Siprem International srl

Continuous Membrane Press

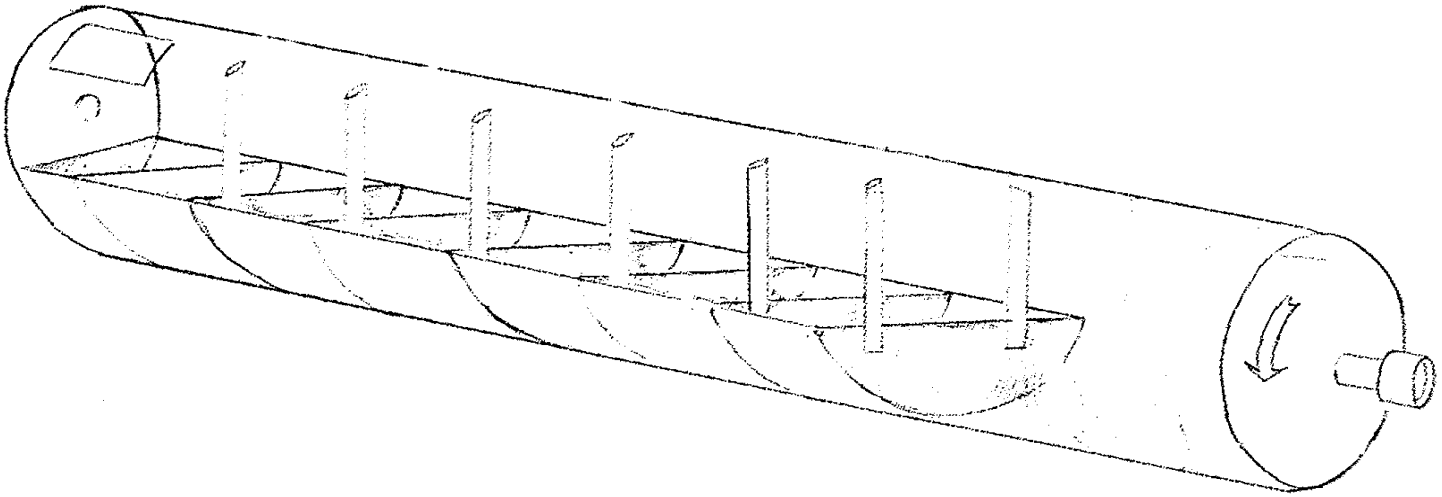
Via Lazio, 8
61100 Pesaro (PU)
ITALIA
Tel. +39 0721 451258 / 414887 / 414109
Fax +39 0721 451812
www.siprem.it
e-mail: siprem@siprem.it

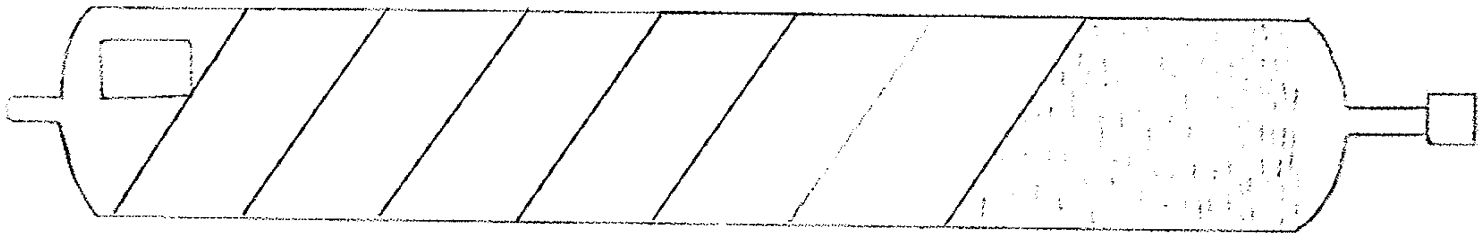
Continuous Membrane Press

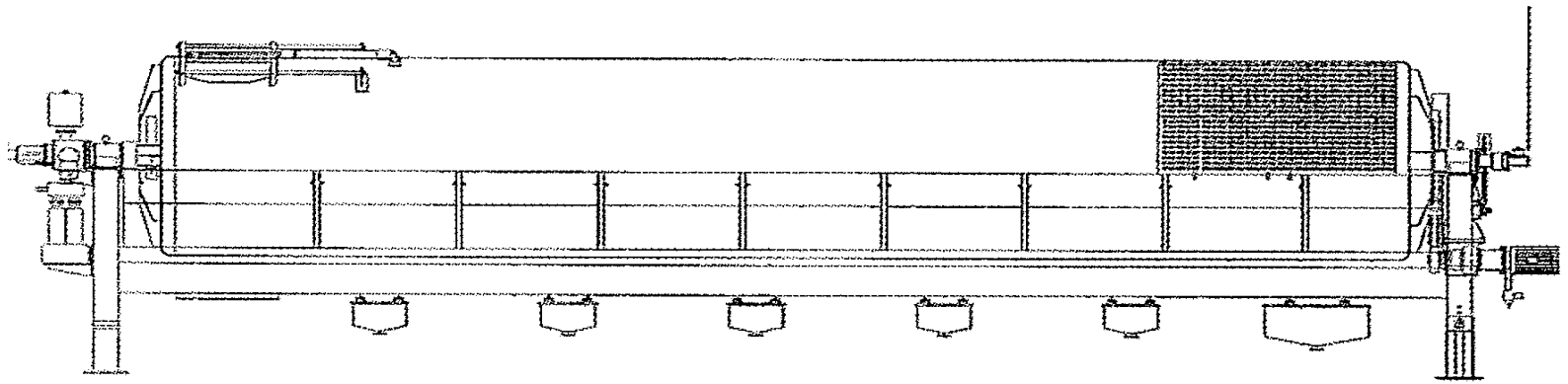
The new generation of machines able to both load product and unload marcs in continuous operation.

(European Patent no. 0 569 695 on 20th November 1996)


SIPFEM
INTERNATIONAL
Presse Continue
à Membrane
PCM400







Working principle

The Continuous Membrane Press consists of a cylindrical tank lying horizontally, rotating about its axis and entirely made of Stainless Steel Aisi 304.

The tank is fixed to the chassis by means of two supports with bronze bushes, which allows it to rotate by means of a gearbox. The chassis is made of carbon steel and all the parts in contact with the product are made of Stainless Steel Aisi 304.

Working principle

The tank contains several diaphragms inside it, basically semi-elliptical in shape, and arranged in such a way as to create first free dejuicing chamber and a series of "pressure chambers", each with its own specific function.

Working principle

The tank has a large perforated surface area with holes that are flared outwards and is self-cleaning to ensure efficient dejuicing and a de-blocking action on the sections where the juice passes through.

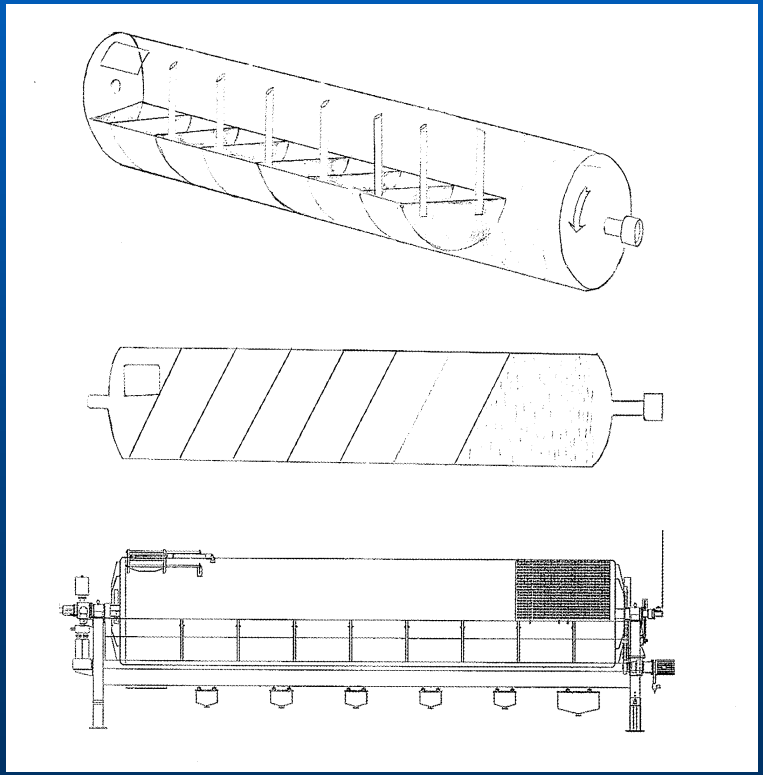
The dejuicing holes take up the entire external surface of the free dejuicing chamber, whilst in the remaining pressure chambers only half of the circumference is perforated.

Working principle

The dejuicing chamber is located at one end of the cylinder, where the product is fed continuously by means of an axial filling conduit. This chamber is designed so that it drains completely and guarantees the extraction of a high percentage of free-run juice during the filling phase.

Working principle

The various pressure chambers are separated from each other. Inside which the product is gradually subjected to increased pressure as it progresses towards the final chamber. This process makes it possible to achieve the same effect as in a traditional membrane press using a system involving different phases, each one with different pressures.



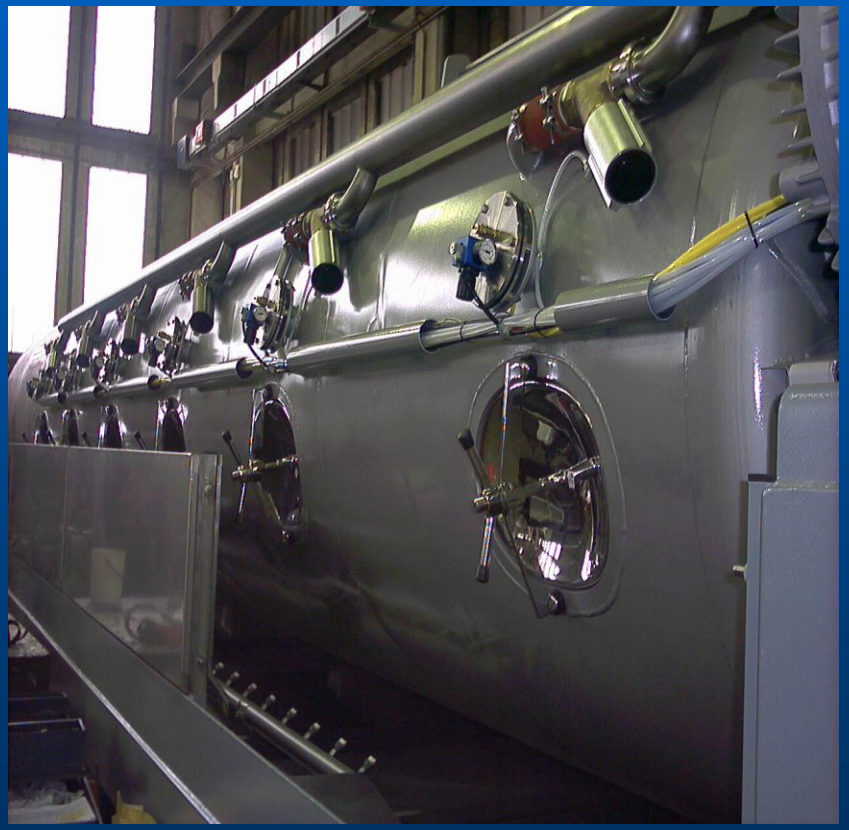
Working principle

Each compression chamber contains a separate (from the other chambers) press membrane. The membrane that separates the two tank sections consists of a nylon fabric, coated with a food grade non-toxic material. The fabric can be heat welded if any repairs are necessary.

A pneumatically operated automatic door allows the intermittant discharge of the exhausted marc from the final pressure chamber.

Working principle

A system of pressurised fluid introduction is also present, consisting of a collector and a series of inlets, controlled by respective valves, for the different pressure chambers.



Working principle

The pressures inside the different chambers range in value from 0.2-0.3 bar in the first section of the machine, reaching about 2.0 bars in the final section from which the marc is then discharged.

The various pressing phases are interspersed by crumbling to allow continual renewal of the grape mass structure achieving excellent dejuicing rates and to move forward the pomace from one chamber to the next one

Example of operating pressure setting

Chamber 1	**0,20 bar**
Chamber 2	**0,40 bar**
Chamber 3	**0,80 bar**
Chamber 4	**1,20 bar**
Chamber 5	**1,50 bar**
Chamber 6	**1,80 bar**
Chamber 7	**2,00 bar**

N.B. – The number of chamber spans from 6 to 7 according to the specific model

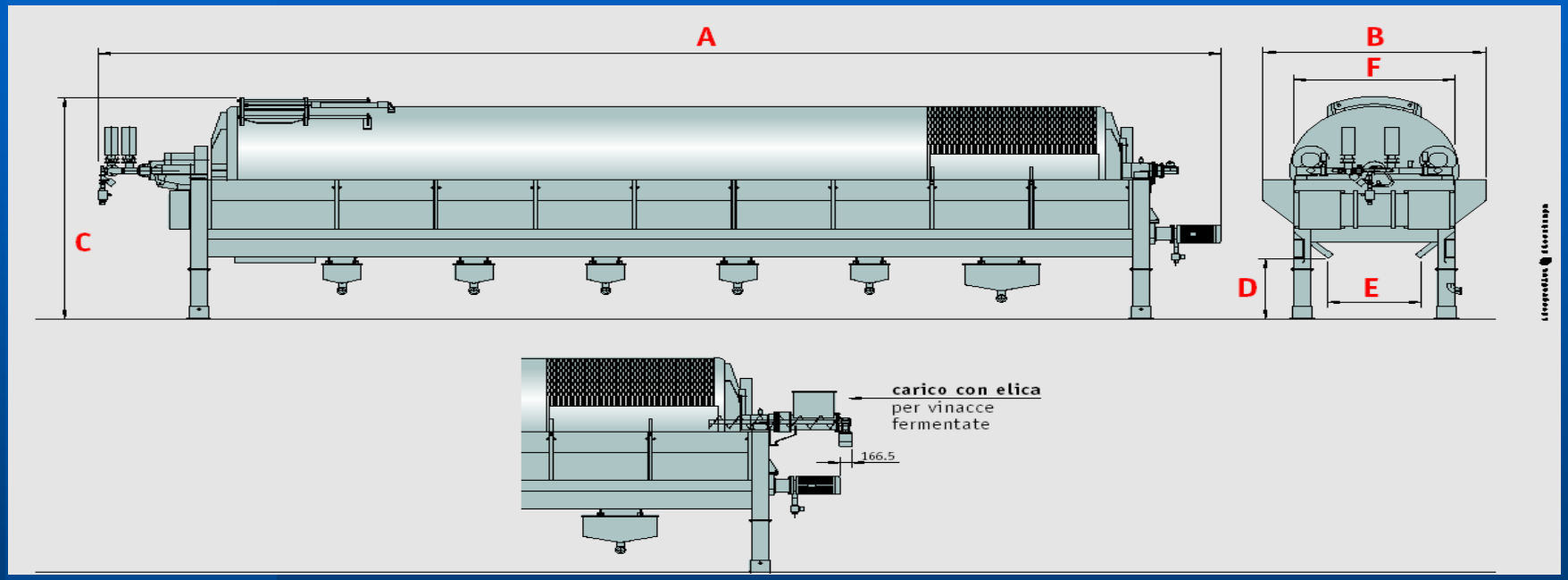
Working principle

The juice obtained by the processing is collected in different troughs, located under the press, allowing separation at every stage.

I TROUGH	40%
II TROUGH	20%
III TROUGH	15%
IV TROUGH	12%
V TROUGH	8%
VI TROUGH	5%

N.B. – The above indicated percentages refer to total yield of 76-80 %

Overall dimensions (expressed in mm)



MISURE D'INGOMBRO E PESO							
PCM100	12780	2300	3400	900	1050	2300	8700 kg
PCM200	14657	2600	3450	1050	1200	2400	9500 kg
PCM400	16644	3300	4150	1050	1200	2400	13000 kg
	A	B	C	D	E	F	PESO

Le quote sono espresse in millimetri. La Ditta costruttrice si riserva il diritto di apportare alle macchine le modifiche necessarie per il loro miglioramento; per tali motivi i dati hanno valore indicativo.

Technical data

PCM100	220hl	6	10-16 tonn	13-22 tonn	9,2kW	13kW	2 kW	120 mm	80-100 mm	740 mm	potenza di 22kW portata elaborata 3000 l/min a 1 Mpa (10 bar) 1 serbatoio di accumulo da 5000 litri a 1 Mpa (10 bar)
PCM200	350hl	6	18-25 tonn	25-33 tonn	15kW	2x13kW	2 kW	120 mm	80-120 mm	740 mm	potenza di 30kW portata elaborata 4500 l/min a 1 Mpa (10 bar) 2 serbatoi di accumulo da 3000 litri a 1 Mpa (10 bar)
PCM400	640hl	7	32-45 tonn	42-60 tonn	18kW	2x13kW	2 kW	120 mm	80-120 mm	740 mm	potenza di 45kW portata elaborata 6000 l/min a 1 Mpa (10 bar) 2 serbatoi di accumulo da 5000 litri a 1 Mpa (10 bar)
	capacità del serbatoio a vuoto	numero di camere di pressatura	produzione oraria di uva fresca, *pigiata o diraspata*	produzione di uva fermentata, *espressa come uva iniziale svinata*	potenza del motore di rotazione	potenza di ciascuna della soffiante	potenza del motore di rotazione dell'elica, *dove previsto*	diametro nominale del condotto di carico	diametro nominale dei condotti delle tramogge di scarico del mosto	diametro del portello di evacuazione della vinaccia	caratteristiche del compressore

Technical data

TECHNICAL DATA	PCM 100	PCM 200	PCM 400
Tank capacity when empty	220 hl	350 hl	640 hl
N° of pressing chambers	6	6	7
Rotation motor power	9,2 kW	15 kW	18 kW
Power of the blower	13 kW	2x13 kW	2x13 kW
Motor for rotating propeller *(optional)*	2 kW	2 kW	2 kW
Hourly output of fresh crushed or de-stalked grapes	10-16 Ton	18-25 Ton	32-45 Ton
Hourly output of fermented racked grapes *(expressed as starting grapes)*	13-22 Ton	25-33 Ton	42-60 Ton
Nominal diameter of loading pipe	120 mm	120 mm	120 mm
Nominal diameters of must emptying hopper pipes	80-100 mm	80-120 mm	80-120 mm
Diameter of marcs unloading door	740 mm	740 mm	740 mm
Weight	8700 Kg	9500 Kg	13000 Kg

OVERALL DIMENSIONS (in mm)

	A	B	C	D	E	F
PCM 100	12780	2300	3400	900	1050	2300
PCM 200	14657	2600	3450	1050	1200	2400
PCM 400	16644	3300	4150	1050	1200	2400

Compressor characteristics PCM 100
rating 22kw 3000 litres/min. at 1 MPA (10 bar)
1 collecting tank 5000 litres at 1 MPA (10 bar)

Compressor characteristics PCM 200
rating 30kw 4500 litres/min. at 1 MPA (10 bar)
2 collecting tanks 3000 litres at 1 MPA (10 bar)

Compressor characteristics PCM 400
rating 45kw 6000 litres/min. at 1 MPA (10 bar)
2 collecting tanks 5000 litres at 1 MPA (10 bar)

Advantages of the Continuous System

- High output capacity guaranteed by the continuous cycle operation

- Soft and calibrated pressing, a typical feature of membrane operation

- Fractional juice separation obtained through progressive regulation of working pressures

- Complete juice extraction from marcs ensured by the pressing technique.

Advantages of the continuous system compared with the discontinuous one

PCM

-Continuous operation

-Product quality similar to that obtained by traditional membrane presses of the same kind.

-High juice yield.

-Working cycle duration: about 1 hour/1 hour and 20' (from the charging to the discharging of the exhausted marcs).

- Possibility of separating the juice at every different pressure stage.

- Low working pressure.

- Complete automation of the various operations

- Extremely versatile, able to adapt to the various types of grape.

- Easily swapped from one type of grape to another.

- Automated and efficient washing operations

-Strong reliability due to the use of established technology used for over a decade.

Discontinuous System

- Discontinuous processing cycle.

- The pressing cycle depends on the product being processed and the size of the press can take over 2 hours

- Higher installation costs

Features

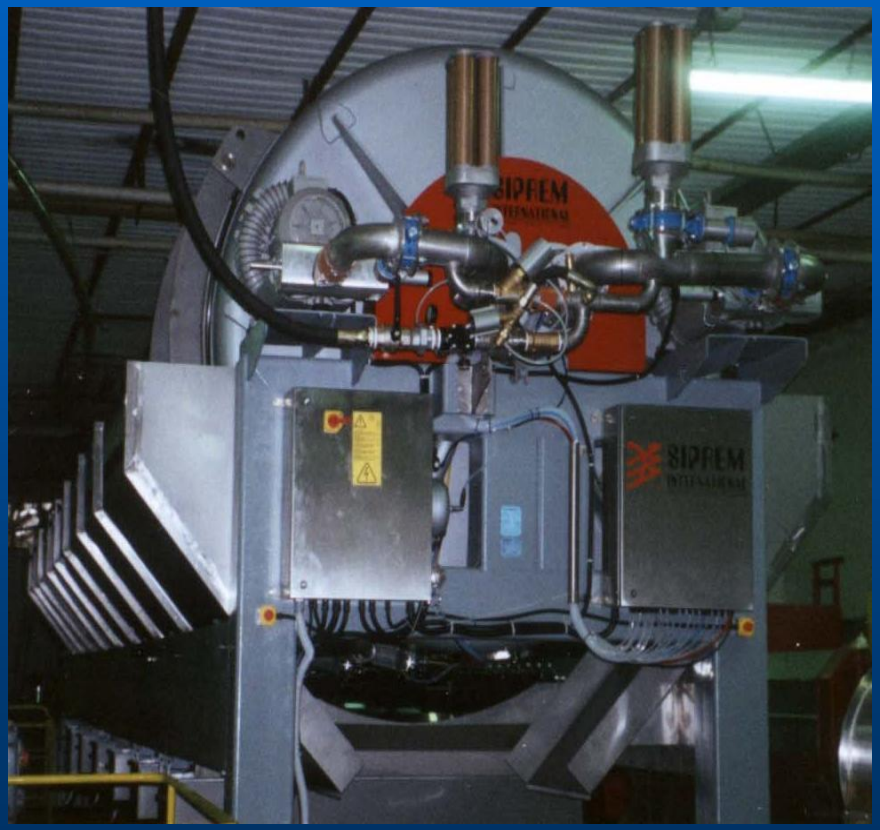
Control Panel

Modern and functional, immediately understood by means of the symbols used. Equipped with a PLC for programming, the control panel allows the operator to set the various working phases of the machine, to edit the parameters and to check correct machine function by digital keyboard display.
The operator can program:
-pressure level in each pressing chamber with a maximum difference of 0.4 bar between 2 contigue chamber
-the holding time: is the same for each chamber
-the number of revolutions of the tank between two pressing cycles (necessary for cake breaking and pomace forwarding)
-the number of revolution of the tank with open door (necessary to discharge the pomace of the last pressure chamber)

Features

Pneumatic circuit

The machine's substantial need of compressed air is supplied by a rationally designed system that includes blowers, stainless steel pipes, pressure reducers, safety and exchange valves and discharged silencers.
Everything is controlled by its own control panel.



Features

Unloading door

The device, with pneumatically controlled automatic opening, allows the aperture through which the marcs is released to be opened either completely or only partially (according to the working capacity of the external marc removal device).

Features

TWO FEEDING SYSTEMS ARE AVAILABLE:

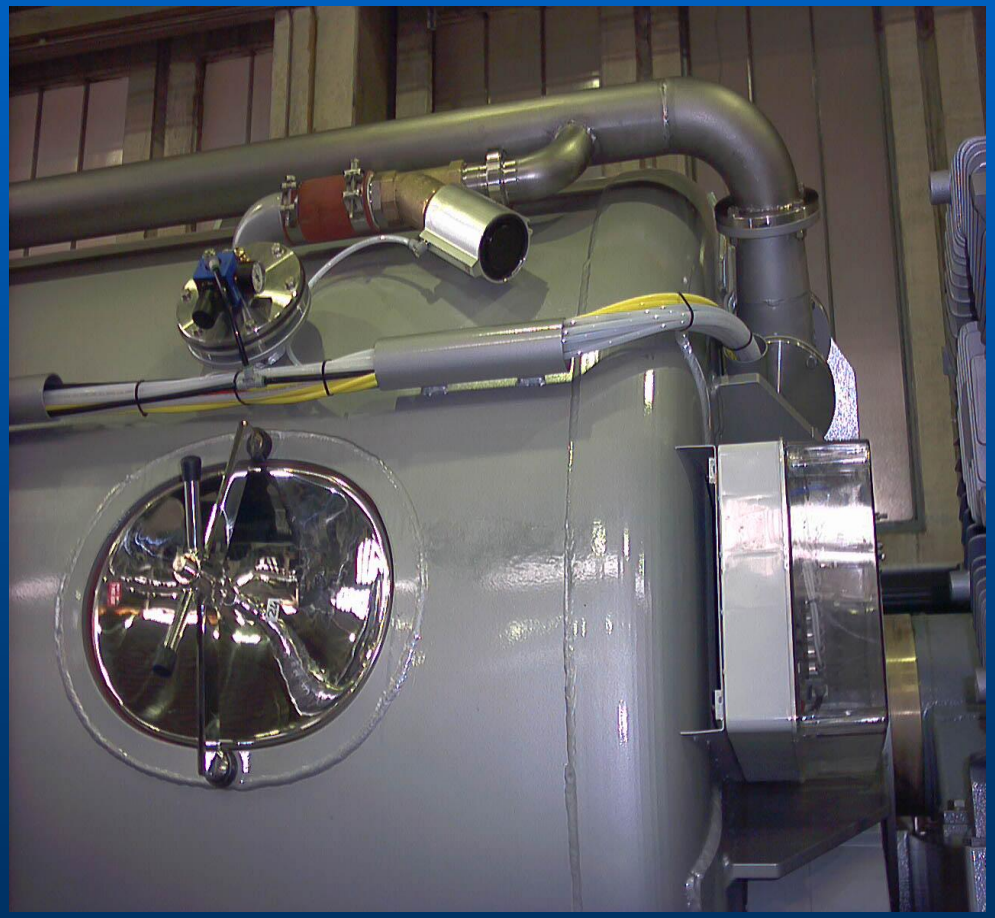
Standard Axial type

Axial screwed type

Features

"Manhole Door"

For easy membrane inspection



Features

Automatic Washing

The procedure, entirely PLC controlled, is carried out using a series of suitably located spray nozzles which spray the surfaces to be cleaned with water from the mains supply.

Features

Juice Collecting Troughs

The trough underneath the static draining chamber is bigger than the troughs under the pressing chambers.

Features of the Working cycle

Juice drainage

This is performed continuously at every pressure stage through the side of the pressing chamber, equipped with suitably shaped openings.
In this way juice with different characteristics can be drained separately.

Features of the Working cycle

Pomace discharging

The processing residue, completely strained of juice, is unloaded from the machine on the opposite end to the feed, via the tank's rotational movement.

Some analysis of the juice/wine obtained Prosecco juice vintage 2002 analysis- Winery: Cantina sociale Ormelle, Treviso

PRECHAMBER N.1			PRECHAMBER N.3		
Reducing sugar	%w/v	15,8	Reducing sugar	%w/v	15,86
pH (electrometric method)		3,5	pH (electrometric method)		3,54
Potassium	g/l	1,88	Potassium	g/l	1,95
Tartaric Acid	g/l	5,67	Tartaric Acid	g/l	5,79
Titratable Acidity (expressed in tartaric acid)	g/l	7,2	Titratable Acidity (expressed in tartaric acid)	g/l	7
Total sulpur dioxide	mg/l	34	Total sulpur dioxide	mg/l	35
Malic Acid (-)	g/l	4,94	Malic Acid (-)	g/l	4,61
Total Polyphenols (uv) expressed in galic acid	mg/l	193	Total Polyphenols (uv) expressed in galic acid	mg/l	213
Suspended solids (centrifugation)	%	1,74	Suspended solids (centrifugation)	%	0
Assimilable nitrogen	mg/l	184	Assimilable nitrogen	mg/l	186
PRECHAMBER N.2			**PRECHAMBER N.4**		
Reducing sugar	%w/v	15,62	Reducing sugar	%w/v	15,71
pH (electrometric method)		3,53	pH (electrometric method)		3,61
Potassium	g/l	1,91	Potassium	g/l	2,1
Tartaric Acid	g/l	5,81	Tartaric Acid	g/l	6,04
Titratable Acidity (expressed in tartaric acid)	g/l	7,1	Titratable Acidity (expressed in tartaric acid)	g/l	7,3
Total sulpur dioxide	mg/l	38	Total sulpur dioxide	mg/l	35
Malic Acid (-)	g/l	4,68	Malic Acid (-)	g/l	5,16
Total Polyphenols (uv) expressed in galic acid	mg/l	203	Total Polyphenols (uv) expressed in galic acid	mg/l	222
Suspended solids (centrifugation)	%	0,67	Suspended solids (centrifugation)	%	0,62
Assimilable nitrogen	mg/l	178	Assimilable nitrogen	mg/l	189

Laboratory Michelet (Treviso)

Prosecco juice vintage 2002 analysis - Winery: Cantina sociale Ormelle, Treviso

PRECHAMBER N.5			PRECHAMBER N.6		
Reducing sugar	%w/v	15,66	Reducing sugar	%w/v	14,9
pH (electrometric method)		3,59	pH (electrometric method)		3,72
Potassium	g/l	2,13	Potassium	g/l	2,47
Tartaric Acid	g/l	5,98	Tartaric Acid	g/l	5,46
Titratable Acidity (expressed in tartaric acid)	g/l	7,3	Titratable Acidity (expressed in tartaric acid)	g/l	7
Total sulpur dioxide	mg/l	36	Total sulpur dioxide	mg/l	41
Malic Acid (-)	g/l	5,09	Malic Acid (-)	g/l	5,84
Total Polyphenols (uv) expressed in galic acid	mg/l	221	Total Polyphenols (uv) expressed in galic acid	mg/l	294
Suspended solids (centrifugation)	%	0,78	Suspended solids (centrifugation)	%	0,45
Assimilable nitrogen	mg/l	190	Assimilable nitrogen	mg/l	195

Laboratory Michelet (Treviso)

Sangiovese juice vintage 2002 analysis - Winery: Cantine soc. Chianti Senesi e Fiorentini (Siena)

PRECHAMBER NO.1			**PRECHAMBER NO. 3**		
Total acidity in tartaric acid	gr/l	8	Total acidity in tartaric acid	gr/l	9,1
pH (electrometric method)		3,2	pH (electrometric method)		3,3
Total sulphur dioxide	mg/l	60	Total sulphur dioxide	mg/l	70
Total Polyphenols	mg/l	1.632,00	Total Polyphenols	mg/l	1.930,00
Malic Acid (-)	gr/l	2,5	Malic Acid (-)	gr/l	2,61
Tartaric Acid	gr/l	1,83	Tartaric Acid	gr/l	1,91
Potassium	mg/l	750	Potassium	mg/l	802
Assimilable Nitrogen	mg/l	123,2	Assimilable Nitrogen	mg/l	169,4
Brix Sugars	gr/l	8,93	Brix Sugars	gr/l	9,55
Suspended solids	gr/l	29	Suspended solids	gr/l	27
PRECHAMBER NO. 2					
Total acidity in tartaric acid	gr/l	9,5			
pH (electrometric method)		3,25			
Total sulphur dioxide	mg/l	72			
Total Polyphenols	mg/l	1.873,00			
Malic Acid (-)	gr/l	2,69			
Tartaric Acid	gr/l	2,09			
Potassium	mg/l	800			
Assimilable Nitrogen	mg/l	168			
Brix Sugars	gr/l	9,52			
Suspended solids	gr/l	25			

Laboratory Imavi (Ancona)

Sangiovese juice vintage 2002 analysis - Winery: Cantine soc. Chianti Senesi e Fiorentini (Siena)

PRECHAMBER NO. 4			PRECHAMBER NO. 5		
Total acidity in tartaric acid	gr/l	8,8	Total acidity in tartaric acid	gr/l	8,8
pH (electrometric method)		3,35	pH (electrometric method)		3,3
Total sulphur dioxide	mg/l	75	Total sulphur dioxide	mg/l	66
Total Polyphenols	mg/l	1.955,00	Total Polyphenols	mg/l	2.063,00
Malic Acid (-)	gr/l	2,6	Malic Acid (-)	gr/l	2,57
Tartaric Acid	gr/l	1,87	Tartaric Acid	gr/l	2,18
Potassium	mg/l	780	Potassium	mg/l	890
Assimilable Nitrogen	mg/l	165,2	Assimilable Nitrogen	mg/l	170,8
Brix Sugars	gr/l	9,2	Brix Sugars	gr/l	9,64
Suspended solids	gr/l	20	Suspended solids	gr/l	12

Laboratory Imavi (Ancona)

Our "PCM" references

PCM in ITALY

Mod PCM 200

-VINI CHIANTI SENESI	Poggibonsi (SI)	Red grapes
-COLLI FIORENTINI	Montespertoli (FI)	Red grapes
-C. S. MADONNA DEL CARMINE	Lanciano (CH)	White/red grapes
-Cantine RIUNITE & CIV S.c.a.	Castelfranco Emilia (MO)	White grapes
-Cantina di FAENZA Soc. Agr. Coop.	Faenza (RA)	White/red grapes
-Cantina dei COLLI ROMAGNOLI	Faenza (RA)	White/red grapes

Mod PCM 400

-C. S. di MONTEFORTE D'ALPONE	Verona (VR) n° 2	White grapes
-C. S. COPA	Faenza (RA)	White grapes
-C.S. di ORSAGO	Treviso	White grapes
-SOCIETA' INTESA	Bagnacavallo (RA)	White grapes
-LE ROMAGNOLE S.c.a	Alfonsine (RA) n°2	White/red grapes
-Le ROMAGNOLE S.c.a.	Fusignano (RA)	White/red grapes
-Le ROMAGNOLE S.c.a.	Bagnacavallo (RA)	White grapes
-C. S. di CERVETERI	Roma (RO) n° 2	White grapes
-CIV & CIV	Castelfranco Emilia (MO)	White grapes
-C. S. UVAM	Marsala (TP)	White grapes
-CASARSA LA DELIZIA	Pordenone n°2	White/red grapes
-CANTINA TOLLO Soc. Coop Arl.	Tollo (CH)	White/red grapes
-SAN MICHELE VIT. Coop. Agr.	Minervino Murge (BT)	White/red grapes
-CANTINA EUROPA	Petrosino (TP)	White/red grapes
-LIMIDI Soliera e Sozzigalli C. S.	Limidi di Soliera (MO)	Red grapes
-AGRINTESA Soc. Coop. Agricola	Faenza (RA) n°2	White grapes
-VAGLIE AZ. AGR. Di Lumini A.	Orvieto (TR)	White grapes

PCM in the WORLD

Mod PCM 100

-VINTECH PACIFIC	New Zealand	White grapes

Mod PCM 200

-AD PLANTAZE grapes	Podgorica (Montenegro)	White/red
-S. C. DEL CAMPO LA UNIÓN AB grapes	Albacete (Spagna)	White/red
-VINICOLA MIOLO Ltda. grapes	Bento Gonçalves (Brasile)	White/red
-VINARSKA "ARGEADI" dooel	Gradsko (Macedonia)	Red grapes

Mod PCM 400

-C.S. di NEMEA Grapes	Korinthiaki (Grecia)	White/red
-TITTAKIS Nikos	Creta (Grecia)	White grapes
-COOP. PEZON	Creta (Grecia)	White grapes
-PATRAS "PATRAIKI" Union Agr. Coop	Patrasso (Grecia)	White grapes
-FERSPED SKOVIN	SKopje (Macedonia)	White grapes
-BODEGAS CONUVA SA	Alcazar de S. Juan (Spagna)	White grapes
-VINCOR INTERNATIONAL grapes	Niagara Falls, Ontario (Canada)	White/red

Some information from customer Vincor (Canada)

Overall with small exceptions on percentage of solids the SIPREM performance targets are met.

Please find below a couple of graphs with tons per hour averages 1 to 2 weeks prior to the end of harvest or after the first 12,000 T of grapes received.

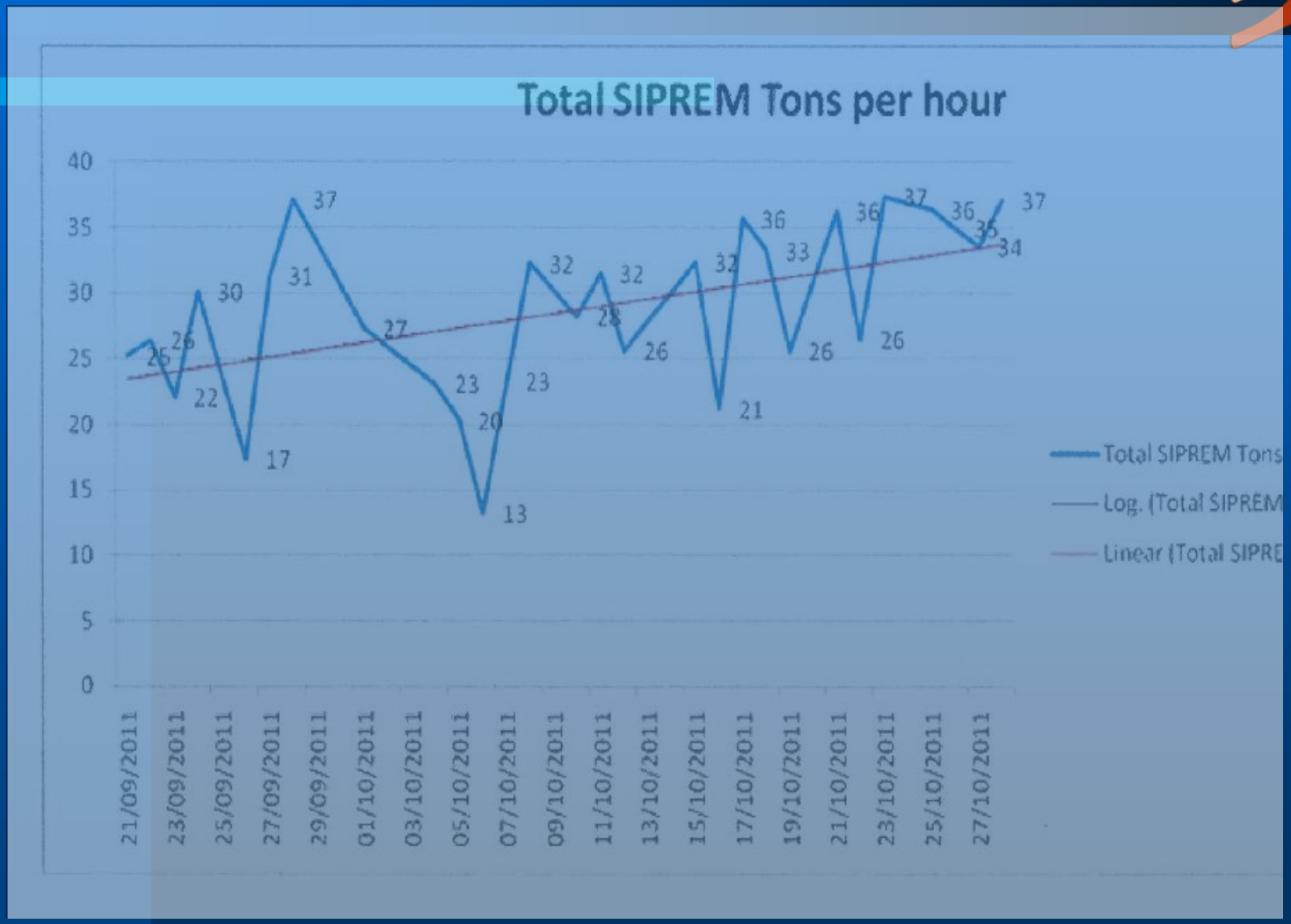
As you will notice the percentage of solids are bit on a higher side, which in my opinion is attributed partially to the use of the de-juicer during pre feeding stage.

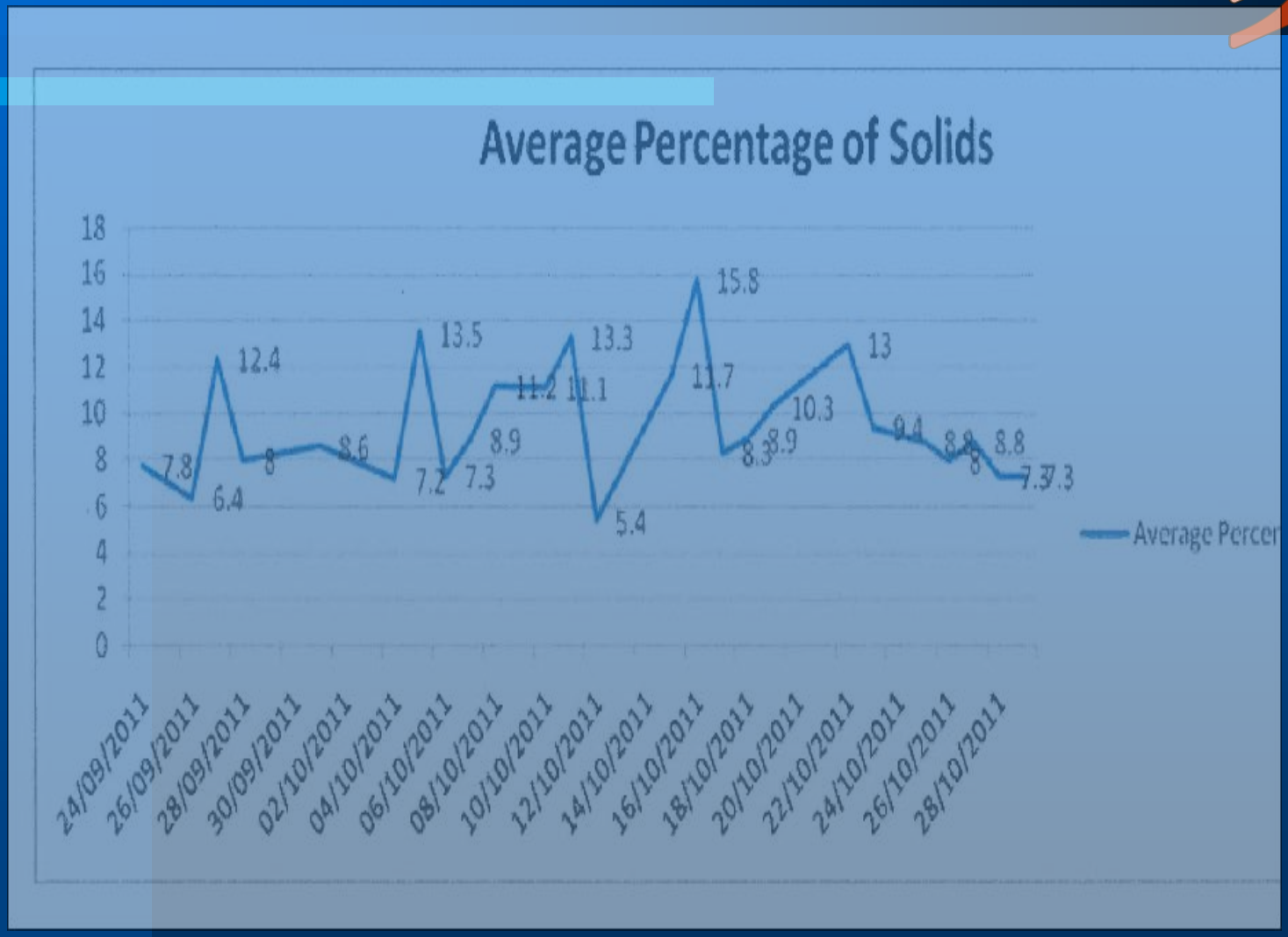
Currently we are working on redirecting the fresh grapes feed lines directly to SIPREM feeding hopper bypassing the de-juicer.

Note that the tons per hour averages include the CIP time at the end of run day as well as the pre-loading time.

I have to say that we are impressed by the ton per hour efficiency of the machine.

Kind Regards,
Vincor


Total SIPREM Tons per hour
40
35
30
25
20
15
10
5
0
21/09/2011
23/09/2011
25/09/2011
27/09/2011
29/09/2011
01/10/2011
03/10/2011
05/10/2011
07/10/2011
09/10/2011
11/10/2011
13/10/2011
15/10/2011
17/10/2011
19/10/2011
21/10/2011
23/10/2011
25/10/2011
27/10/2011
25 26 22 30 17 31 37 27 23 20 13 23 32 28 32 26 32 21 36 33 26 36 26 37 36 35 34 37
Total SIPREM Tons
Log. (Total SIPREM
Linear (Total SIPRE


Average Percentage of Solids
18
16
14
12
10
8
6
4
2
0
7.8
6.4
12.4
8
8.6
7.2
13.5
7.3
8.9
11.2
11.1
13.3
5.4
11.7
15.8
8.3
8.9
10.3
13
9.4
8.8
8
8.8
7.3
24/09/2011
26/09/2011
28/09/2011
30/09/2011
02/10/2011
04/10/2011
06/10/2011
08/10/2011
10/10/2011
12/10/2011
14/10/2011
16/10/2011
18/10/2011
20/10/2011
22/10/2011
24/10/2011
26/10/2011
28/10/2011
Average Percer

Click for YouTube video

SIPREM nel Mondo

Soc. coop. Le Romagnole - **RAVENNA**

SIPREM INTERNATIONAL

Presentation context

- This presentation was given as part of a workshop on grape and juice processing equipment convened by the Australian Wine Research Institute (AWRI) at the 15th Australian Wine Industry Technical Conference in July 2013.

- The main intention of the workshop was to provide attendees with information on equipment that is new or unusual or that has not been widely used in Australia.

- This and the other presentations given were prepared by equipment suppliers, not by AWRI, and AWRI does not necessarily endorse the views presented. Before the purchase of any major winery equipment, AWRI recommends appropriate background investigations being undertaken; including visits to facilities already using similar equipment, consultation with independent experts and the performing of in-house trials.

- AWRI received no payment from suppliers for the inclusion of their equipment in the workshop.

- For any further details on the workshop please contact AWRI Senior Engineer, Dr Simon Nordestgaard, by email at simon.nordestgaard@awri.com.au.