BUCHER
vaslin

Juice Lees Filtration

WEA NZ Conference "Improving Winery Performance"

18-19 September 2008

Juice lees filtration

Who are Bucher Vaslin

Bucher Vaslin is part of the Bucher Industries group. The headquarter of this group is located in Switzerland in Niederweningen.

Bucher Vaslin designs, manufactures, and sells, through its network of exclusive dealers and agents, processes and materials from the grapes to the finished wine.

Bucher Vaslin represents 400 employees, 67,1 Mio€ sales in 2007
25 people in the R&D and Design department
The network : 300 agents and dealers in more than 40 countries

Grapes reception and preparation (Delta range)
Grape presses (Bucher range)
Membrane technologies (Flavy range : crossflow filters and RO)
Maceration
Temperature control

Juice lees filtration

Crossflow filtration by Bucher Vaslin

First industrial filter unit in 1992, still in use today

A complete range of fully automatic filters from 12 m² up to 480 m², still and sparkling wines

Reliable
Easy to use
Low operating cost
Low level of wine losses

Juice lees filtration

Enzymes

10 kl

9 kl

1 kl

Settlement

Cold settling @ 8° C for 12/24 h

9 kl
+ 0.8 kl

Alcoholic fermentation

Homogenization

+

Juice lees filtration

Permeate
0.8 kl
< 1 NTU

Retentate (*)
0.2 kl
Distillation

(*) for a 20% suspended solid initial product

Separate alcoholic fermentation

Juice lees filtration

Which lees are we filtering ?

Only juice lees

After the press, for white and rosé wines, after a first clarification by settlement but before the fermentation starts. The deposit of this first clarification (full of flesh, skins, seeds, stems, earth…) is called « juice lees ». It represents more or less 10% of the total volume.

No bentonite remaining (or no bentonite fining process before)

Why should we filter lees?

Economical point of view (why should we loose this juice?)

The juice extracted from the lees has a real oenological added value.

Fatty acids and flavour precursors high content.

The Bucher Vaslin process will allow a 80 to 85% juice recovery of these 10% volume.

Juice lees filtration

What is the way today, to filter juice lees ?

Plates & Frames Lees Filters & Rotary Vacuum Drum Filters

Diatomaceous earth (cost / use / safety / recovery / labor / treatment cost / cleaning)

In both cases

Juice oxydation problems (loss of aromas / which is in contradiction of the highly aromatic wines that are produced today)

for the RDV

Juice lees filtration

The Bucher Vaslin answer…

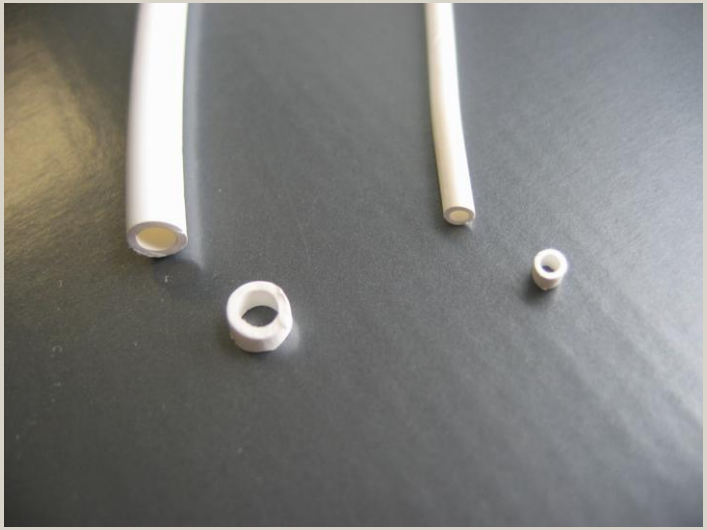
An automatic rotary prefilter (called D3), *the use of this prefilter is compulsory for this process*

A crossflow filter unit (FX 1, FX 2, FX 3)

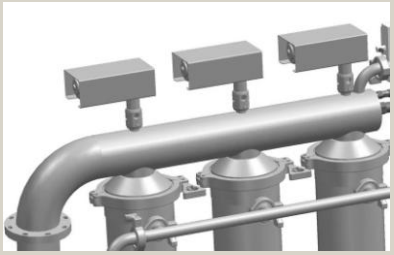
A specially designed upper manifold equipped with mechanical, motorized paddles to avoid blocking.

Specific LWL membranes – ID 3mm – 6 m² per module.

The standard membrane, ID 1.5mm, should not be used



Juice lees filtration

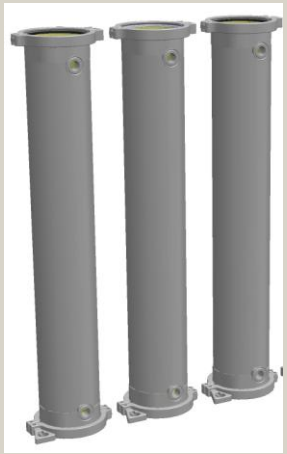


Upper motorised manifold

D3
Automatic rotary prefilter

FX1/2/3 Crossflow
filtration unit

LWL membranes



Juice lees filtration

How to prepare the juice lees ?

Juice lees contain pectins and this may decrease the filtrability of this product

→ Enzymatic treatment is recommended

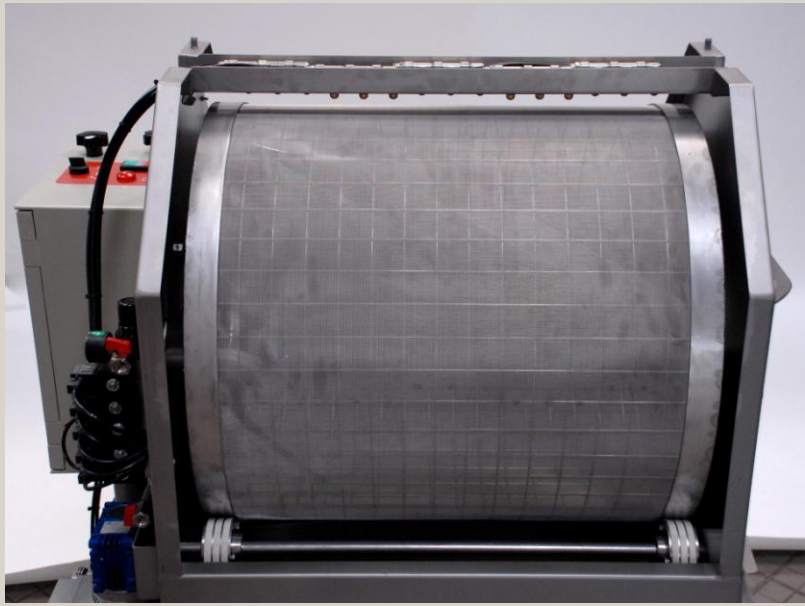
The juice lees is pre-filtered by the rotary prefilter in order to remove the big particles contained in the product. This prefilter has been especially designed for this process.

The juice settlement should be 12 / 24h (to get 10% of juice lees). A longer time will reduce the percentage of juice lees but will affect the flow and the recovery rate.

After racking and prior the juice lees filtration, the juice lees should be homogenized

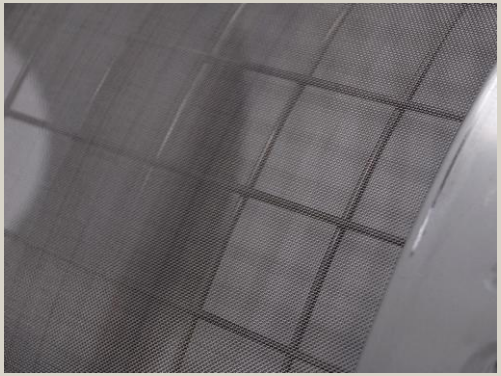
Juice lees filtration

The rotary prefilter - D3



Juice lees filtration

The rotary prefilter - D3



Filtration through a rotating drum with 500 µm mesh,

Feed pump built on

The drum is fed from inside (the prefiltered juice falls into the buffer tank). If the drum is blocked, a probe will detect that the juice level is increasing in the drum. This will start the removal of clogging with compressed air or inert gas nozzles (solids are discharged outside the drum through a chute). The feed pump is stopped during that time.

The buffer tank below the drum is equipped with a level control, and a safety probe against overflow,

Connection with the crossflow unit : flexible hose

If the filter unit stops, as soon as the buffer tank is full, the on board feed pump and the drum are stopped.

Air/Gaz nozzles can be used for water pre-cleaning (in swapping 2 manual valves)

Juice lees filtration

The crossflow unit – FX1/2/3

The « juice lees » mode will be displayed during the filtration process (this mode is available with the standard filtration software),

An upper manifold with Anti-Blocking Systems (patented) has to be fitted on the filtration unit. This system will create turbulence at the module inlet in order to avoid blocking. This system is PLC controlled. This upper manifold may remain in place when normal wine is filtered (not running).

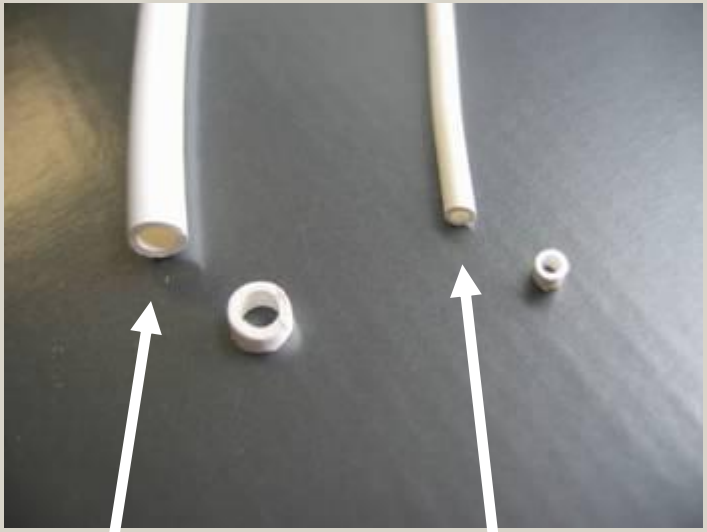
The LWL modules with LWL membranes should be in place. « Juice lees » **can't be filtered** with the 1.5mm ID membranes (safety switch on the internal screen prefilter)

Measured flowrate 30 l/m²/h :

FX2 = 400 l/h

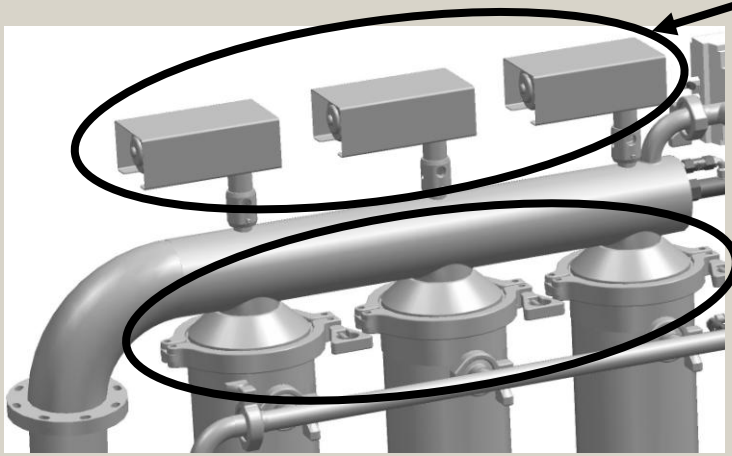
FX3 = 600 l/h

Juice lees filtration



LWL membrane
I.D 3mm
Juice lees
Retentates
1 module = 6m²

LE membrane
I.D 1.5mm
Wine filtration
1 module = 12m²



A 3 mm I.D. allows you to filter more viscous liquid with high suspended solids content, without any risk of blocking capillaries.
Both membranes are 0.2µm pore size and in PES material.

Juice lees filtration

The filtered juice quality

Juice turbidity is <1 NTU

No oxydation during filtration

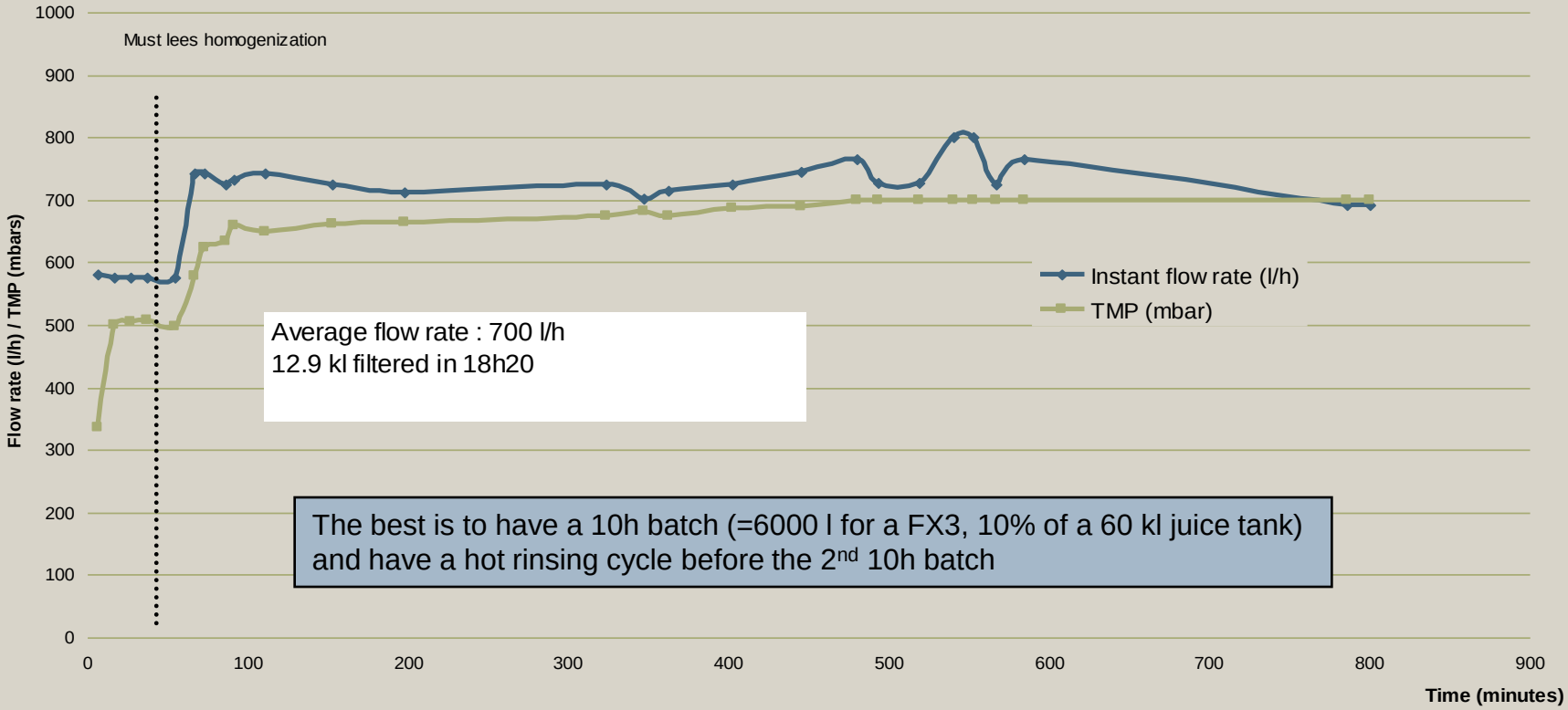
80 to 85% of the juice may be recovered (depending on the initial suspended solids content)

Final retentates are very thick

The filtered juice may be either blended with the original juice or isolated and fermented (after yeast adjustment – as it would be typically done with earth filtered juice lees)

Juice lees filtration

2008, September, the 4th - Domaine de la Motte - Narbonne
Filtration 12.9 kl must lees (Chiraz) 9°C [issued from a 130 kl tank of juice]
Filter : FX3 "bourbes"



Juice lees filtration

Some analytic values

Chablis, 2007

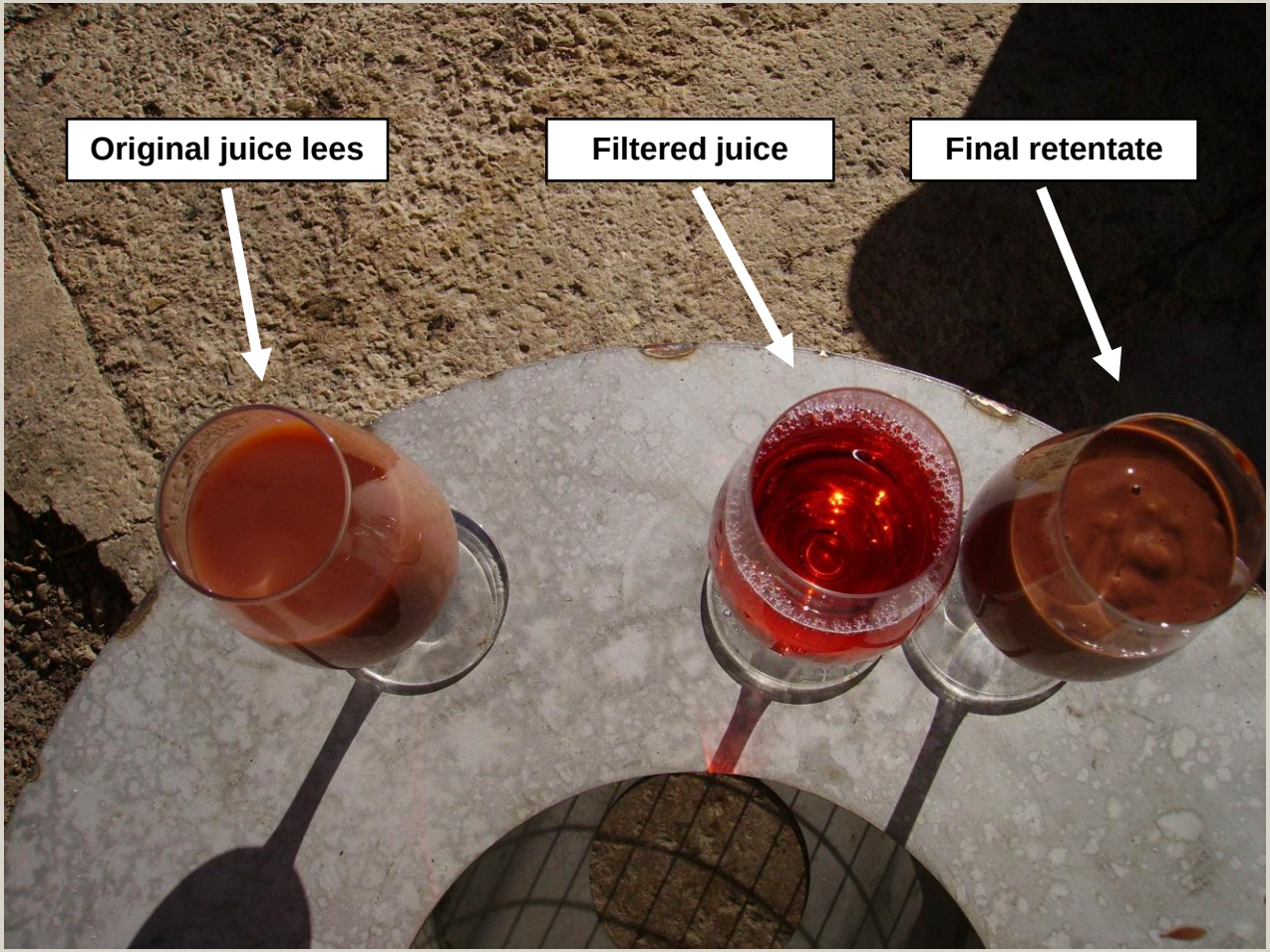
	CROSSFLOW FILTER	RDV
Sugar (g/l)	178	178
Brix (°brix)	10.58	10.63
Density	1074.319	1074.299
Total acidity (g H2SO4/l)	6.97	6.97
pH	3.16	3.18
Volatil acidity (g H2SO4/l)	0.04	0.04
Tartaric acid (g/l)	6	6
Malic acid (g/l)	5.7	6
DO 280	11.1	10.2
DO 520	-0.2	-0.3
Color intensity	1.9	1.6
SO2 free after 12h (mg H2SO4/l)	8	8

Juice lees filtration

Results

Rosé wine

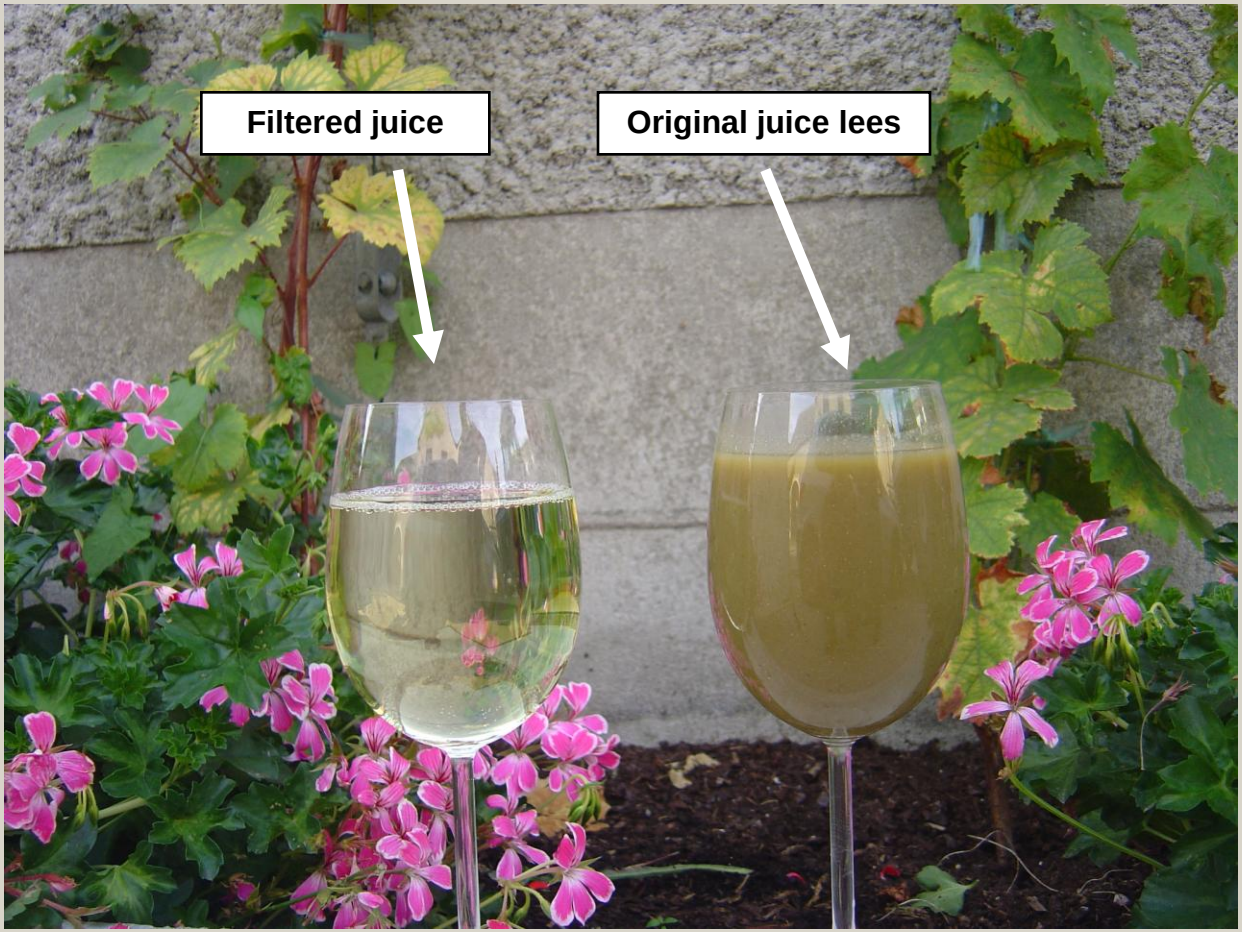
South of France (Var)



Juice lees filtration

Results

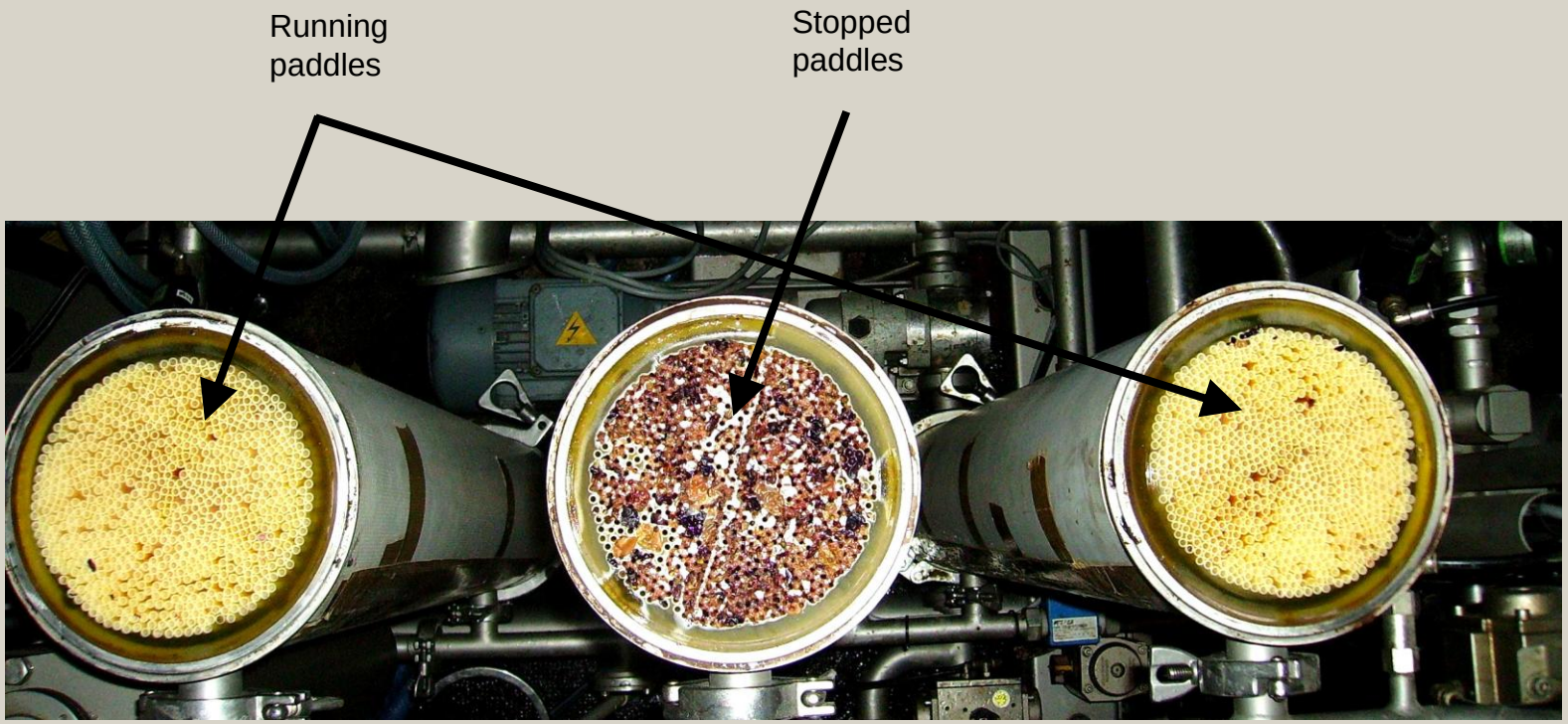
Sancerre (Burgundy)



Juice lees filtration

Paddles efficiency

On a FX3, the middle paddle unit was turned off.
After running the filter for a few minutes, the middle membrane surface was blocked compared to the 2 other membranes where the paddles were active.



Juice lees filtration

Interests

Multi function

The main interest is that the winery is equipped for juice lees filtration and wine crossflow filtration with the same filter unit (filtration quality, cost). With this multi function, the global investment is very attractive for wineries.

Operating cost and ROI

Return on Investment in a very short time.
Operating cost for the RDV = 7 times more than Operating cost for an FX crossflow unit

Quality added value

No oxydation and filtration quality will give you fresher and clearer juice.
Easy to use, you can filter every single tank, avoiding to blend the juice lees alltogether.

→ « Batch by batch » process.

Safety / Environment saving

No diatomeceous earth to handle, no earth to be wasted and retreated
A fully automatic filter unit, PLC controlled, with overpressure safety.

Very easy to use, a minimum supervision is needed when processing

Juice lees filtration

Size

Measured flowrates : 30 l/m²/h
FX1 = 6m² x 30 lmh = 180 l/h → 3,100 l in 17h
FX2 = 12m² x 30 lmh = 360 l/h → 6,100 l in 17h
FX3 = 18m² x 30 lmh = 540 l/h → 9,200 l in 17h

Operating costs

In €/kilolitres	FLAVY	RDV
Cleaning agents	1,85 €/kl	1,30 €/kl
Power supply	1,03 €/kl	0,94 €/kl
Water consumption	0,50 €/kl	0,28 €/kl
Labor time	4,00 €/kl	26,00 €/kl
Diatomeceous earth	----------	21,75 €/kl
TOTAL	**7,38 €/kl**	**50,27 €/kl**

Juice lees filtration

Availability

After many years of trials, validation of each single component, validation on a wide range of grape varieties, the filter is now commercialy ready.

Today for FX1/2/3 – Next year for FX5/6 - Worldwide

1st step, vintage 2008, France

10 units have been sold in France

Official launching

VINITECH 2008 – Bordeaux – 2/4 December 2008

TROPHY : Citation in Vinitech 2008

Thank you

Frédéric Guillet

Filtration Sales Engineer

For more information please contact our agent in NZ VINIQUIP