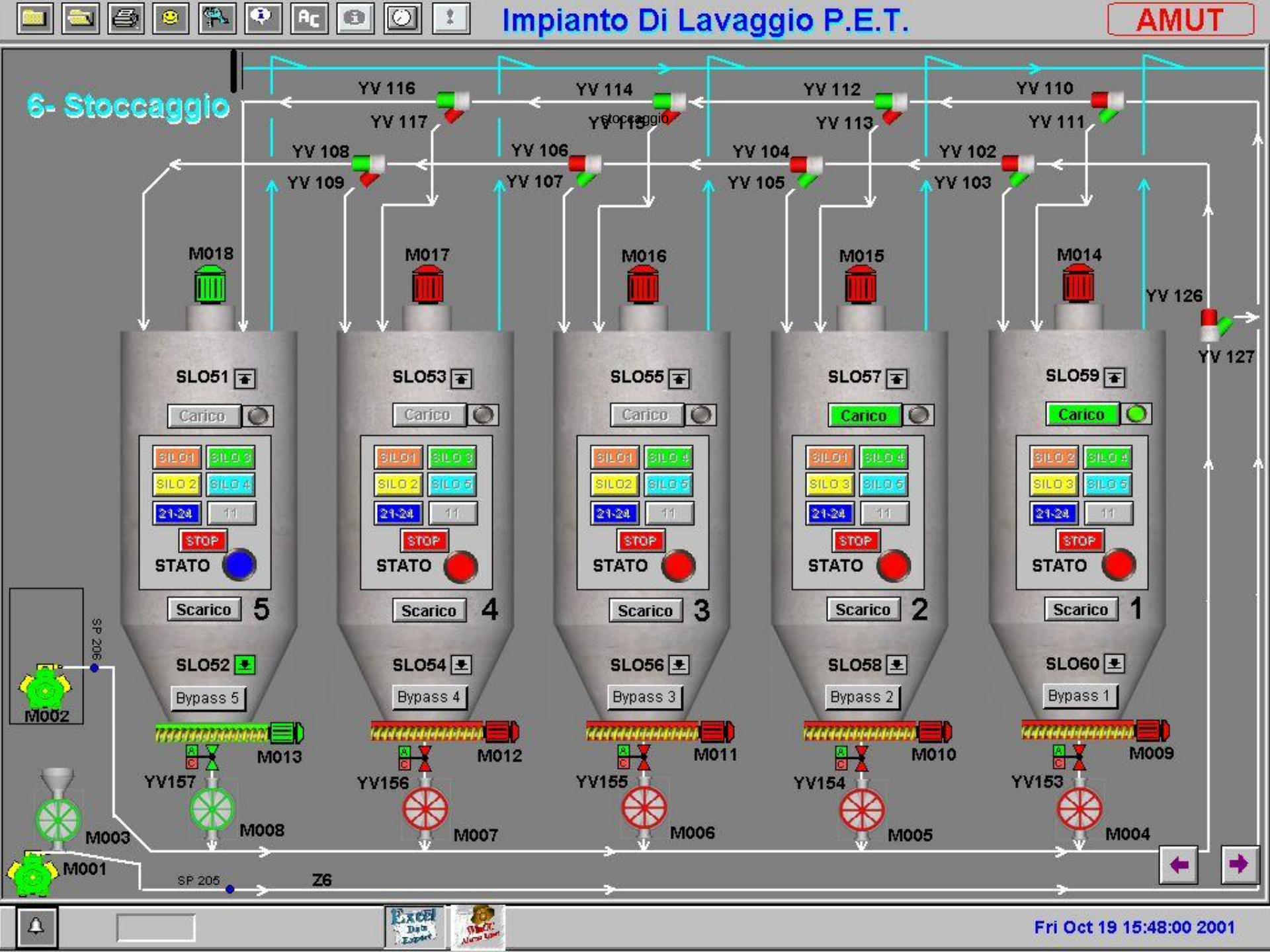
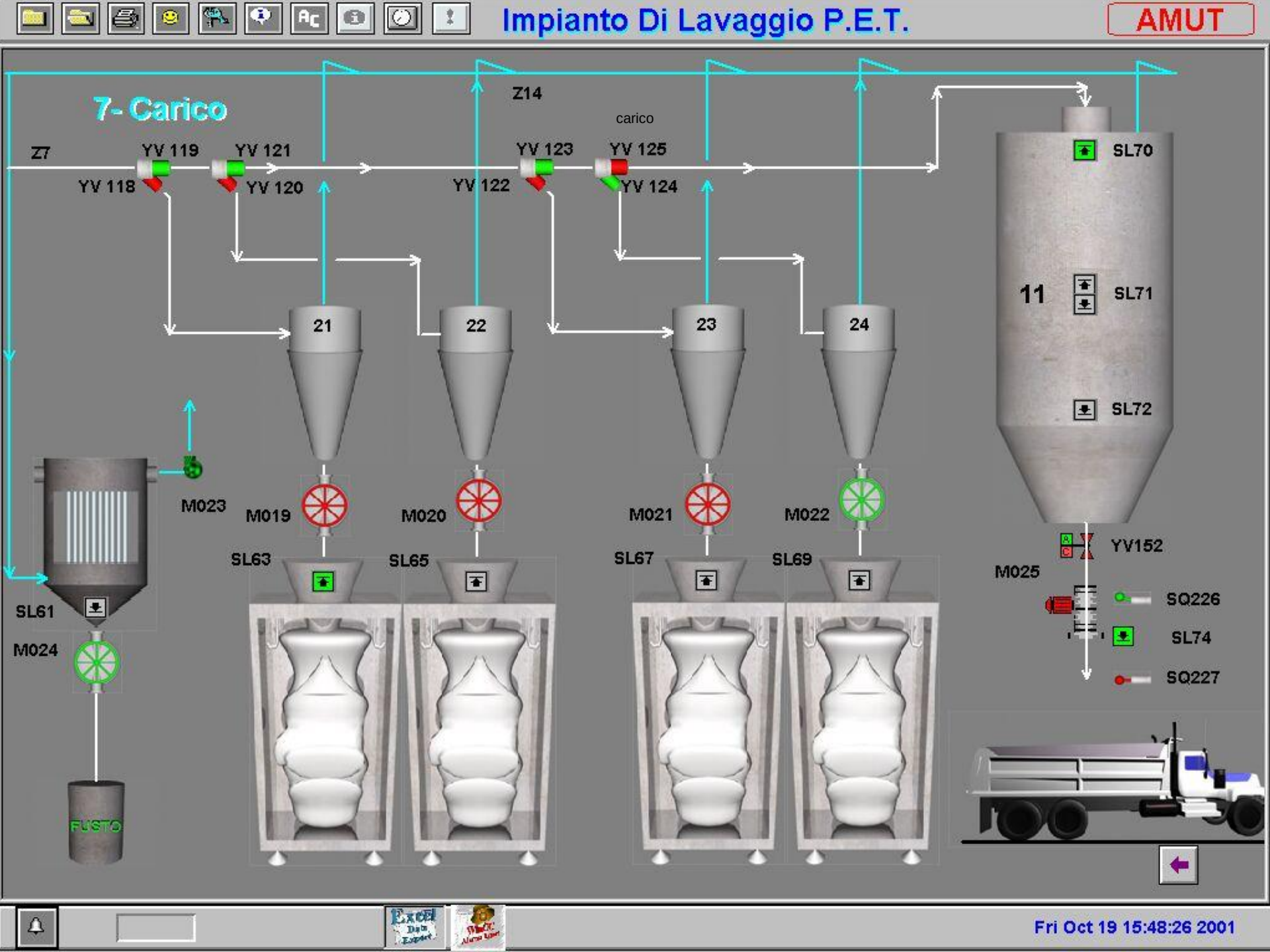
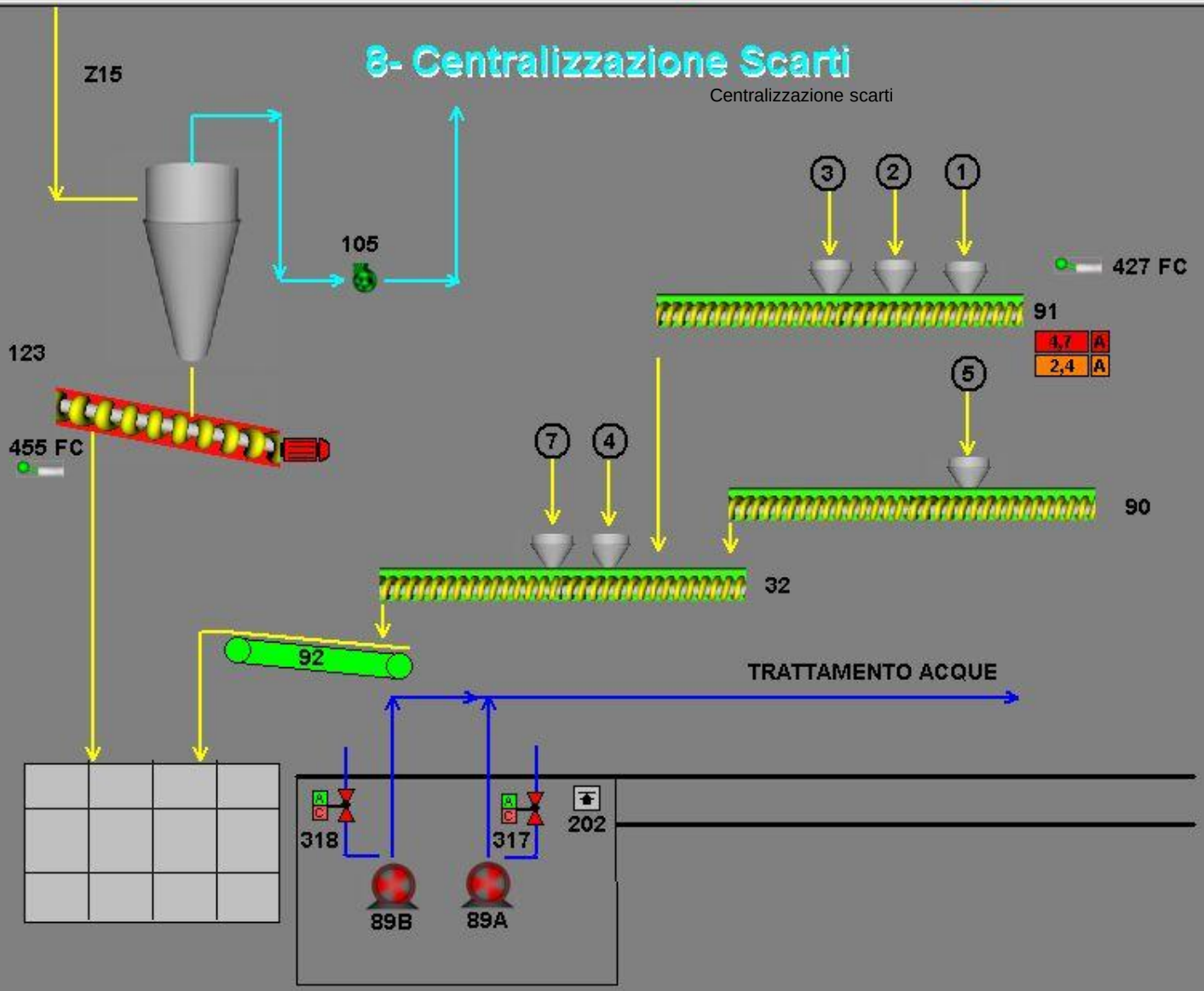

Impianto Di Lavaggio P.E.T.
AMUT
essiccazione
5- Essicc. e Mac. Finale
Z13
Z12
Z11
Z10
Z5
Z6
Z12
Z13
Z28
Z29
502
PV 78,0 C
SP 85,0 C
304
305
40
97 A
67 A
39
503
173,6 C
404 FC
Pid 60
164 A
250 A
60
42 A
40 A
61
41
Max
Min
501
0,52 kPa
538
F
59
122
62
205
67
401 FC
402 FC
403 FC
72
275 A
95 A
73
28 A
18 A
76
28 A
21 A
144
145
75
223
REALE +2820 kg/h
TOT. 4364 kg
Azzera Tot
Fri Oct 19 15:47:30 2001

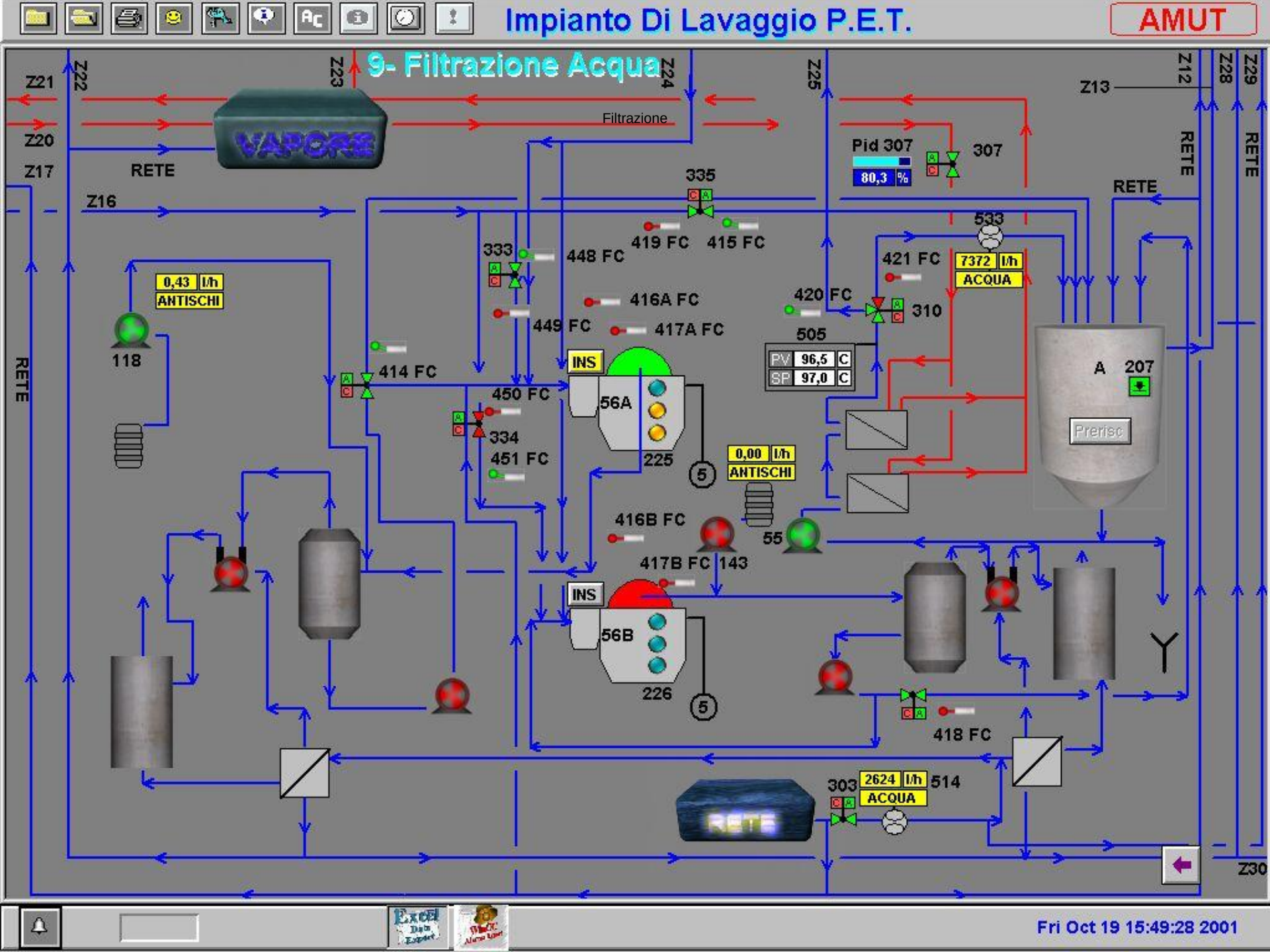

Impianto Di Lavaggio P.E.T.
AMUT
6- Stoccaggio
stoccaggio
YV 116
YV 117
YV 114
YV 115
YV 112
YV 113
YV 110
YV 111
YV 108
YV 109
YV 106
YV 107
YV 104
YV 105
YV 102
YV 103
YV 126
YV 127
M018
M017
M016
M015
M014
SLO51
SLO53
SLO55
SLO57
SLO59
Carico
Carico
Carico
Carico
Carico
SILO1
SILO 3
SILO 2
SILO 4
21-24
11
STOP
STATO
Scarico
5
4
3
2
1
SLO52
SLO54
SLO56
SLO58
SLO60
Bypass 5
Bypass 4
Bypass 3
Bypass 2
Bypass 1
M013
M012
M011
M010
M009
YV157
YV156
YV155
YV154
YV153
M008
M007
M006
M005
M004
M003
M001
M002
SP 206
SP 205
Z6
Fri Oct 19 15:48:00 2001


Impianto Di Lavaggio P.E.T.
AMUT
7- Carico
Z14
carico
Z7
YV 119
YV 121
YV 123
YV 125
YV 118
YV 120
YV 122
YV 124
SL70
11
SL71
SL72
21
22
23
24
M023
M019
M020
M021
M022
SL63
SL65
SL67
SL69
YV152
M025
SQ226
SL74
SQ227
SL61
M024
FUSTO
Fri Oct 19 15:48:26 2001

8- Centralizzazione Scarti

Centralizzazione scarti




Impianto Di Lavaggio P.E.T.
AMUT
9- Filtrazione Acqua
Filtrazione
Z21
Z22
Z23
Z24
Z25
Z13
Z12
Z28
Z29
Z20
Z17
Z16
Z30
VAPORE
RETE
Pid 307
80,3 %
307
335
419 FC
415 FC
333
448 FC
421 FC
7372 l/h
ACQUA
533
420 FC
310
416A FC
449 FC
417A FC
505
PV 96,5 C
SP 97,0 C
0,43 l/h
ANTISCHI
118
414 FC
450 FC
334
451 FC
INS
56A
225
5
A 207
Prerisc
0,00 l/h
ANTISCHI
55
416B FC
417B FC
143
INS
56B
226
5
418 FC
303
2624 l/h
ACQUA
514
RETE
Fri Oct 19 15:49:28 2001

11- Parametri

parametri

PARAMETRO	SET POINT	U
IMPOSTAZIONE VELOCITA TAMBURO 3	40	%
IMPOSTAZIONE CORRENTE TAMBURO 3	25,0	A
VOLUME IN CONST.FEEDER MIN	15,00	%
VOLUME IN CONST.FEEDER MAX	56,00	%
VOLUME IN CONST.FEEDER SUP.MAX	58,00	%
TEMPO PAUSA NASTRO ESTRAZIONE DAL C. FEED.	1	sec
SOGLIA AMP. MULINO AD ACQUA 30	290	A
SOGLIA AMP. DI LAVORO FRICTION WASHER 54	80	A
SOGLIA AMP. MAX. FRICTION WASHER 54	89	A
SOGLIA AMP. CENTRIFUGA 40	81	A
SOGLIA AMP. MULINO FINALE 72	210	A
QUANTITA ACQUA IN INGRESSO	1400	l/h
TEMPO LAVAGGIO CESTELLO FORATO CENTR. 40	20	sec
TEMPO LAVAGGIO PARETI CENTRIFUGA 40	30	sec
TEMPO RIPOSO LAVAGGIO CENTRIFUGA 40	15	min
TEMPO LAVAGGIO LINEA DURANTE CAMBIO SILO	1	sec
TEMPO LAVORO SCARICO FANGHI 309	2	sec
TEMPO PAUSA E. V. SC. DA IDROC. PRELAV 313	120	min
TEMPO LAVORO E.V. SC. DA IDROC. PRELAV. 313	2	sec
TEMP. MIN SERBATOIO "A" FRICTION WASHER	70	°C
TEMP. MIN SERBATOIO "B" PRELAVAGGIO	65	°C
TEMP.PRERISC. SERBATOIO "A" FRICTION WASHER	85	°C
TEMP.PRERISC. SERBATOIO "B" PRELAVAGGIO	80	°C
SOGLIA TEMP. INGRESSO ESSICCATORE	175	°C
TEMP. ALLARME INGRESSO ESSICCATORE	300	°C
IMPOSTAZIONE VELOCITA COCLEA 34	100	%
IMPOSTAZIONE VELOCITA COCLEA 37	100	%

PARAMETRO	SET POINT	U
TEMPO LAVORO LAMA FILTRO 56A	3	sec
TEMPO RIPOSO LAMA FILTRO 56A CON LIV. ALTO	60	sec
TEMPO RIPOSO LAMA FILTRO 56A CON LIV. MEDIO	250	sec
TEMPO RIPOSO LAMA FILTRO 56A CON LIV. BASSO	400	sec
TEMPO LAVORO LAMA FILTRO 56B	3	sec
TEMPO RIPOSO LAMA FILTRO 56B CON LIV. ALTO	60	sec
TEMPO RIPOSO LAMA FILTRO 56B CON LIV. MEDIO	250	sec
TEMPO RIPOSO LAMA FILTRO 56B CON LIV. BASSO	400	sec
TEMPO RIPOSO E.V. 332 LAV. INTERNO TAMBURO 3	30	min
TEMPO LAVORO E.V. 332 LAV. INTERNO TAMBURO 3	30	sec
RIT. APERT. E.V. 328 DURANTE LAV. INT.TAMBURO 3	25	sec
TEMPO RIPOSO E.V. 336 LUBRIF. NASTRO 2	30	min
TEMPO LAVORO E.V. 336 LUBRIF. NASTRO 2	720	sec
TEMPO RIPOSO NASTRO 140	30	min
TEMPO LAVORO NASTRO 140	600	sec
TEMPO RIPOSO PULIZIA UGELLI FILTRI	10	min
TEMPO LAVORO PULIZIA UGELLI FILTRI	5	sec
TEMPO RIPOSO COCLEA 123 IN AUTOMATICO	5	min
TEMPO LAVORO COCLEA 123 IN AUTOMATICO	5	min
SOGLIA MIN DEPRESSOSTATO ESSICCATORE	0,25	kpA
SOGLIA MAX DEPRESSOSTATO ESSICCATORE	2,40	kpA

Impianto Di Lavaggio P.E.T.

AMUT

Manutenzione

U.M.	SET POINT	ATTUALE	ACK	DESCRIZIONE
HRS	24	18	FATTO	LUBRIFICARE CATENA NASTRI 1, 2
HRS	500	18	FATTO	CONTROLLARE OLIO RIDUTTORI NASTRI 1, 2
HRS	6000	1631	FATTO	SOSTITUIRE OLIO RIDUTTORI NASTRI 1, 2
HRS	500	203	FATTO	INGRASSARE CUSCINETTI NASTRO 1
HRS	48	42	FATTO	INGRASSARE CUSCINETTI NASTRO 2
HRS	120	81	FATTO	INGRASSARE CUSCINETTI DEL TAMBURO ROTANTE 3
HRS	500	132	FATTO	CONTROLLARE OLIO RIDUTTORI DEL TAMBURO ROTANTE 3 E COCLEE DI SCARICO 111, 112
HRS	6000	1631	FATTO	SOSTITUIRE OLIO RIDUTTORI DEL TAMBURO ROTANTE 3 E COCLEE DI SCARICO 111, 112
HRS	120	81	FATTO	LUBRIFICARE CUSCINETTO POSIZIONAMENTO TAMBURO ROTANTE 3
HRS	120	81	FATTO	LUBRIFICARE CUSCINETTI NASTRI 4, 6, 92, 93, 94, 95, 96
HRS	500	78	FATTO	LUBRIFICARE CUSCINETTI DEL VENTILATORE TRASPORTO BOTTIGLIE 5
HRS	120	81	FATTO	LUBRIF. CUSCINETTI TAMBURO ASP. ETICHETTE 7, NASTRO SEL.9, CONSTANT FEEDER 10,13
HRS	500	125	FATTO	CONTROLLARE OLIO RIDUTTORE NASTRO ESTRAZIONE DAL CONSTANT FEEDER 10
HRS	6000	1631	FATTO	SOSTITUIRE OLIO RIDUTTORE NASTRO ESTRAZIONE DAL CONSTANT FEEDER 10
HRS	120	81	FATTO	LUBRIFICARE CUSCINETTI NASTRI 15, 20
HRS	120	81	FATTO	LUBRIFICARE CUSCINETTI NASTRI 16A, 16B, 21A, 21B
HRS	120	81	FATTO	LUBRIFICARE CUSCINETTI SPAZZOLE NASTRI 16A, 16B, 21A, 21B
HRS	120	81	FATTO	LUBRIFICARE CUSCINETTI NASTRI 27, 29
HRS	120	81	FATTO	LUBRIFICARE CUSCINETTI MULINO AD ACQUA 30
HRS	500	289	FATTO	LUBRIFICARE CUSCINETTI MOTORE MULINO AD ACQUA 30
HRS	120	81	FATTO	CONTROLLO OLIO POMPE 46, 47
HRS	120	85	FATTO	LUBRIFICARE CUSCINETTO DEL SEPARATORE 33
HRS	120	81	FATTO	LUBRIFICARE CUSCINETTI VASCHE PREFLOTTAZIONE E RISCIAQUO
HRS	120	66	FATTO	LUBRIFICARE BUSSOLE INFERIORI DELLE COCLEE 35, 36, 38, 67
HRS	500	187	FATTO	LUBRIFICARE CUSCINETTI SUPERIORI DELLE COCLEE 35, 36, 38, 67
HRS	500	125	FATTO	CONTROLLARE LIVELLO OLIO RIDUTTORI COCLEE 35, 36, 38, 67
HRS	6000	1631	FATTO	SOSTITUIRE OLIO RIDUTTORI COCLEE 35, 36, 38, 67
HRS	250	108	FATTO	CONTROLLARE OLIO DI TUTTE LE POMPE
HRS	6000	1631	FATTO	SOSTITUIRE OLIO DI TUTTE LE POMPE
HRS	500	132	FATTO	CONTROLLARE OLIO RIDUTTORE FRICTION WASHER 54
HRS	6000	1631	FATTO	SOSTITUIRE OLIO RIDUTTORE FRICTION WASHER 54
HRS	120	81	FATTO	LUBRIFICARE CUSCINETTI E BADERNE DEL FRICTION WASHER

Fri Oct 19 15:50:02 2001

Portata settimanale

Grafico

OPEN

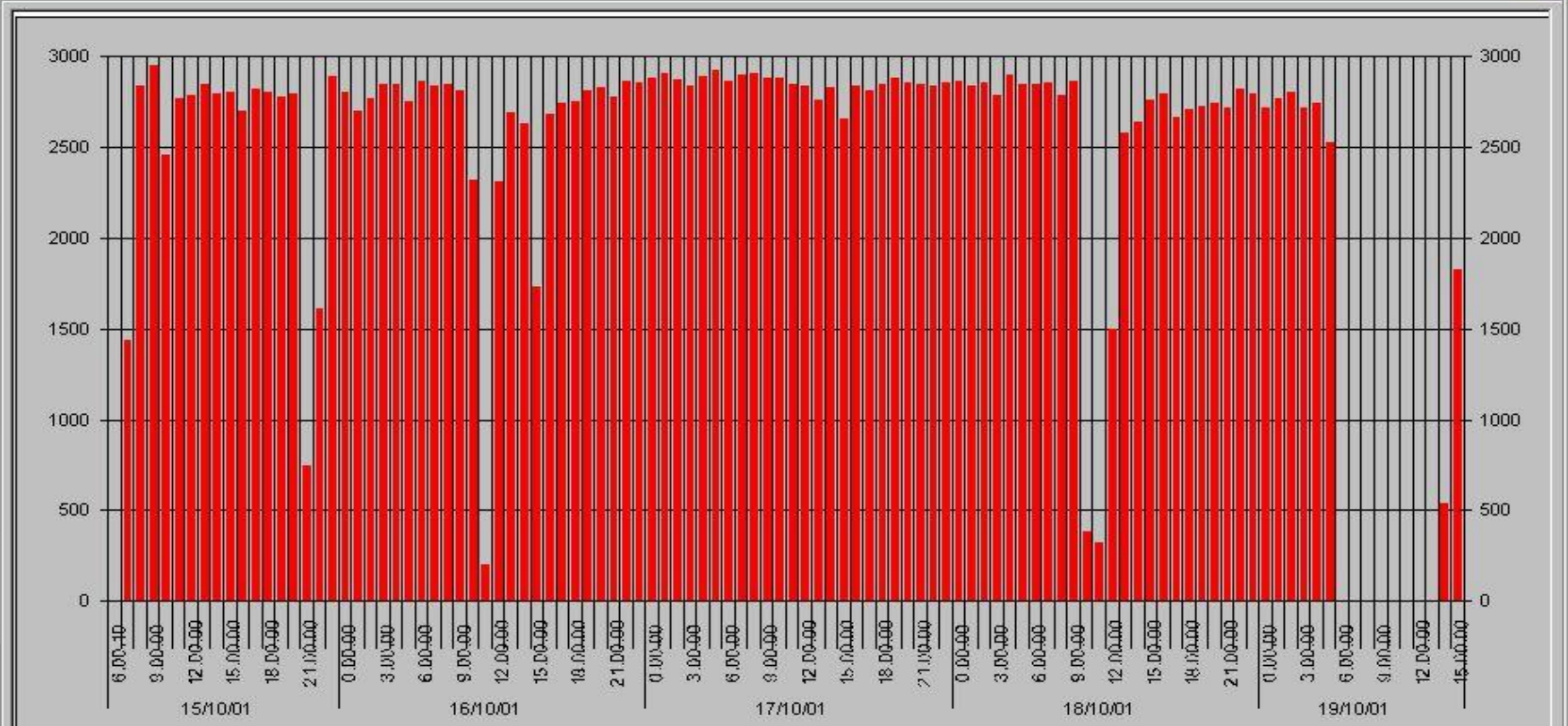
PRODUZIONE

CARICO MATERIALE

ASSORBIMENTI

TEMPERATURE

CHEMICALS



Data	Ora	SetPoint_nastro_10	Produzione_oraria_nastro_10	Produzione_finale_progressiva	Portata_Finale	OreSettimanali	ProduzioneSettimanale
15/10/01	6.00.10	0	0	3704867	0	0	0
15/10/01	7.00.00	4000	2848	3706301	1434	1	1434
15/10/01	8.00.00	4450	4433	3709144	2843	2	4277
15/10/01	9.00.00	4500	4416	3712092	2948	3	7225
15/10/01	10.00.00	4200	3722	3714550	2458	4	9683
15/10/01	11.00.00	4600	4481	3717320	2770	5	12453
15/10/01	12.00.00	4800	4714	3720108	2788	6	15241

Tutto

Selezione

Legenda

2D/3D

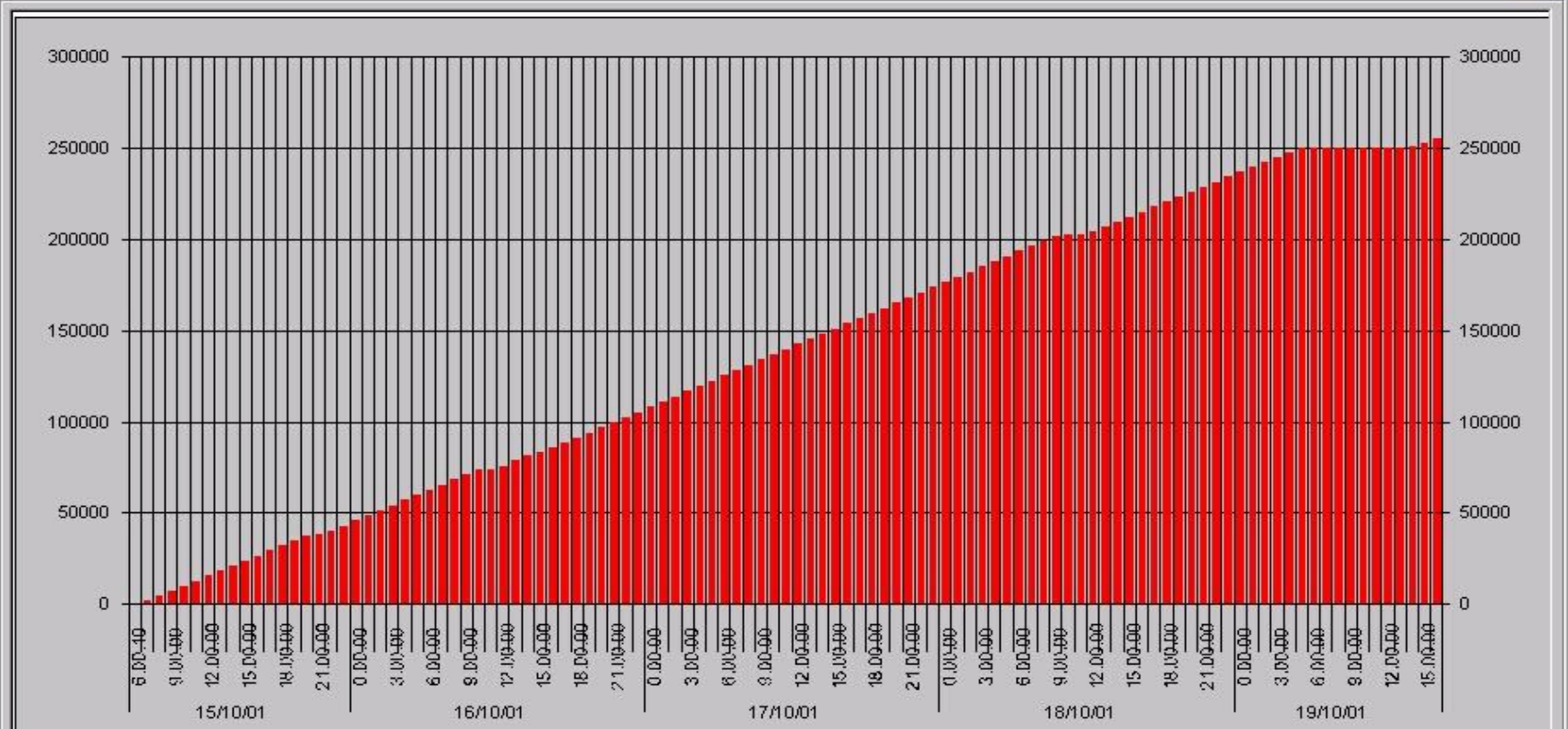
2D

3D

Esc

Produzione settimanale

Grafico

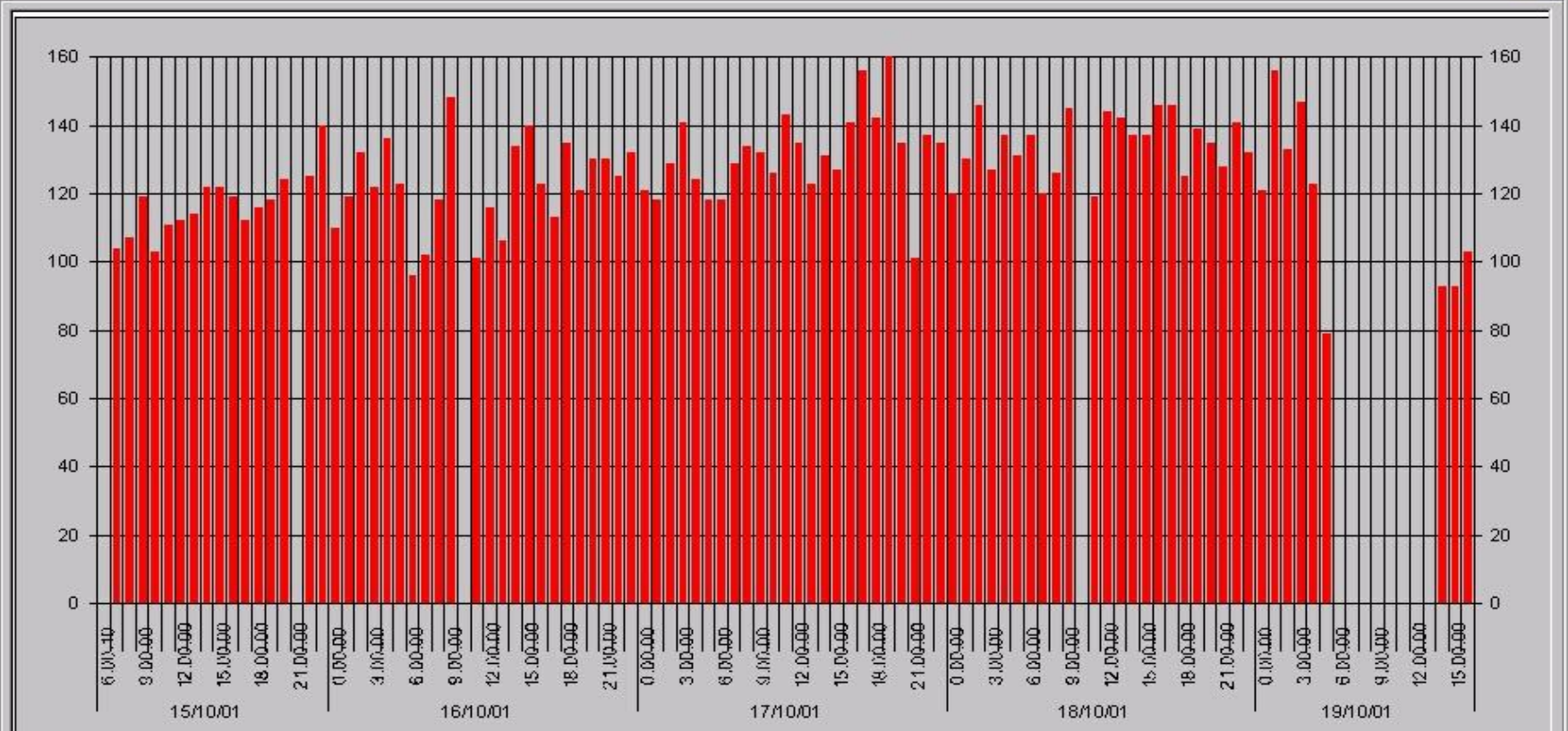


Data	Ora	SetPoint_nastro_10	Produzione_oraria_nastro_10	Produzione_finale_progressiva	Portata_Finale	OreSettimanali	ProduzioneSettimanale
15/10/01	6.00.10	0	0	3704867	0	0	0
15/10/01	7.00.00	4000	2848	3706301	1434	1	1434
15/10/01	8.00.00	4450	4433	3709144	2843	2	4277
15/10/01	9.00.00	4500	4416	3712092	2948	3	7225
15/10/01	10.00.00	4200	3722	3714550	2458	4	9683
15/10/01	11.00.00	4600	4481	3717320	2770	5	12453
15/10/01	12.00.00	4800	4714	3720108	2788	6	15241

OPEN
PRODUZIONE
CARICO MATERIALE
ASSORBIMENTI
TEMPERATURE
CHEMICALS
Tutto
Selezione
Legenda
2D/3D
2D
3D
Esc

Assorbimento mulino acqua

Grafico

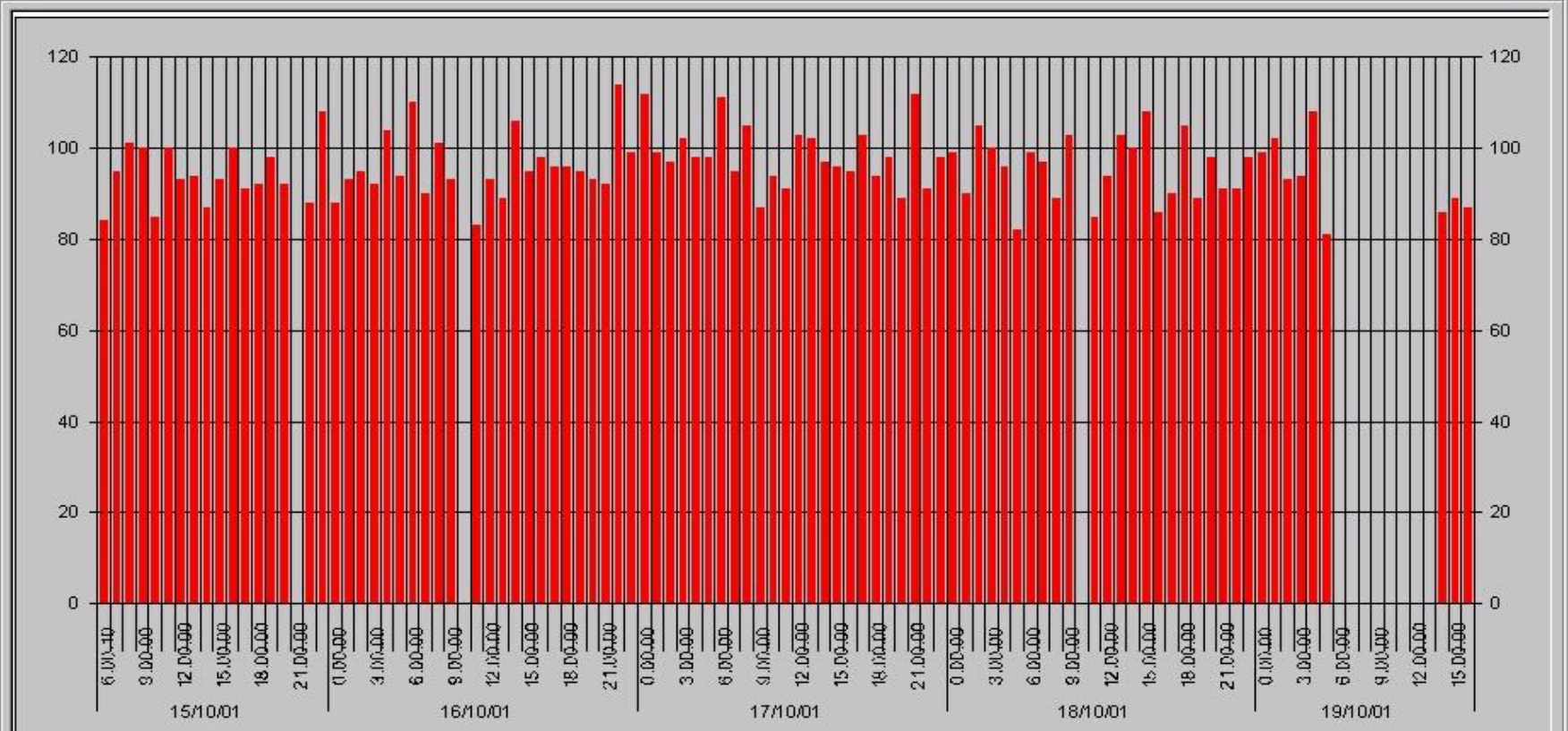


Data	Ora	Corrente_Mulino_30	Corrente_Friction_Washer_54	Corrente_Centrifuga_40	Corrente_Mulino_Finale_72	Pressostato_differenziale_essicatore
15/10/01	6.00.10	0	72	0	84	0.84957269999999996
15/10/01	7.00.00	104	79	59	95	0.4316239
15/10/01	8.00.00	107	82	64	101	0.42393160000000002
15/10/01	9.00.00	119	79	65	100	0.46153850000000002
15/10/01	10.00.00	103	80	69	85	0.42307689999999998
15/10/01	11.00.00	111	81	65	100	0.4452991
15/10/01	12.00.00	112	82	68	93	0.41538459999999999

OPEN
PRODUZIONE
CARICO MATERIALE
ASSORBIMENTI
TEMPERATURE
CHEMICALS
Tutto
Selezione
Legenda
2D/3D
2D
3D
Esc

Assorbimento mulino finale

Grafico



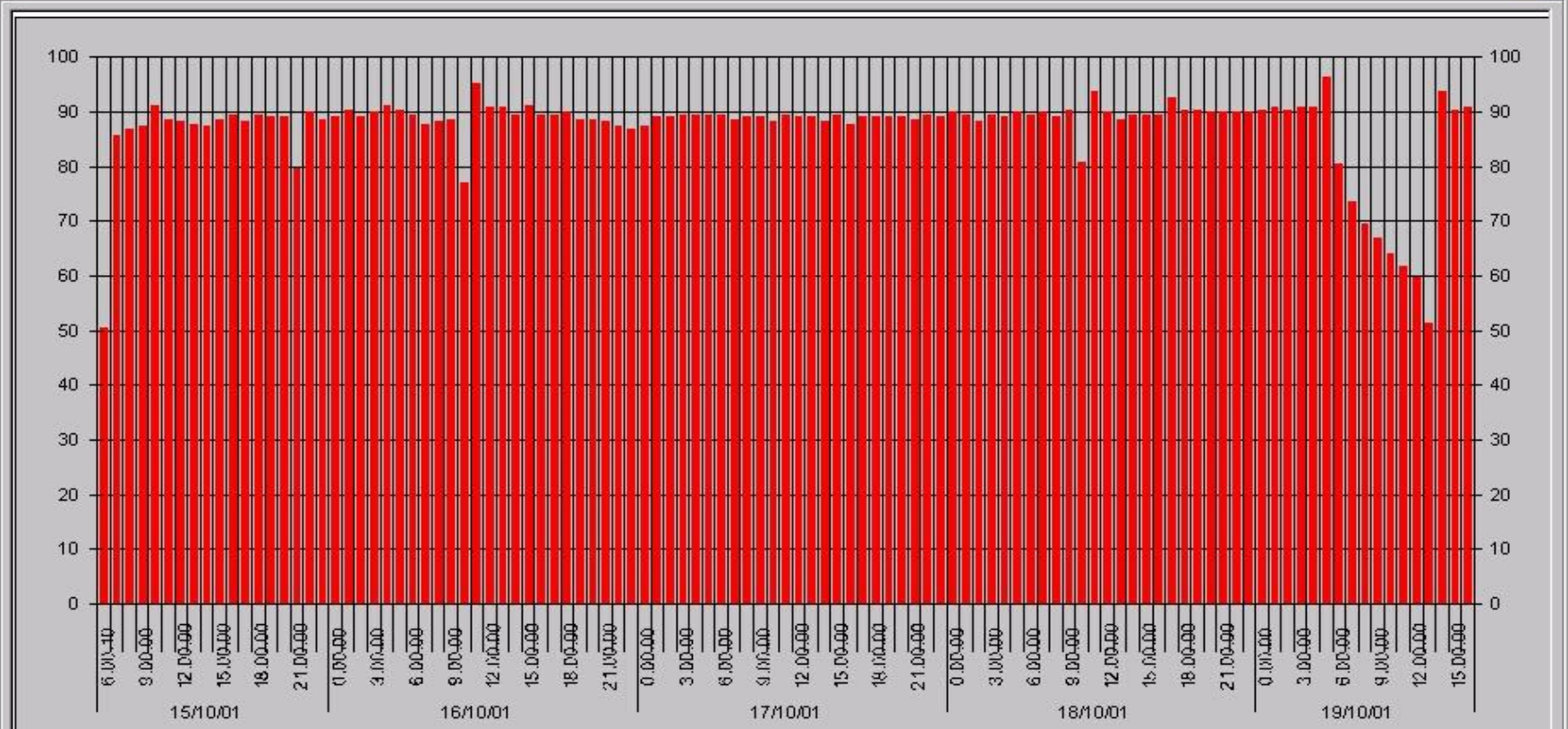
Data	Ora	Corrente_Mulino_30	Corrente_Friction_Washer_54	Corrente_Centrifuga_40	Corrente_Mulino_Finale_72	Pressostato_differenziale_essicatore
15/10/01	6.00.10	0	72	0	84	0.84957269999999996
15/10/01	7.00.00	104	79	59	95	0.4316239
15/10/01	8.00.00	107	82	64	101	0.42393160000000002
15/10/01	9.00.00	119	79	65	100	0.46153850000000002
15/10/01	10.00.00	103	80	69	85	0.42307689999999998
15/10/01	11.00.00	111	81	65	100	0.4452991
15/10/01	12.00.00	112	82	68	93	0.41538459999999999

OPEN
PRODUZIONE
CARICO MATERIALE
ASSORBIMENTI
TEMPERATURE
CHEMICALS
Tutto
Selezione
Legenda
2D/3D
2D
3D
Esc

Temperatur of the Friction Washer

Grafico

OPEN
PRODUZIONE
CARICO MATERIALE
ASSORBIMENTI
TEMPERATURE
CHEMICALS

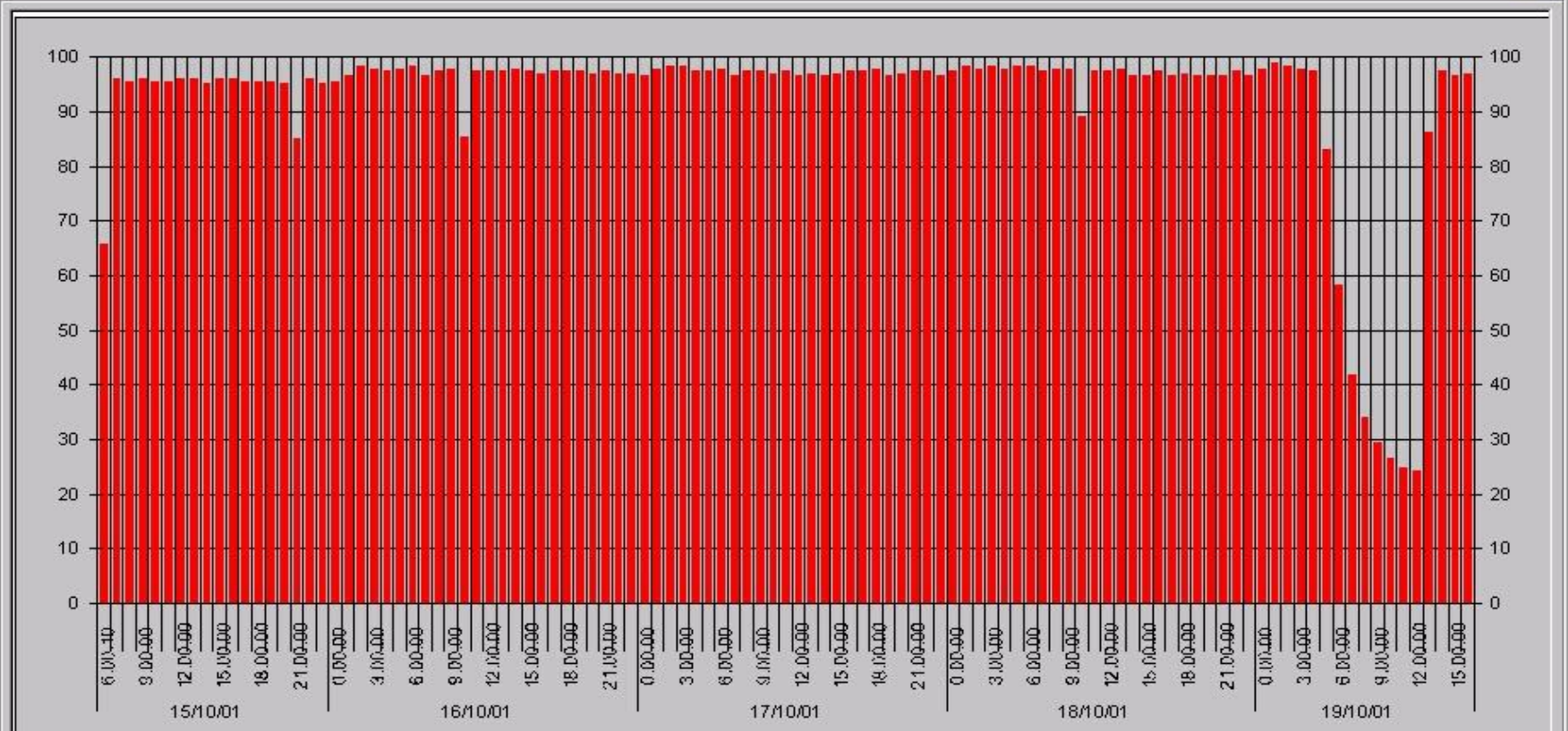


Data	Ora	emp_Serb_A	emp_Serb_B	Temp_Friction_Washer	Temp_Essiccatore_In	Temp_Essiccatore_Out
15/10/01	6.00.10	0000000003	0000000003	50.63373	69.532749999999993	33.620690000000003
15/10/01	7.00.00	0000000006	9999999993	85.687849999999997	159.59870000000001	75.862070000000003
15/10/01	8.00.00	95.61345	9999999995	86.986149999999995	170.79859999999999	78.017240000000001
15/10/01	9.00.00	0000000006	9999999997	87.41892	173.5986	77.586209999999994
15/10/01	10.00.00	95.61345	9999999995	91.313820000000007	113.3991	67.672420000000002
15/10/01	11.00.00	95.61345	9999999997	88.717219999999998	173.5986	78.879310000000004
15/10/01	12.00.00	0000000006	9999999993	88.284450000000007	170.79859999999999	78.879310000000004

Tutto
Selezione
Legenda
2D/3D
2D
3D
Esc

Temperatura serbatoio A

Grafico

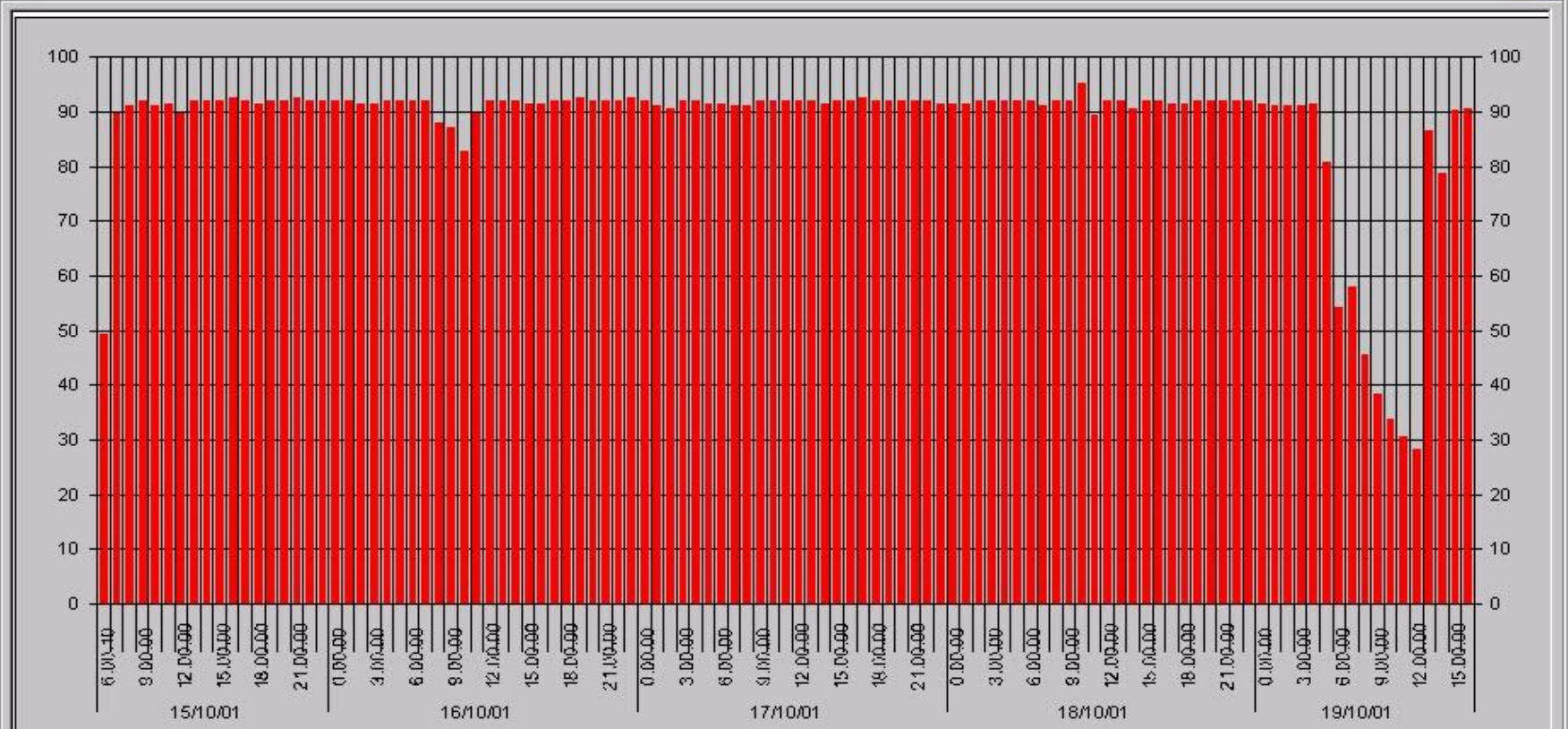


Data	Ora	emp_Serb_A	emp_Serb_B	Temp_Friction_Washer	Temp_Essiccatore_In	Temp_Essiccatore_Out
15/10/01	6.00.10	0000000003	0000000003	50.63373	69.532749999999993	33.620690000000003
15/10/01	7.00.00	0000000006	9999999993	85.687849999999997	159.59870000000001	75.862070000000003
15/10/01	8.00.00	95.61345	9999999995	86.986149999999995	170.79859999999999	78.017240000000001
15/10/01	9.00.00	0000000006	9999999997	87.41892	173.5986	77.586209999999994
15/10/01	10.00.00	95.61345	9999999995	91.313820000000007	113.3991	67.672420000000002
15/10/01	11.00.00	95.61345	9999999997	88.717219999999998	173.5986	78.879310000000004
15/10/01	12.00.00	0000000006	9999999993	88.284450000000007	170.79859999999999	78.879310000000004

OPEN
PRODUZIONE
CARICO MATERIALE
ASSORBIMENTI
TEMPERATURE
CHEMICALS
Tutto
Selezione
Legenda
2D/3D
2D
3D
Esc

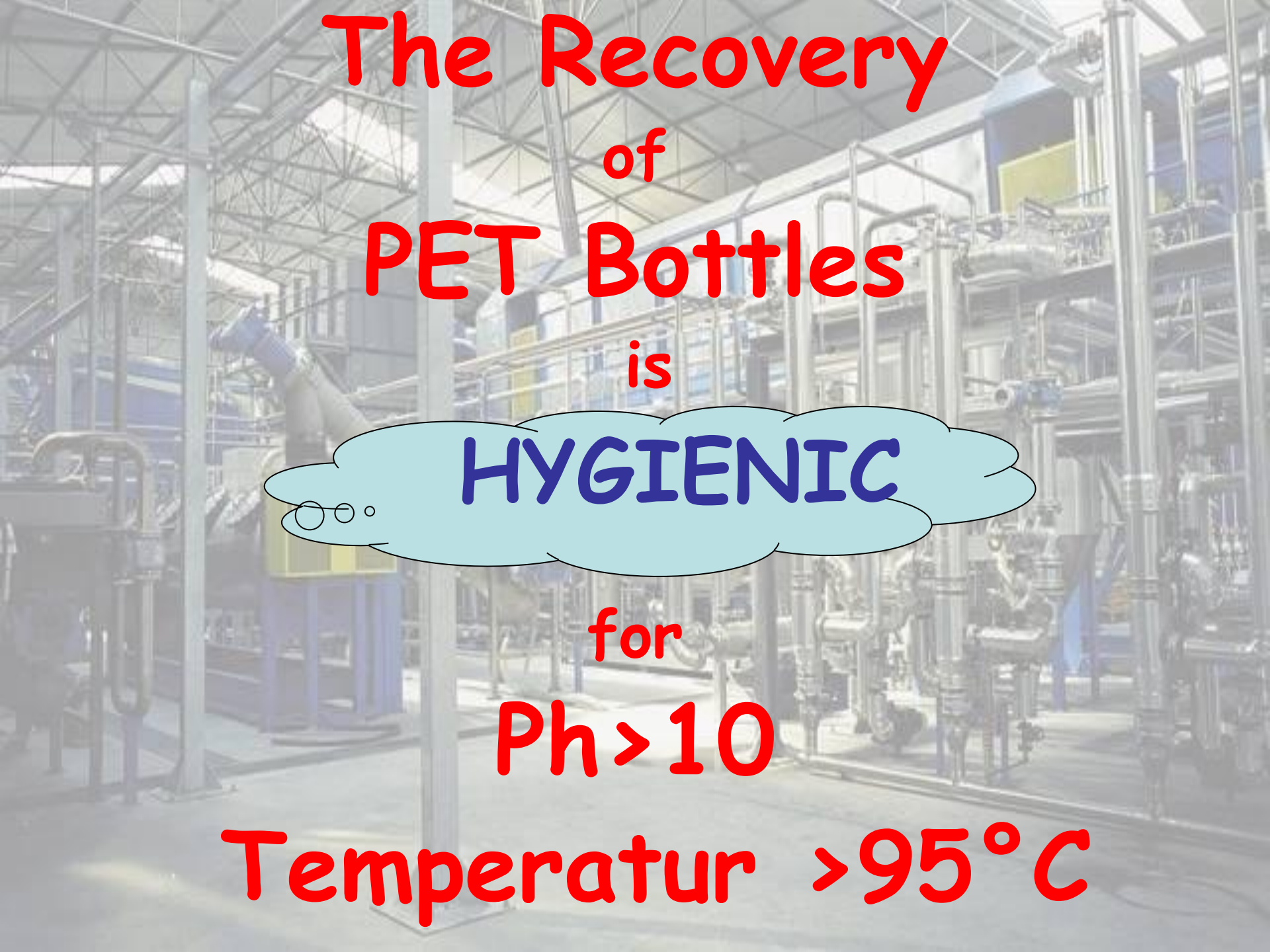
Temperatura serbatoio B

Grafico



Data	Ora	emp_Serb_A	emp_Serb_B	Temp_Friction_Washer	Temp_Essiccatore_In	Temp_Essiccatore_Out
15/10/01	6.00.10	0000000003	0000000003	50.63373	69.532749999999993	33.620690000000003
15/10/01	7.00.00	0000000006	9999999993	85.687849999999997	159.59870000000001	75.862070000000003
15/10/01	8.00.00	95.61345	9999999995	86.986149999999995	170.79859999999999	78.017240000000001
15/10/01	9.00.00	0000000006	9999999997	87.41892	173.5986	77.586209999999994
15/10/01	10.00.00	95.61345	9999999995	91.313820000000007	113.3991	67.672420000000002
15/10/01	11.00.00	95.61345	9999999997	88.717219999999998	173.5986	78.879310000000004
15/10/01	12.00.00	0000000006	9999999993	88.284450000000007	170.79859999999999	78.879310000000004

OPEN
PRODUZIONE
CARICO MATERIALE
ASSORBIMENTI
TEMPERATURE
CHEMICALS
Tutto
Selezione
Legenda
2D/3D
2D
3D
Esc


The Recovery
of
PET Bottles
is
HYGIENIC
for
Ph>10
Temperatur >95°C

Microbiological Laboratory Tests on Post-consumer Bottles and Washed Flakes

MacDermid
A SPECIALTY CHEMICAL COMPANY
Metallurgy Division

Spettabile

AMUT Spa
Via Cameri 16
28100 - Novara

San Martino di Trecate, 11.11.2003
Ns. Rif. : GP

Alla cortese attenzione del Vs. Dott. Sereni

OGGETTO: verifica cariche batteriche

Sono stati condotti test di laboratorio per evidenziare, ed eventualmente quantificare cariche batteriche presenti su PET precedente a processo di riciclo (ciclo di lavaggio a caldo) e successivamente a tale operazione:

Carica batterica totale (TSA – 48 h a 37 °C)

PET bottles 2,5 x 10^5 ufc/ml (unità formanti colonia)
PET flakes **3 ufc/ml**

Il valore riscontrato su PET flakes è da considerarsi come inquinamento da campionamento.

Funghi e Lieviti (SAB – 72 h)

PET bottles + + + (contaminazione elevata)
PET flakes **non rilevabili**

Coliformi totali (VRBL – 24/48 h a 37 °C)

PET bottles 7 x 10^3 ufc/ml
PET flakes **non rilevabili**

Enterobatteriaceae (VRBG – 24/48 h a 37 °C)

PET bottles 1,7 x 10^5 ufc/ml
PET flakes **non rilevabili**

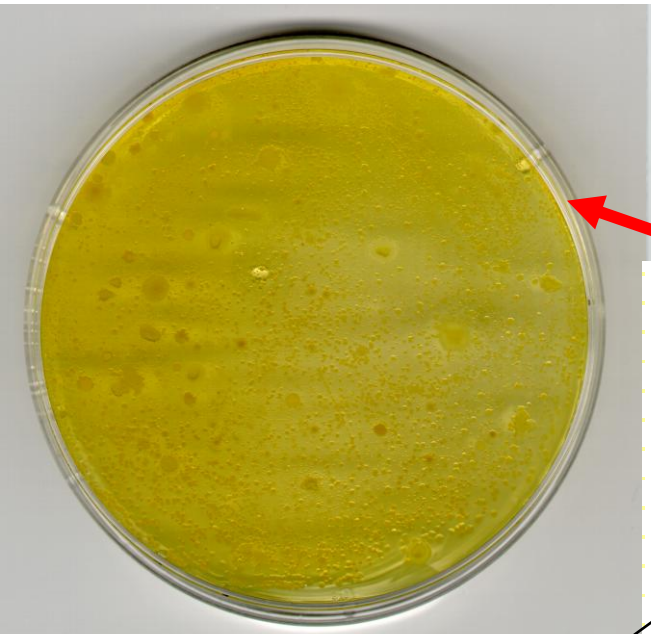
Total bacterial charge

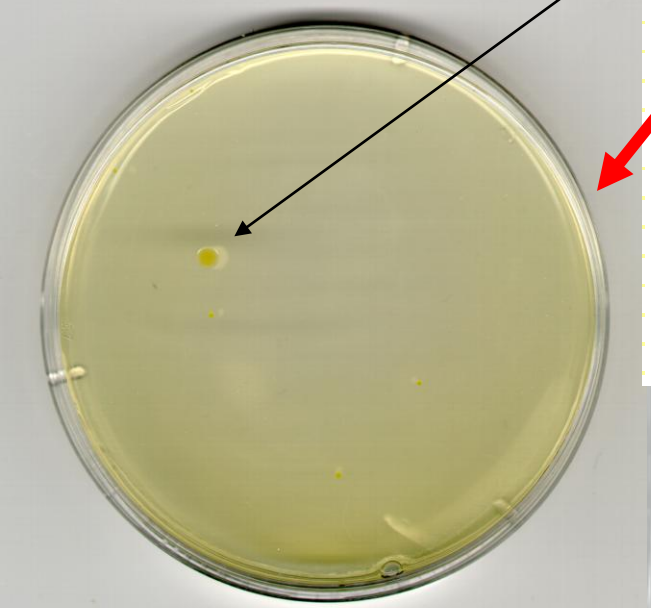
Units made colonies

Pollution of sample

Not considerable

Carica batterica totale (TSA – 48 h a 37 °C)





Bottles

Carica batterica totale (TSA – 48 h a 37 °C)

PET bottles	2,5 x 10^5 ufc/ml (unità formanti colonia)
PET flakes	**3 ufc/ ml**

Il valore riscontrato su PET flakes è da considerarsi come inquinamento da campionamento.

Funghi e Lieviti (SAB – 72 h)

PET bottles	+ + + (contaminazione elevata)
PET flakes	**non rilevabili**

Coliformi totali (VRBL – 24/48 h a 37 °C)

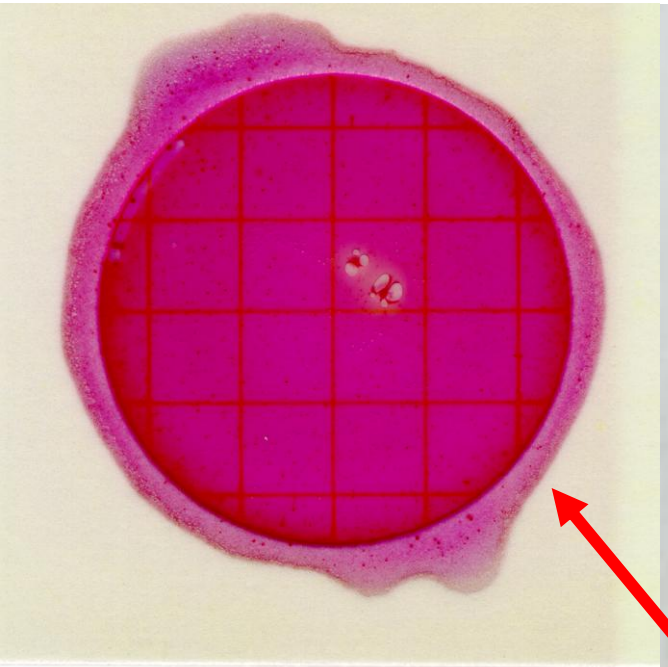
PET bottles	7 x 10^3 ufc/ml
PET flakes	**non rilevabili**

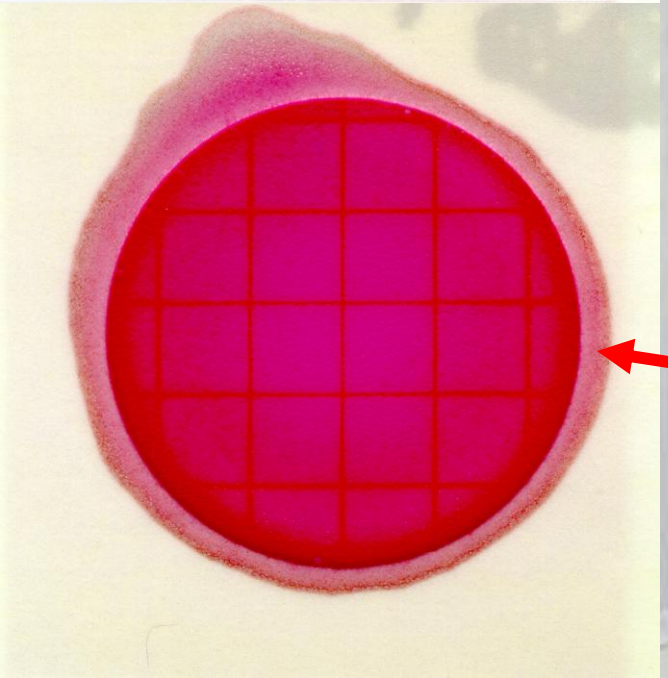
Enterobatteriaceae (VRBG – 24/48 h a 37 °C)

PET bottles	1,7 x 10^5 ufc/ml
PET flakes	**non rilevabili**

Flakes

Enterobatteriaceae (VRBG – 24/48 h a 37 °C)





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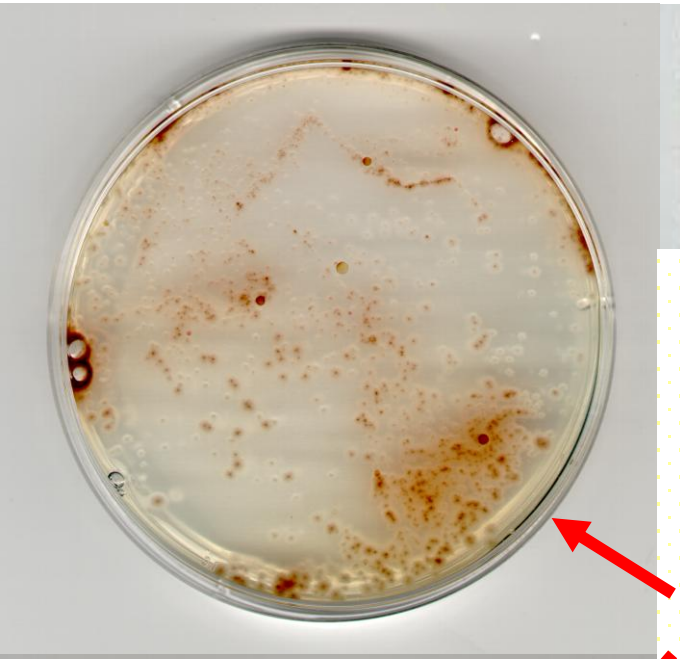
PET bottles	1,7 x 10^5 ufc/ml
PET flakes	**non rilevabili**

Flakes

Funghi e Lieviti (SAB – 72 h)



Bottles

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Enterobatteriaceae (VRBG – 24/48 h a 37 °C)

PET bottles 1,7 x 10^5 ufc/ml

PET flakes non rilevabili

Flakes

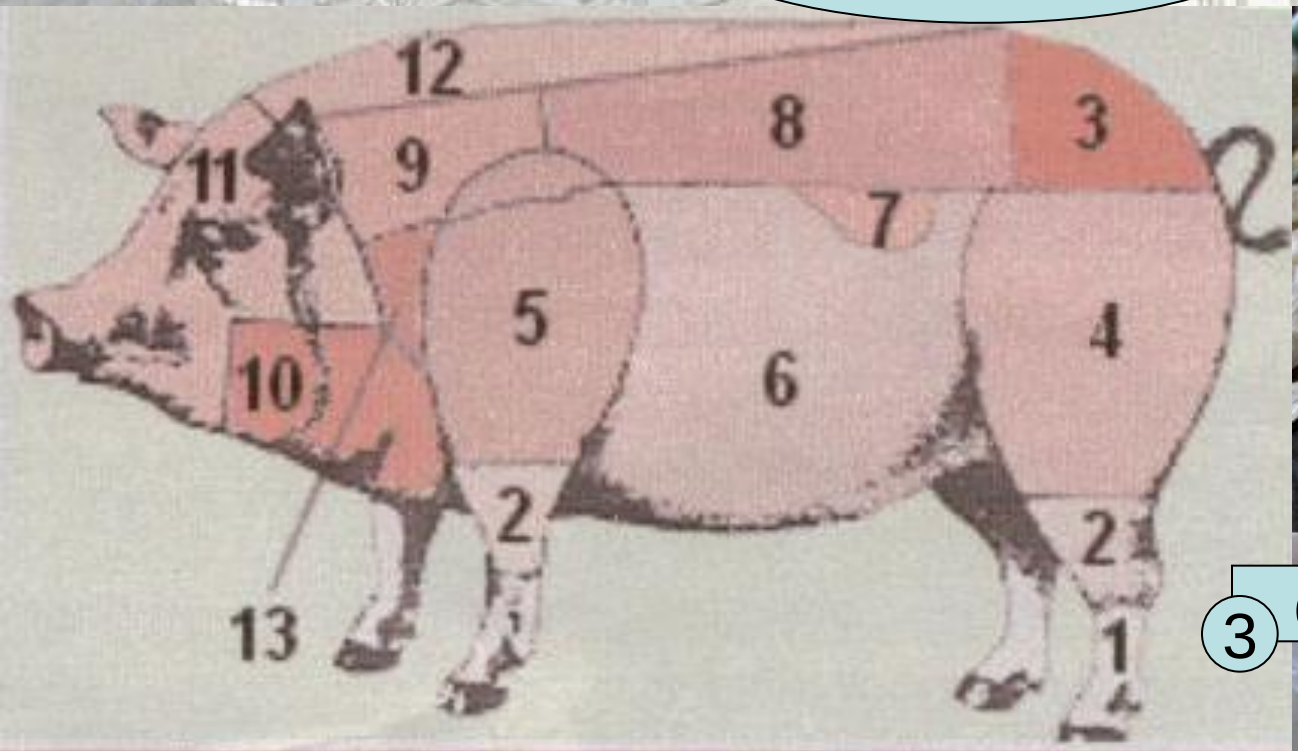
The Recovery of PET Bottles is

ECOLOGICAL

because:

The PET Bottles are like the Porks

Nothing is thrown away



1 zampe 2 zampino 3 carrè (culatello) 4 coscia 5 spalla

6 pancetta 7 filetto 8 lombo 9 coppa

10 gola e guanciale 11 testa 12 grasso 13 costine

The Wasted Materials produced from the Filters can be used as FDR (Energy Recovery)

PO Labels

Paper Labels

1

The Waste Material produced from the first Flotation Tank is recycled as good PO Flakes

PO Caps

2

PO Labels


3
The Mud produced from the Wasted Water Plant can be used as Cement Additive

The Wires of Bales are recycled

4

ERREPLAST
The process capability

The plastic recovery plant has a process capability up to 15.000 ton/year of PET post consumer bottles with a potentiality of 2.500 kg/hour input and 2.000 kg/hour output.

ERREPLAST
The plant

The Erreplast plant, completely realised by Italian technology, represents today an example of advanced industrial application.

A fully automated system produces high quality PET flakes by a mechanic treatment of plastic containers coming from the differentiated collection of rubbish.

MONTELLO
The process capability

- The PET recovery plant has a process capability up to **20.000 ton/year** of PET post consumer bottles with a potentiality of **3.600 kg/hour** input and **3.000 kg/hour** output.

MONTELLO

The Montello plant, completely realised by Italian technology, represents today the most advanced centre of Recycling .

A fully integrated system produces high quality PET flakes from the automatic sorting plant of plastic post-consume waste coming from the differentiated collection .