metodo Ganimede®

INFORMATION AND EXPERIENCES

Ganimede S.r.l.
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Vinification: how grapes are processed into wine.

Vinification is the complex process whereby wine is made out of grapes.
This short definition contains all the complex interventions and choices characterising the processing of the grapes, starting when these are harvested until when the wine is drawn off the vat.
Vinification comes after viticulture (grape growing) and before wine refining.
Viticulture, vinification and refining are all directly and closely related:

EFFICIENT VITICULTURE + EFFICIENT VINIFICATION + EFFICIENT REFINING

=

BEST POSSIBLE RESULT

Efficiency is the most important parameter to reach the target above and produce the desired effect.
In fact, working with a "live" matter implies that a winemaker cannot have a merely scientific approach, because there are too many variables: climatic conditions, production needs, market demand...
The choices of a winemaker must be EFFECTIVE: the strategies used in a large cooperative winery are different from the choices made in a small private winery; conditions change from one year to the next and grape varieties too are very different, and there are many more variables. This is why the choices will not always be the same, though they need to be always efficient.
How often have you heard say "The good wines are made in the vineyard!"?
This is an unquestionable truth, but it should be interpreted in the light of the remarks above.
To obtain a good wine, the high quality grapes we have grown in the vineyard must be worked with great care and efficiency first during fermentation and then during refining. This is the only way to reach the best possible result.

This introduction is aimed at underlying that the oenologist plays a crucial role in a winery: his know-how, experience, instinct and palate, supported by effective and flexible technology (remember there is a high number of variables involved in the process) will contribute to enhance, year by year, the qualities of the raw grapes he has available and help him hit once again the best possible result.

Looking at the process in detail, soon after destalking the grapes, we obtain a fluid product (must) containing some solid elements (skins, seeds and bits of stalks, etc.).

The solid elements, which account for about 10% (dry marc), are represented by:
seeds (3 to 5%)
skins (5 to 7%).

The figures above show that the part of skins (**a source of sweet and smooth tannins**) is not that much greater than the part of seeds (**usually, a source of bitter and rough tannins**). The skins, beside noble tannins, also contain colouring substances and aromas (or their precursors).

Depending on the year and variety grown, the seeds are an important variable, which should be taken into account and handled with care.
It is true they are wrapped in a greasy cuticle which prevents the substances contained in them to disperse in the fermenting juice, but this holds true only at an early stage of the process.
In fact, a large amount of seeds will normally remain incorporated in the skins in the cap of marc.
The mechanical washing generated by pumping the juice over, combined with the effects of high temperature and alcohol, will break up these cuticles and cause the substances contained in the seeds to blend in the must-wine.
Unless unripe seeds are separated in due time, they will pass their bitter and astringent tannins on to the product.
It is evident that the option to exclude the seeds from the vinification process is always desirable, and sometimes indispensable to preserve product quality.

In medium and/or poor quality grapes (because of very high output/ha, belated pest control, poor maturation of grapes, or adverse climatic conditions over the season, etc.), the amount of unripe seeds can often be considerable.
This means the skins will contain a lower amount of colouring substances and good tannins and unripe seeds will have a massive amount of aggressive and astringent tannins.
These grapes will make scarcely elegant, rough wines with herbaceous scents, which will need a great deal of refining interventions before they are ready for consumption, with higher costs and deferred sales.
In central and northern Italy, rarely do seeds reach an adequate phenol maturity, so that it becomes essential to exclude them from the process.
On the contrary, if seeds have conveniently ripened, the vinification method should be capable to exploit their potential successfully.

The skins forming the floating cap must be used up entirely and efficiently.
This means that all the berries will have to be flooded thoroughly by the pumped-over liquid to avoid they become compacted (as it usually happens) and give way to incorrect and incomplete leaching.
Therefore, if grapes have a potential of 100 and our method of fermentation cannot guarantee that 100% of berries will be used up, we will have **a net loss of the potential we had in the vineyard,** with quite sizable losses up to 30-50%.
To manage extraction better we are forced to build fermentation vats of a reduced capacity and very large diameters, because very thick caps will hardly enable to tap to the full the potential of the grapes.
Research to date and information from the producers and colleagues who use different fermenters available in the market point to the need to make a careful and detailed evaluation of the different opportunities offered by different systems, on the basis of the remarks above.

On top of all, we should remember that in winemaking a fermenter is the tool which will have the greatest influence on the quality of the end product and, by its efficiency and flexibility, will enable to boost the inner merits of the grapes.

From all the considerations above, it is evident that a fermenter is undoubtedly the most important tool in a winery to meet efficiently both production and quality needs.

An oenologist will have to make his choices depending on the analytical data he has available, but also on the sensations he can derive from the tasting sessions he carries out to check how the wine is developing throughout the fermentation-maceration process.
The palate, in fact, is the best tool when assessing product qualities: from the grapes themselves throughout the fast developments of a fermenting wine.
Following this evolution daily, a winemaker can make convenient and timely choices, as long as the fermenter he has chosen to work with can help him operate in an effective way.

How to choose the right fermenter

The remarks above make it clear that a fermenter plays a key role along the path of grapes-wine. Therefore, the choice of the right fermenter is crucial.

As a general principle, we can safely state the main scope of any fermenter is to get the best out of the fermenting marc, while preventing the cap from hardening, and to ensure a thorough and selective extraction of colouring substances and phenols, while preventing a too violent mechanical action on the cap from producing an undesired amount of lees, which can lend (**often irreversibly**) herbaceous aromas and bitter and astringent flavours to the must.

A fermenter will have to help guarantee that the potential and merits of the raw grapes are exploited to the full (best possible result).

When choosing a fermenter, we will have to assess its characteristics, strong and weak points, while bearing in mind that his efficiency and flexibility will help us to turn grapes into wine in the best possible way.

Let us analyse what are the essential characteristics of a fermenter. We will start with the general characteristics and then consider different needs at different stages of maceration and fermentation.

GENERAL CHARACTERISTICS.

1. Does it guarantee the grapes are used up efficiently?
2. Does this hold true also when the vat is large-sized and the cap of marc is very thick?
3. Does it guarantee the marcs are stirred conveniently and the product is homogeneous?
4. Does this hold true also with very compacted grapes (raisins)?
5. And with very fragile grapes, can they be stirred gently?
6. Is it suitable to be used efficiently depending on different characteristics of the grapes processed (is it flexible)?
7. And is it suitable to be used with different methods and applications (considering that research often offers new options)?
8. And moreover, is it adapted to work both red and white grapes, starting from prefermentation maceration down to storage?
9. Can an oenologist interact in the process and control every stage of fermentation depending on the raw grapes and the year?
10. Can it make the most of the product?
11. Can filtered air injection (oxygenation) be carried out efficiently? Is contact of air with the product long enough? Is there pressure enough to help the gas interact with the whole mass, so that injection is homogeneous?
12. Are all the options above really quantifiable and repeatable?
13. Can other technical gases be used in an efficient, safe and repeatable way?
14. Are there any ways available to prevent the must from overflowing and suddenly spilling out off the vat?
15. In case of excessive filling, is there a risk the vat will be damaged?
16. How much maintenance will the vat require? How much will this cost?
17. How much power will it require?
18. How many staff will be required to operate the fermenter?
19. Is it user-friendly?

PRE-FERMENTATION STAGE.

1. Does it guarantee the product (skins-liquid) is homogeneous enough? How is this obtained?
2. Can the vat be used efficiently to run static maceration before fermentation? And what about dynamic maceration?
3. And, if any protections are available, how is the product protected?
4. Can skin contact be used also with white grapes, also without injecting SO_2 to protect them?
5. Can all these operations be run in a safe, quantifiable and repeatable way, or only in an empirical way?

FERMENTATION STAGE.

1. How is the cap stirred?
2. Is stirring gentle though certainly efficient?
3. Does stirring cause skins to break up or are these left intact?
4. Does the stirring method guarantee the marcs will not be overworked and consequently produce large amounts of lees?
5. Does it help homogenise the product during the process?
6. Is temperature homogeneous too?
7. Is it possible to separate skins from seeds?
8. Is it possible to separate part and/or all the seeds?
9. Is layering of the seeds good enough to enable separating the unripe seeds only?
10. Is it possible to use the method called Deferred Extraction of Anthocyans?
11. How much can be extracted from the skins only (tannins, anthocyans, aromatic substances), and can this be analytically proven?
12. Is quality of the extracted product easily verifiable through tasting?
13. Does it help accelerate extraction (is it faster than other fermenters)?
14. Can the whole process of fermentation be accelerated, if necessary?
15. Are the skins always wet, or do they remain partly on top of the cap and/or on the walls and mechanical parts of the vat and are they consequently likely to be contaminated by acetic bacteria?
16. Does it help reduce acetous fermentation, and consequently reduce the need to use SO_2 with white and red wines? How is this reduction guaranteed?

POST-FERMENTATION STAGE
DRAWING OFF, STORAGE AND REFINING.

1. In long macerations, is it possible to have a gentle process also when the skins have macerated, so that they are easily deteriorated and likely to produce bitter flavours?
2. Is drawing off delicate, or are any mechanical parts required (screws, extractors)?
3. What are the consequences of a vigorous stirring of the marcs beside the formation of lees? Is the production of “pressed wine” and methyl alcohol higher?
4. Are quality characteristics, smells and aromas, protected during drawing off?
5. Can drawing off be run in a simple and fast way?
6. How long does it take to draw off?
7. How many staff are needed to draw off?
8. Can the staff operate in total safety conditions?
9. Is hygiene guaranteed during drawing off?
10. Is the vat easily cleaned? And what about the auxiliary parts needed to draw off (extractors, screws, hoppers, ..)?
11. Can the vat be used also as a storage tank? Are any adjustments required to this end?
12. Is it also possible to use it as a storage/expansion tank?
13. Can we carry out the light lees contact (bâtonnage) too? How can this method be applied? What results do we get from it?
14. How long does it take to refine the wines after drawing off? How much does refining cost?
15. Can the fermenter help accelerate refining times and cut costs?

Evolution of the consumers' market.

It is renowned that the market today has a taste for firm and richly-coloured red wines, with a robust phenol texture but at the same time soft and velvety in character.
Then, we need to privilege the production of balanced wines, preferably low in residual sugars, so that they are easily drunk.
To do so, we need to obtain wines showing soft and not aggressive tannins as soon as they are drawn off. This way, we will also cut sizably the cost of production, because few interventions will be needed to correct the wines and make them ready for consumption.
Oenologists today are well aware that higher quality lies in a good balance between all the extracted substances, and not only in the quality of these elements.
A consistent character pursued in modern wines is the softness and roundness.
Very important is also to obtain wines with more marked and defined varietal characteristics.
End consumers know nothing about the winemaking methods used or the chemical analyses of the wines they taste, so that their judgement is based on the strongest impressions they get from the wines, and namely complexity, harmony and balance between the different components.
Concerning white wines (save for Prosecco and Pinot Gris, which have a different story), the trend is for more aromatic wines, with elegant and refined aromas and a balanced taste.
The remarks above are particularly relevant for would-be consumers (today's youngsters are likely to become our customers in the future), who have a different approach to wine than in the past. All astringent and scarcely elegant wines, offering green and vegetal scents, are heavily disadvantaged.
The market demand has also changed because people have changed their lifestyles: there are millions of people who have fast meals out of their homes. Well, a pasta dish or a sandwich need a different match, i.e. a more supple, elegant, tasty wine.
Drinking wine is not a necessity, but a pleasure for our customers.
We may decide to produce wines based on personal choices and criteria, even countering the general trend, but we should never forget that we must sell our wines eventually. Then, a wine should please, especially at times like today when the trend is for genuine products expressing an identity of their own.
In general terms, the market asks for quality wines which reflect the character of their grape variety and land of origin.
All this means very good news, because winemaking has continued evolving and improving as compared to the past, and a growing emphasis is attributed to the winemakers' work.
Making wines with natural methods, reducing the use of additives to correct and preserve them to the minimum, means enhancing the healthy quality of this beverage.
We should not forget, however, that competition with other beverages is quite fierce today and the focus is increasingly on natural and healthy products.

In conclusion, a fermenter will need to help:

- improve quality of end product to match current demand from the market
- cut down costs for production
- get a higher income
- get maximum automation of the process
- get maximum control over the process
- be flexible and user-friendly
- enable efficient applications
- accelerate working times while improving product quality
- guarantee traceability
- make different choices in operation
- guarantee microbiological safety
- guarantee safety for the operator and simplify his/her control and intervention
- reduce maintenance needs
- save energy costs (lower consumption and lower power needs)
- increase productivity and produce only free-run juice (no pressed wines)

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Dear Sirs,

You will find hereafter some information about Ganimede patented fermenter.

First launched in 1997, Ganimede technology has fast spread worldwide and is now available in 23 different countries.
This striking success, a unique case in the sector of fermenters, is owed to the **real benefits** offered by the system and acknowledged by our numerous customers (see references).
Ganimede, in fact, **guarantees its users efficient applications and quantifiable advantages** unbeatable by any other vinification method currently available.

The success of Metodo Ganimede® is especially linked to the judgment derived from a sensory analysis on the quality of the wines produced in this vat. If compared with the wines made with other methods, Ganimede wines prove to be strongly marked with finer and more elegant smells and great softness on the palate, owed to the presence of the "**good tannins**" only.

For the latest 4 years or so, **we have held tasting sessions at several national and international wine exhibitions, offering the wines made with Metodo Ganimede® in different winemaking areas and districts.**
These were both wines of the year (which were not subject to any type of refining intervention, so as to show their true inner qualities) **and great aged wines. The experts were surprised and impressed to find these wine samples were all characterised by soft fine tannins.**

The revolutionary technology of Ganimede is suited to work both **red and white grapes**, also thanks to the exclusive method of "**dynamic skin contact**" (see experiences of P.C.M.).

When speaking of vinification, it is often said that the most important thing is the quality of the grapes. I guess we all agree on this point. However, many people do not understand that **the potential of the grapes must be conveniently tapped. This is the most difficult thing to do!!**
In traditional fermenters, the cap of marcs is so packed and difficult to control that it is not possible to have such a homogeneous distribution of the liquid at contact with the skins, through a delicate and not invasive stirring action (with no mechanical devices) on both small and large amounts of product (see comparative analyses).

Only Ganimede can offer a selective extraction of the noble components only, using up 100% of the skins (the source of the good tannins), while the seeds are separated at the bottom of the tank and can be used separately.

In traditional systems, considering it is difficult to control the cap of marcs, **only 50-80% of the potential of the grapes can be tapped. This implies a significant loss** in extracted substances, and also quality may be compromised by the astringent tannins contained in the seeds. **This inconvenience happens also in small fermenters** (see analyses of Villa Russiz).

Moreover, having wines characterised by stable, soft and elegant tannins as soon as they are drawn off is a key prerequisite to get high quality wines from a later stage of refining, while at the same time accelerating and cutting the costs of the operations required to make them ready for consumption.

This holds true for both young wines and the top-range wines adapted to be refined in small barrels.

The exclusive features of “Metodo Ganimede”:

(Watch the stages in the film and in the model).

Of all the winery equipment, the fermenter is the one with the greatest impact on the quality of the wines.

1. **Exclusive control of the method called “DYNAMIC SKIN CONTACT”** especially suited to white wines, but also applicable to red wines (**same grapes, different wines).**
2. **SCIENTIFIC use of technical gases**. Only Ganimede can run the use of technical gases in a scientific way, i.e. guarantee **safe and repeatable results**.
   (Prefermentation and postfermentation maceration, oxygenation)
3. **Successful control of the cap of marcs**. Also **a cap over 2,5 metres high** will cause no trouble for Ganimede. Only the typical **volcanic stirring** action of this system can guarantee that each single berry is used up completely and prevent the cap from becoming compact and the must from following preferential paths when falling down to the bottom of the tank. There lies the great difference with other fermenters, which is found in the smaller vats of 50 hl capacity too.
4. **Fast fermentation and extraction.** At equal conditions with a traditional system, Ganimede can accelerate production time **by about 30%.**
5. **All the seeds will fall at the bottom of the vat (the coldest area)** thanks to the exclusive stirring of the cap of marcs. **Once they are collected at the bottom, the seeds can be separated** partially or totally (to eliminate the astringent tannins), depending on the specific needs of the oenologist.
6. **Selective extraction**. Since the seeds can be separated, the extraction process is exclusively aimed at the cap of marcs. In Ganimede, the cap is composed of the **skins only,** where in addition to colouring substances the good tannins are found (extraction of the noble substances only).
7. **A sizable reduction of the use of SO_2** because the whole process is kept under control and takes place in a controlled environment.
8. **The wines are lower in volatile acidity**, thanks to an ideal and complete leaching of the whole mass of marcs (the skins are always wet and no fragments of them remain floating on the cap and/or on the walls and parts of the tank, where they may be contaminated by acetic bacteria).
9. **Homogeneous temperature** is guaranteed inside Ganimede, because the top jacket, which is found above the diaphragm, cools down the central area, while the lower pocket cools down the peripheral area.
10. **Only free-run juice.** An exclusive drawing-off system guarantees that only free-run juice is produced. **In fact, no extractors, screws or hoppers are needed and this means the vat can be rapidly and easily emptied** (with no pressed wines or by-products with a high content in methyl alcohol), **with less staff needed and total safety conditions for the operators.** There is no risk that the product may overflow suddenly and be lost, because **the whole process takes place in a closed system, with no dispersion of the aromas**.
11. **No use of mechanical devices and minimum power requirements**, with a sizable cut in costs.
12. **No risk of sudden overflow of product** (TOP LEVEL safety probe).
13. **No risk of structural damages** caused by an excessive filling or power breakdowns.
14. **Excellent storage tank.** The only vat which can be used as an expansion tank (by injecting an inert gas below the diaphragm, the liquid is pushed upwards – the tank is always full).
15. **Easy and rapid cleaning.** Ganimede is easily cleaned. Moreover, since no auxiliary devices are needed to draw off, the troublesome cleaning of any screws and hoppers is avoided.
16. **Only one operator is needed to run the whole process.**

There is no other system today capable of offering such a <u>wide flexibility of use</u>, and enabling the oenologist to <u>run the process at his own will</u>. These are the true valid elements to compare when choosing what fermenter to buy.

THE OENOLOGISTS' OPINIONS

"With Ganimede® technology, based on distributing the marc, we manage to achieve even and delicate release of colouring matter and components extracted from the skins: simply a must when aiming at highly complex wines suitable for refinement in barriques."

Gianni Masciarelli
San Martino sulla Marrucina (CH) – Italy
Winery of the year 2004 for the italian Wine Guide "Gambero Rosso"

"Ganimede®'s remarkable versatility makes a customised management of the whole process a reality, helping oenologists obtain wines with the desired qualities."

Romeo Taraborrelli, oenologist

"Ganimede® offers higher depth in colour, a remarkable fruit, a full and soft mouth feel thanks to fair amounts of extracted substances and highly polymerised phenols"

Emilio Pasqua
"Azienda Agricola Musella"
San Martino Buon Albergo (VR) – Italy

"With Ganimede®, we have obtained an exceptional Amarone that is richer in colour, very well structured, with complex, intense and persistent aromas"

Dario Tommasi
"Tommasi Viticoltori"
Pedemonte (VR) – Italy

"We chose Ganimede® because extraction is delicate, selective and not aggressive and the skins remain intact."

Elio Novello
"Fratelli Bolla S.p.A."
Verona – Italy

"Ganimede® combines the versatility of use with a great extractive power, making sure the maximum respect of the berries."

Gianpaolo Vaona
"Az. Agr. Novaia "
Verona- Italy

“...a wine with a high content in tannins is not synonymous for a long-living wine, but for an unbalanced wine”

Pierfranco Giovannini, oenologist
Cantine Endrizzi s.r.l.
San Michele all’Adige (TN- Italy

”The way the cap is kept under control is extraordinary for such a large fermenter, and the possibility to vary the action of the bypass enables the oenologist to have full control over colour extraction. A complete extraction from skins is easily obtained.
The cooling system gave me excellent control over fermentation temperature, so that my job at harvest time was made far easier.
Only one operator was needed to discharge the marc after a load of 80 tons in 1 hour and ten minutes. The integrated soaking of the marc eliminates the need to intervene manually with pressure nozzles at draining-off.. In brief, I feel the operation of Ganimede® fermenter is best described as “set and forget.“

Stuart Auld
Senior Winemaker
Normans Lone Gum Winery (Tandou)
Australia

”The Ganimede® fermenters we have been testing for three years at Leconfield performed very well.
Fermentations are consistent, clean, and exhibit extremely good aromatics, with good colour extraction.“

Philippa Treadwell
Winemaker
The Hamilton Wine Group
Coonawarra
Australia

At the time when we were planning the winery at Château Cransac, our greatest concern was the quality of the processed grapes and getting maximum control over all the stages of vinification. This was the reason why we chose to equip our winery with 100% Ganimede fermenting systems.
Thanks to Ganimede vats, we have reached our targets for 2003 harvest, i.e. wines with a high profile. This simple system helps eliminating a high number of troublesome procedures that have no impact on quality (pumping-over lines, pump cleaning, operations repeated several times in a day). Then, we could spend more time on the operations that are essential to improve quality (tasting sessions twice a day, checks on the rows of grapes that needed harvesting, orientation of the parcels) and we could run vinification automatically.
The winery makes wines with three different profiles (basic, medium and high range). Ganimede system enables us to tailor the vinification method depending on the harvested grapes and the desired results. Gamay, prefermentation cold maceration with injection of CO2, low-temperature vinification, one cycle every 5 hours. Negrette (typical Frontonnais

variety), higher temperature and a cycle every 4 hours for more structured wine longer in the mouth. Syrah, a cycle every 3 hours, postfermentation maceration to get a more textured and spiced wine adapted to be refined in small barrels).
With one vat only, we could adjust refining to the targets we had set for our wines.
In our strategy, the natural and eco-friendly concept of Ganimede is a logical consequence of controlled grape growing, aimed at paying maximum respect to the environment, the product and the consumer.

Jean-Christophe Briet,
Oenologist - Technical Director
Château CRANSAC
Fronton
France

Thanks to Ganimede system, you can work with a more flexible and user-friendly system, and the system itself works autonomously: you only need to set it and then just taste.
Ganimede enables us to make délestage during the whole process of vinification with no staff required. The "délestage-pumping over" operations in Ganimede are very soft and imply no leaching, if compared to the aggressive action of traditional fermenters.
I think a second tasting valve in the diaphragm could be useful because during prefermentation maceration it is more interesting to taste the wine as much closest to the cap as possible.

Nicolas Lebrun
Oenologist – Technical Director
Château de SAURS
France

Thanks to Ganimede system, we have made a high quality wine, with the same colour and aromas as a wine obtained with traditional vinification but with a much rounder and softer tannin impression on the palate. The advantage of this system is that its flexible setting enables an oenologist to running vinification ideally with no need of other helpers in the winery. My concern at the start was that pumping over generated by CO2 would affect the must only partially, but my doubts were fast gone as soon as I saw how the system can work autonomously. I was very impressed. I think this process may be interesting for the varieties most susceptible to crushing, thanks to its natural pumping over action with no pumps involved.

Nicolas Gornes
Oenologist charged with red winemaking
Cave des Sieurs d'Arque
France

The special feature of Ganimede is its user-friendliness: regulations are simple, pumps are not used and the work is flexible. Thanks to the injection of gas and the pumping-over action

by the carbon dioxide, the product is constantly protected and can be processed with the cold maceration method.
The work gets more flexible this way and one can speed up or slow down extraction at any time, while preserving grape quality.
In a cooperative winery, the use of the safety probe during filling is an essential way to control the sudden rise of the cap of marcs and prevent the liquid from spilling off the vat, while avoiding to use any staff to control filling levels. To make drawing off easier, it is preferable to opt for the tanks with a slanting dish instead of a flat bottom.

André Serret
Oenologist – Head of Technical Staff
Domaine Brial Baixas
France

With a traditional vat, I need to work two hours a day, while with Ganimede system I could save time. All is done automatically, with good quality results.

Jean Veyrier
Oenologist – Director
Cave des Costieres Pomerols
France

We had a wonderful 2003 harvest and the quality of the wines met our expectations. We made round, fruity and richly coloured wines, exactly what we meant to obtain to meet the demand of our customers, who look for textured and easily drunk wines.
The numerous tastings carried out during vinification have revealed that all Ganimede fermenters confer the wines some typical characteristics: texture, firm body, roundness, softness and fruit. We can safely say a Ganimede style does exist.

Jean Lavie
Director
Cave de Saint Pantaleon les vignes
France

Ganimede enabled me to carry out a completely automatic vinification, from dynamic skin contact down to postfermentation maceration.

As usual, the wines obtained are high quality, with virtually no staff required. The technical operations of fermentation, pumping-over, temperature control and use of different technical gases (CO2, oxygen, filtered air) were entirely carried out in automatic mode.
This helped me save time and concentrate more on tasting my wines, checking and changing the different parameters to obtain the wine I wanted, depending on the quality of the raw grapes.

Jean-Claude Chasson
Owner

Domaine Chasson
France

Thanks to Ganimede system, we can have a thorough control over the fermentation process and we can work at our own wish, thanks to its user-friendly control panel. The permanent bubbling action below the cone helps a constant and delicate extraction of colour and texture, with no risk to crush the skins, which often happens in traditional systems. Upon drawing off, you realise that all the seeds are collected at the bottom of the tank, where they can be easily separated with no need to use the press. Moreover, thanks to our crushing system, the skins are dripped off softly and gradually. In our region, where wines are often acid and contain phenols not always conveniently ripe, Ganimede helps making richly coloured and round wines more rapidly, with no need to make long macerations and consequently risk to extract vegetable tannins.

Romain Parisis
Oenologist – Director
Cave de Bourgeuil
France

"Thanks to its genial conception, Ganimede leaves to the oenologist the chance to choose the desired way of extraction depending on the variety and on the kind of wine he wants to obtain.

Its great simplicity of use permits to lighten the labour in the winery and to save manpower for other things. The risks of malfunction are almost eliminated.

The quality of the tannins and the colour obtained during the fermentation with Ganimede are really impressive, even on the Pinot Noir known as difficult to extract.

Having a constant mixing of the cap allow a very precise control of the fermentation temperatures both in solid and liquid parts."

Maurice Zufferey
Oenologist – owner
Muraz-Sierre (Valais)
Switzerland

I've been working for 3 years with the Ganimede concept and I surely can highlight several advantages:

1) *saving of time during the vinifications thanks to a simple automatic planning.*
2) *Absence of engines, that means less maintenance of the machine and less troubles regarding the normal winery activities..*
3) *Complete skin contact maceration. The mass of marc is completely stirred with the wine during the fermentation. There's no big piece of marc forming.*

4) *We can adapt the skin contact action on our personal exigencies. The number of délestage can vary from a Syrah to a Pinot Noir, at the start, middle or at the end of the vinification. Whether at the start or at the end of fermentation we introduce air and CO2, just to confer a special characteristic to the wine without any mechanical intervention.*
5) *I think that the tannins are more sweet, soft and in general, several comparative tests on 5 different varieties, showed even a more intense colour.*

Dominique Giroud - Oenologist
F & D Giroud
Sion (Valais)
Switzerland
"Grand Prix Special Vinitaly 2004"

"...happy with the excellent results we have obtained with Ganimede this year, we are convinced we will invest further in this innovative system ."

Cave du Chevalier Bayard
Varen (Valais)
Switzerland

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Report by Bodega Coop. Santa Quiteria Higueruela (Albacete) Spain, on 2003 harvest.

For their 2003 harvest, Santa Quiteria Cooperative Winery bought 3 Ganimede® fermenters with a useful capacity to process 150.000 kg grapes (each) and 1 peristaltic pump Rotho® mod. DF 90.

At first, the investment was judged as very expensive. However, if weighed up against traditional fermenters, the purchase was finally longed for and heartily accepted.
President D. Juan Aparicio, General Manager Mr. Martin, Technical Director and Winemaker D. Pedro Sarrión and Head of Production and Winemaker D. Javier Oncina showed a great interest in this new system, which will enable the winery to improve their working process and above all to obtain a better finished product, adding value to the grapes coming from member growers.

The main target of the Winery was to process a great amount of grapes per day while reducing manpower and especially to obtain a wine whose high quality could justify and pay back the investment as rapidly as possible.
The wines should have to meet the needs of the market, which now rejects any wine that is harsh, excessively tannic and poorly balanced.

The only grape variety processed here is Garnacha Tintorera.
Considering the local conditions of soil and climate (height of vineyards comprised between 950 and 1,100 metres, clay and limestone soil, impressive temperature range….), this variety can give very interesting quality wines, but the presence of too harsh tannins due to a high acid content in the grapes (8 - 10 gr./lt) makes wines that are potentially very rich in colour but inelegant and aggressive, so that repeated, long and expensive refining operations are needed to correct them.

The option to remove grape seeds, or to isolate them, was considered as a crucial stage by the winemaker. Moreover, the ideal management of the cap in such a large fermenter can guarantee optimum extraction of colour and of aromas especially.
This is possible without using a pump, whose action may be too vigorous and cannot guarantee the cap is kept under control, and always produces herbaceous flavours altering the sensory qualities of the final product.

As soon as the filling stage is completed, fermentation can be run easily and rapidly and temperature control proves perfect, since the system always ensures product homogeneity and process reliability.

When fermentation started, the mixing action on the cap, which was over 2 metres thick, was impressive – vigorous and gentle at the same time – and quite different from what can be seen in traditional fermenters, where the must/wine always follows preferential paths when falling down to the bottom of the tank.

The winemaker D. Pedro Sarrión was most impressed by the quality of the end products, which smelled more fruity, were elegant and deep and had a high tannin content, giving wines a firm though very balanced frame, despite their high fixed acidity content.

Director Martin is now marketing the wines processed with Ganimede® at a price of € 0,95 per litre (with 14° alcohol content) as compared to € 0,75 per litre for traditional products.

A cost analysis of Ganimede® investment, as compared to traditional fermenters:

N. 3 Ganimede® fermenters of 150,000 kg useful capacity
and n. 1 Rotho® pump mod. DF 90 at a price of € 250,000.00.

	litres	**Ganimede®**	traditional
Useful capacity	**150.000**		
PURCHASE PRICE		**€ 78,000.00**	**€ 47,000.00**
PART of amortisation for years	5	€ 15,600.00	€ 9,400.00
Number of filling cycles		5	3
NUMBER OF LITRES PROCESSED		**750,000**	**450,000**
IMPACT OF COST PER LITRE		**€ 0.0208**	**€ 0.0209**

The table above shows a comparison of the part of amortisation (deliberately fixed at a short period of 5 years) and the number of litres processed.
This analysis allows to estimate the real costs to calculate when assessing the economic value of the investment.
As a consequence, the real cost is virtually different from what is derived from the mere evaluation of the purchase price of the two types of fermenter.

Thanks to the greater performance offered by Ganimede®, the whole working cycle could be completed in 4 days, as compared to 6 days in a traditional system.
Therefore, for a harvest time of about 3 weeks, Ganimede® can be filled 5 times, while a traditional tank can be filled only 3 times.

Devatting is quite interesting in Ganimede® in terms of speed and user-friendliness.
The whole operation only took 4,5 hours (devatting was operated at first speed, since the current presses did not allow to operate at a higher speed) and only one operator part-time, with no extractors or screws.
It took place in a closed and protected system and produced over 100,000 litres of wine.

Considering the information above, we can obtain at each filling cycle:

100,000 litres of wine from the traditional system, for a price of € 0.75 per litre, totalling € 75,000.00

100,000 litres of wine from Ganimede® fermenter, for a price of € 0,95 per litre, totalling € 95,000.00

Therefore, Ganimede® guarantees a € 20,000.00 increased value at each cycle.

The figure needs no further comments.

We will conclude by listing all the advantages offered by Ganimede®, as they were remarked by the President, the general manager and especially the technical manager of the Winery:

1. A real chance to process large amounts of grapes and obtain high quality wines, with very different results from traditional fermenters.
2. A chance to extract seeds or to process them separately.
3. A rapid and very efficient extraction from grapes of their noble components only.
4. A minimum use of manpower and a totally automatic working cycle.
5. Maximum microbiological safety (volatile acidity is half as much as in traditional fermenters, while Ganimede® contains twice as many grapes).
6. A total control of the whole process by the winemaker, who has more time available to make the most important verifications (tasting sessions, quality checks, etc.).
7. The Rotho® pump allows drawing off the whole mass easily and rapidly, working in a closed system and extracting all the remaining juice from the marc. Things work in quite a different way in traditional drawing off with an extractor, a screw and a pump, where work is slower, twice as many operators are needed (so that manual work and risks are greater), pressed wine is produced and cleaning the whole working line entails more trouble and more time.
8. The higher quality of wines from Ganimede® method is undisputable.
9. Several tasting sessions by customers and friends allowed to confirm the wine obtained from Ganimede® is extremely smooth, so that it is almost ready to be drunk as soon as fermentation is completed. Therefore, the wine can be drunk beforehand and be marketed accordingly, with further cuts in costs.

This was certainly the best investment ever for the Winery, because it self-financed as soon as its first year of operation.

Ricardo Cantera

P.S.: *At the end of October the Winery has confirmed to buy 8 more Ganimede® fermenters like the previous ones for next harvest in 2004.*

Translation of the article "Experiencia de la Cooperativa Santa Quiteria con Ganimede" appeared on N° 26 November-Decembre 2003, pages 30 and 31 of the technical magazine "ENOLOGOS", official magazine of the Spanish Federation of the Oenologists Association.

CO-OPERATIVE LABORATORY WINE CLASSIC CHIANTI

S.ANDREA IN PERCUSSINA (Via Scopeti, 155)
50026 SAN CASCIANO V.P. (FI)
Entrusted of vigilance D,MAF 03/02/79

Sample of: Red Wine CLASSIC CHIANTI DOCG ANNATA 1997

Given by: S.M. TENIMENTI PILE E LAMOLE SRL

Arrival date: 04/05/98

		Sample n°. 1 Vinification in **Ganimede tank**	Sample n°. 2 Vinification in Traditional tank
Alcohol distillation % in volume		**13,58**	13,54
Reducers Sugars	g/l	**0,85**	0,93
Total Acidity (Tartaric ac.)	g/l	**5,80**	5,92
pH		**3,33**	3,30
Volatile Acidity net of SO_2	g/l	**0,28**	0,30
Sulphurous total	mg/l	**60**	62
Sulphurous free	mg/l	**10**	12
Dry Extract net	g/l	**29,20**	26,15
Ashes	g/l	**2,42**	2,18
COLOUR : Intensity		**10,93**	9,78
Shade		**0,58**	0,60
Phenol Index on U.V.		**70**	63
Malic Acid (enzymatic met.)	g/l	**0,07**	0,10
Tartaric Acid (met.)	g/l	**2,80**	2,92
Glycerol (enzymatic met.)	g/l	**8,05**	7,90

GRAPES HARVESTED IN THE SAME PERIOD ARE FROM THE SAME VINEYARD.

VILLA RUSSIZ WINERY
ANALYTICAL COMPARISON OF "COLLIO MERLOT"

Analytical data

Wine: *COLLIO MERLOT 2003*

Date: analysis of 12th September 2003

Parameters	**GANIMEDE 5 t**	**TRADITIONAL 3 t**
Sample number	1718	1717
Total acidity - Tartaric Acid g/l	5.75	5.12
Volatile Acidity – Acetic Acid g/l	0.24	0.27
Citric Acid g/l	0.10	0.09
Lactic Acid g/l	0.26	0.10
Malic Acid g/l	1.69	1.81
Tartaric Acid g/l	3.36	2.92
Total Anthocyans mg/l	780	725
Glycerine g/l	9.86	9.39
Red color intensity U.A.	1.82	1.51
Leucoanthocyans mg/l	4.222	3.640
Total Polyphenols mg/l	3.657	3.195
Total Sulphurous mg/l	73	77
Real Alcoholometric title % vol.	13.29	13.02
Colour tonality U.A.	0.50	0.53
Sugar g/l	18.47	14.09
Electrometric Ph	3.77	3.84

Date: analysis of 6th October 2003 wines in barriques

Parameters	**GANIMEDE 5 t**	**TRADITIONAL 3 t**
Sample number	3420	3421
Total acidity - Tartaric Acid g/l	5.54	5.01
Volatile Acidity – Acetic Acid g/l	0.39	0.43
Real Alcoholometric title % vol.	14.32	13.83
Sugar g/l	3.78	3.75
Electrometric Ph	3.73	3.77

Analysis performed by "Centro di Riferimento Enologico s.r.l." - Pozzuolo del Friuli (UD) ITALY

·PASQUA·
VIGNETI·E·CANTINE·IN·VERONA

Vinification experimentation Vintage 98

During vintage 98 some parallel vinifications have been done using the new vinification system " Ganimede" and a fermenting system of piston type.
The grapes used for the tests come from the same area of origin, adjuvant products used were the same, and so were the temperatures and fermenting state.
It has been looked for, in practice limits, to start from the same raw material.
The tests have been done on following grapes:

- Roccolo Merlot
- Roccolo Cabernet
- Roccolo Valpolicella

Results

Extractive parameter that have been taken into consideration as the most meaningful to judge the occurring extraction in the maceration are:

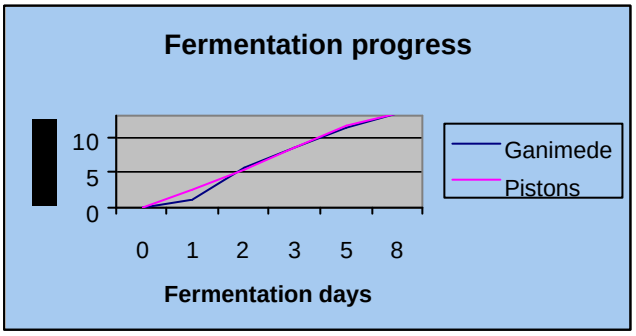
- Net extract
- Total Poliphenol
- Dyes intensity

Rocccolo Merlot

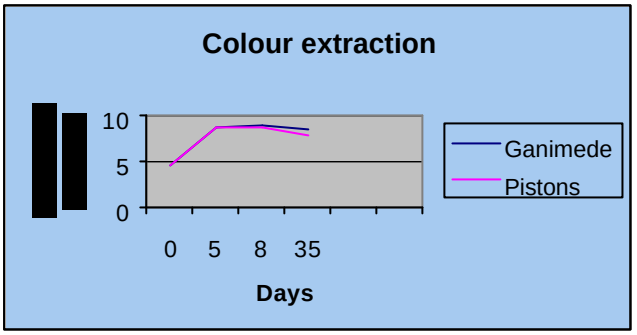
Fermentation start: 09-09-1998
Fermentation end : 17-09-1998

Parameters	***Ganimede***	***Pistons***
Alcohol ml%ml	13.21	13.43
Net extract g/l	31.20	30.00
Poliphenols mg/l	2200	1940
Colour intensity	8.566	7.890
Colour shade	0.600	0.476

Fermentative progress: as you can see from the table the fermenting kinetics are parallel.



Colour extraction: the extraction revealed to be the same in the two types of fermenting system in the first 5 days;
then the Ganimede produced wine at fermentation end revealed to be of a stronger colour.
As you can notice in the graphic after 35 days the colouring intensity lowers in both wines because of a stabilisation of the wine bringing an anthocians decrease.



Roccolo Cabernet

Ganimede Fermentation start: 22-09-1998
Ganimede Fermentation end: 30-09-1998
F 5 with pistons Fermentation start: 28-09-1998
F 5 with pistons Fermentation end: 07-10-1998

Parameters	***Ganimede***	***Pistons***
Alcohol ml%ml	13.75	13.05
Net extract g/l	31.80	31.05
Poliphenols mg/l	2350	2200
Colour intensity	9.100	8.470
Colour shade	0.586	0.695

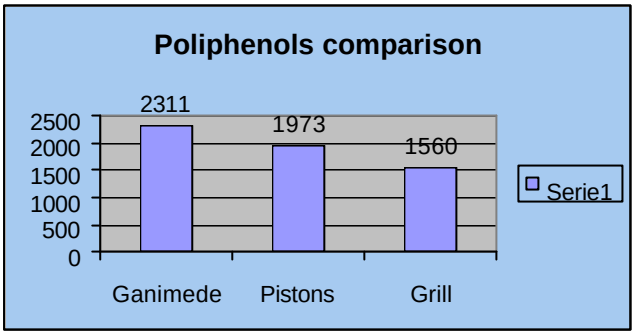
Musella + Roccolo Valpolicella

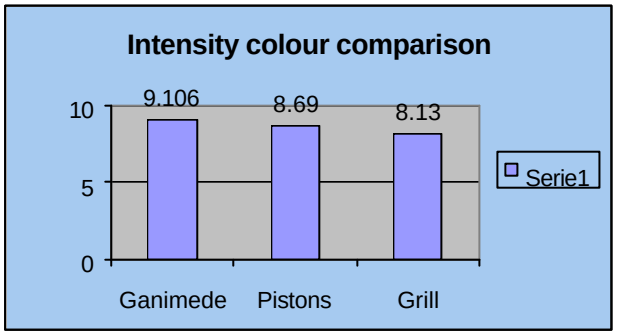
In this case a wine obtained in a fermenting system of “grill” type that allows to observe the differences in extractive parameters.
You can notice that a good extracts content but a low poliphenol index; this indicates that the marc is not completely exhausted.
The marc, in fact, in this type of fermenting system could not be re-mixed and the cession of substances in the liquid is limited.

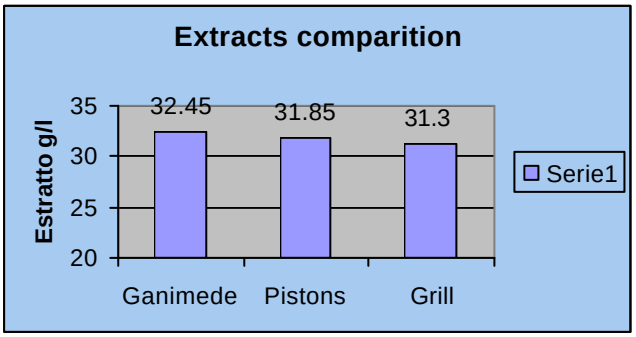
Ganimede Fermentation start : 22-09-1998
Ganimede Fermentation end: 30-09-1998
F 5 with pistons Fermentation start: 28-09-1998
F 5 with pistons Fermentation end: 07-10-1998

Parameters	***Ganimede***	***Pistons***	***Grill***
Alcohol ml%ml	13.26	12.88	12.34

Total extract g/l	32.45	31.85	31.30
Poliphenols mg/l	2311	1973	1560
Colour intensity	9.106	8.690	8.130
Colour shade	0.687	0.619	0.585







Conclusion

In all the three cases of the considered grapes a stronger extraction efficacy has been observed by the Ganimede fermenting system compared to pistons and grill vinification systems.
It seems that this is due to its particular type of "mixing" that keeps the marc very shelled and never packed in order to cede all its substances in the best way.
At organoleptic exam the experimental data results are confirmed:
this indicates that the considered chemical parameters are really revealing the quality of a wine as for its structure and its body.

·PASQUA·
VIGNETI·E·CANTINE·IN·VERONA

Amarone 1999.

February 25 th, 1999

Parameters	***Horizontal Fermenting system hl 75*** (cellar Musella)	**Pistons fermenting system hl 150** (cellar Musella)	***Pistons fermenting system hl 100 (cellar Pasqua)***	***Ganimede fermenting system hl 150 (cellar Pasqua)***
Alcohol ml%ml	17.11	17.11	18.17	**16.87**
Sugar g%ml	0.26	1.05	1.35	**3.55**
Total extract g/l	36.70	46	49.75	**80.45**
Net extract g/l	35.10	36.50	37.25	**45.95**
Poliphenols mg/l	2216	2192	2505	**2811**
Anthocyanins mg/l	Mass: 295		327	**392**
Colour intensity	13.516	10.960	12.536	**12.808**
Colour shade	0.451	0.487	0.504	**0.517**

NOTE: As you can note, the sample obtained with the Ganimede system has still got a little sugar elements because, unlike the other fermenters, it hasn't been possible to warm the product to make easier the completion of the fermentation.