



AERMEC FOR WINE



The Wine industry



Wine has been a constant throughout the history of civilization and can be traced back to ancient times. The roots of the age-old wine-growing tradition run deep in the Land, thriving on its generosity. Nowadays, this tradition draws on advanced techniques and technologies to enhance, and bring to the consumer, the characteristics and unique qualities of each wine.

While wine has gone from being an everyday staple to a choice driven by enjoyment and cultural experience, each process and instrument contributing to its definition is now gaining new importance.

Progressing from a tradition linked to old-fashioned farming practices, today's winemaking also entails controlling every single stage within its creation with the aid of advanced hi-tech equipment to ensure the finished product is as true as possible to itself and to its territory.

The growing need to strive towards increasingly ambitious quality objectives is spurring the market to create a supply chain capable of ensuring excellence at every stage: from practices employed in the vineyard to the use of new technologies within winery resulting from systems designed and produced ad hoc.



Aermec solutions

Aermec is a well established player in the winemaking market through its specific collaboration with leading suppliers within the industry.

Our specific know-how has grown extensively over the years so that we are now well placed to offer cutting edge solutions to the industry.

With a view to enabling personnel specialized in the wine industry to build on their know-how day by day, and hence be able to offer installers, designers and oenologists first-hand support at every stage of the system design and build process, Aermec offers pilot facilities and even a winery-cum-laboratory where we can test new solutions so that the equipment we design is developed on a bespoke basis and not simply adapted.

These plants are monitored daily and allow us to experiment with innovative solutions to cater to all the requirements of a modern winery.



*Château Smith Haut Lafitte,
Bordeaux Martillac,
France*





The winemaking process

Generally speaking, the process can be split into two different operating cycles: fermentation with skin contact (red wines) and **fermentation without skin contact** (white and rosé wines).

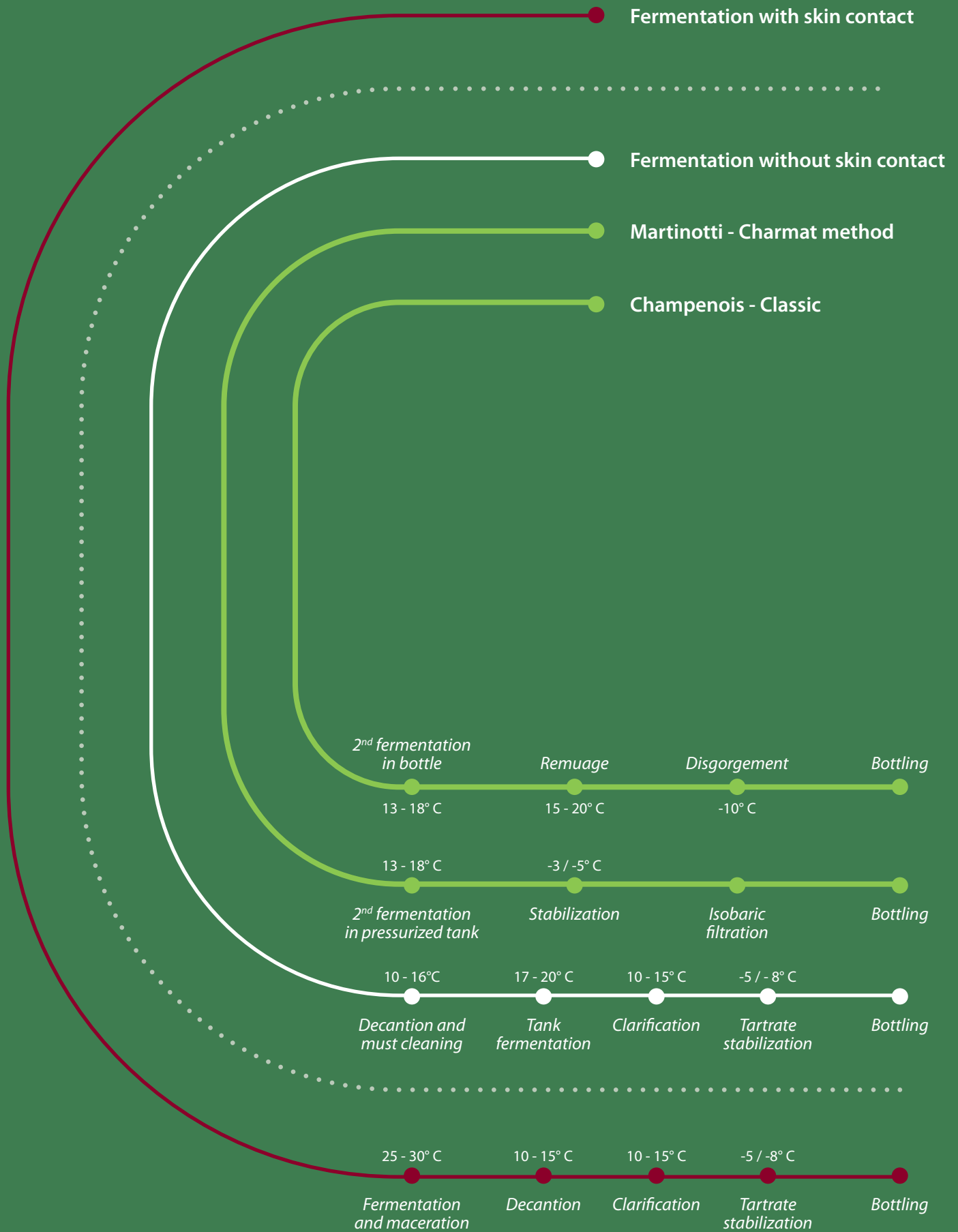
Essentially, the difference between the two cycles lies in the skin contact: namely, in **fermentation with skin contact**, the skins are kept in contact with the must so that they give up their flavour and colour to the product (maceration); while in fermentation without skin contact, grapes are immediately gently pressed to stop the must being contaminated by other elements.

Fermentation without the skins is also used in making **sparkling wines**, whose distinguishing feature is the foam produced by carbon dioxide building up in the bottle as a result of fermentation.

There are two possible methods for making a sparkling wine: the Classic Method (or Méthode Champenoise), featuring slow secondary bottle fermentation; and the Charmat Method, where the sparkling process takes place in a pressurized tank.

*Cantina Vivallis,
Nogaredo (TN).
Italy*

Process stages



The graph shows the stages of the process and the temperatures which are usually used.

Quality and technology

The fact that positive and negative charges are present during the winemaking cycle, and the considerable advantage of not having to use natural gas as a primary energy source, have led to the heat pump making successful inroads into the wine industry. In addition, the demand for ever-improved product quality translates into an ever-growing demand for quality in the production cycle as well, thus calling for an optimised design of the whole winery system. In such a scenario,

the refrigeration equipment plays an important and everexpanding role. From the arrival of the grapes through to bottling, every stage of the cycle has its optimum target temperature range and its own energy requirements that need to be quantified and taken into account at the design stage. Aermec delivers innovation and ensures the latest technologies are applied not just to the product, but to whole systems designed to promote the concept of reliability and energy efficiency.



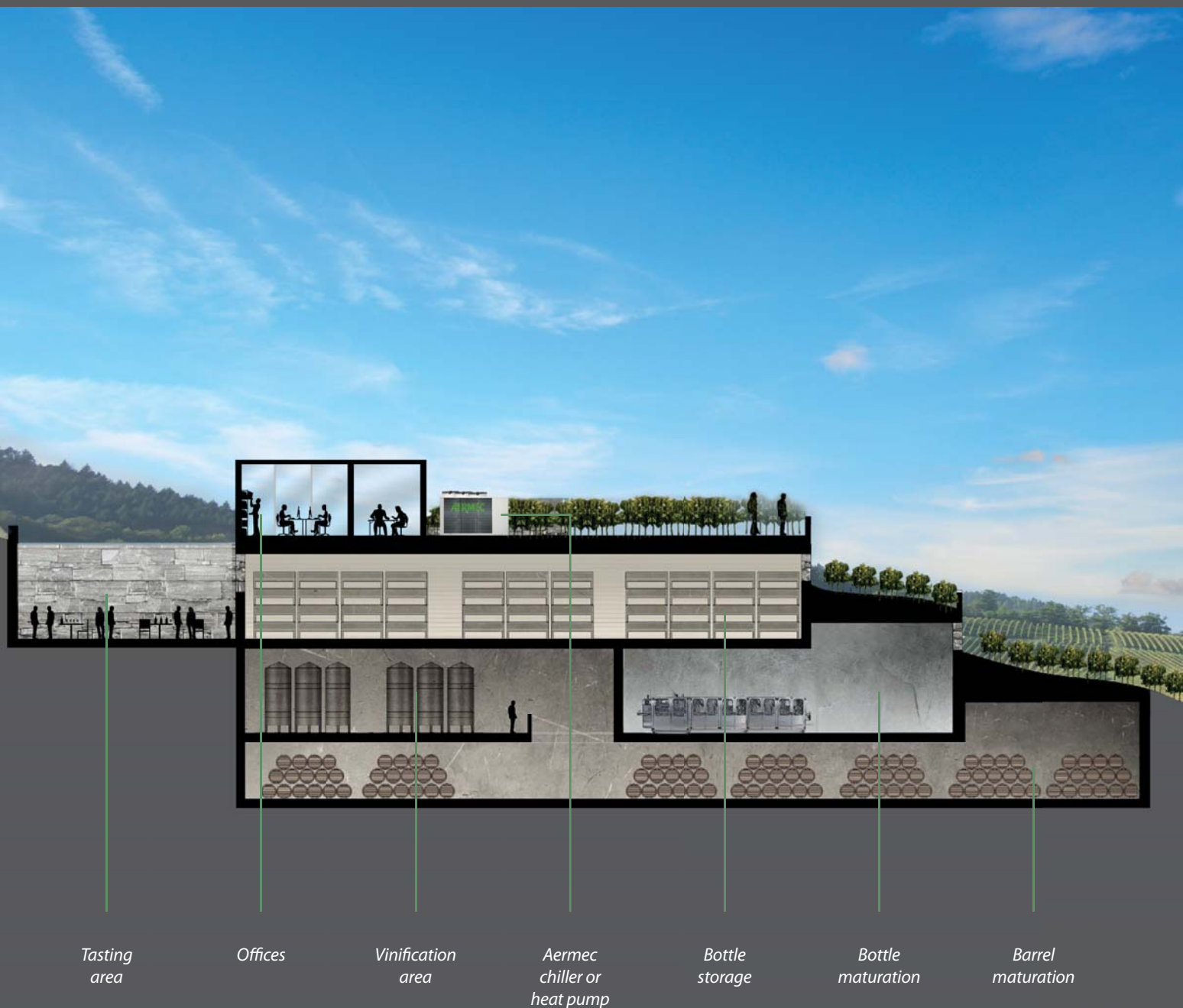
*Tenute Loacker - Corte Pavone,
Montalcino (SI)
Italy*

The winery system

The target temperatures are achieved - depending on the various stages - and maintained with internal chilling, external chilling and air conditioning of the ambients.

Aermec supplies chilled or hot water for vinification components such as thermal jackets or heat exchangers. Furthermore, thanks to our extensive range of engineering solutions, we can also ensure the right temperature and humidity conditions required for each individual room,

with the option of remote control and monitoring to make the system more reliable and easier to operate. Interactions between the wine and wood are greatly affected by temperature and relative humidity and nowhere is this more true than in the barrel room, where the temperature is kept between 12 and 18 °C and humidity between 75% and 85%. This correlation between two variables often requires the application of an Air Handling Unit (AHU).



The Aermec range

To cater to the requirements of wineries the world over, Aermec offers chillers and heat pumps sized specifically to meet the winemaking cycle's every need.

The ANL, NRL and NRB air-cooled ranges, supplied as a packaged solution, ensure high levels of energy efficiency, delivering considerable savings both in new projects and in the upgrading of existing facilities.

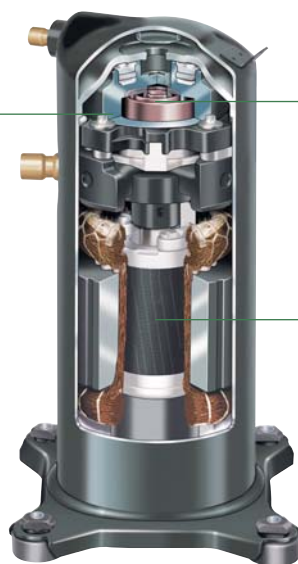
In addition to Eurovent certification confirming system performance, Aermec units feature the latest, most advanced technologies and high-quality components. The unit enclosure, made from hot-dip galvanized sheet steel with a polyester powder coating, provides both strength and easy access for maintenance work. The fan assembly comprises statically and dynamically

balanced axial-flow fans. With the application of multiple scroll compressors, reliability and safety are guaranteed and efficient step control is achieved, ensuring reduced partial load energy consumptions. Compliant scroll technology, offered on most models, represents the most advanced solution available on the market, ensuring high efficiency and reliability, low noise and reliability.

Depending on the configuration, the unit features safety devices including: high and low pressure switches; high and low pressure transducers; inlet and outlet water temperature sensors.

The plant side heat exchanger in a AISI 316 steel brazed plate configuration, comes with a frost protection heating element as standard.

Fixed scroll connected to compressor body.



Moving scroll connected to drive shaft whose orbital motion creates gas pockets.

High-efficiency induction motor.

Compliant Scroll technology ensures axial and radial compliance between the two scrolls. Axial compliance minimizes leakages. Radial compliance increases the compressor's service life as it allows small solids and liquid refrigerant to pass through it. As a result of this special combination, overall compressor efficiency and reliability are increased.



ANL SERIES
Cooling capacity: 13 - 44 kW
Heating capacity: 13 - 46 kW



NRL SERIES
Cooling capacity: 56 - 194 kW
Heating capacity: 59 - 206 kW



NRB SERIES
Cooling capacity: 224 - 1047 kW
Heating capacity: 215 - 1009 kW

NRL models and all heat pumps feature an air-side finned coil heat exchanger, made with copper tubes and aluminium turbulence-inducing fins. ANL and NRB series chillers feature a microchannel heat exchanger ensuring considerable energy efficiency gains and a lower refrigerant content.

The thermostatic expansion valve adjusts the flow of gas to the evaporator based on the heat load, offering a dual cooling set point to cover a wide water outlet operating range from +18 to -10 °C.

All models come with the option of a built-in hydronic kit, a plug&play solution which notably simplifies installation. The various configurations include storage tanks with single or dual pumps and with different head pressures. The MODUCONTROL control system on ANL units offers

various features, including: set point compensation according to the outside temperature, alarm log management, operating hour counter, local or remote control, the display of all sensor and transducer readings.

The NRL and NRB series are fitted with the pCO5 microprocessor. Its various features include: temperature control based on load conditions; alarm log management; management of pumps, heating elements and other components; definition of operating time bands; defrost cycle management based on self-adaptive logic for improved efficiency; control of two units using Master/Slave logic; remote control via a dedicated display.

In addition, NRB can be ordered to handle outside air temperatures as low as -20 °C.

Chillers

ANL	Vers		050	070	080	090	102	152	202
Cooling Capacity	°	kW	13,31	16,39	20,35	22,14	26,34	32,69	42,60
	P / A	kW	13,51	16,63	20,62	22,42	26,93	33,48	43,49
	N / Q	kW	13,72	16,87	20,9	22,72	27,07	33,66	43,72
Input power	°	kW	4,12	4,98	6,48	6,79	8,06	10,31	13,53
	P / A	kW	4,01	4,83	6,3	6,6	8,07	10,53	13,79
	N / Q	kW	4,18	5,01	6,48	6,79	8,46	10,58	13,82
EER	°	W/W	3,23	3,29	3,14	3,26	3,27	3,17	3,15
	P / A	W/W	3,37	3,44	3,27	3,40	3,34	3,18	3,15
	N / Q	W/W	3,28	3,37	3,23	3,35	3,20	3,18	3,16
ESEER	°	W/W	3,74	3,82	3,65	3,71	3,85	3,99	3,94
	P / A	W/W	3,85	3,97	3,8	3,95	3,96	3,64	3,82
	N / Q	W/W	3,66	3,77	3,61	3,75	3,61	3,74	3,62

NRL	Vers		0280	0300	0330	0350
Cooling Cap.	E	kW	56,64	64,64	73,63	82,50
Input power	E	kW	17,16	19,76	22,17	25,57
EER	E	W/W	3,30	3,27	3,32	3,23
ESEER	E	W/W	3,75	3,72	3,80	3,68

NRL	Vers		0500	0550	0600	0650	0700	0750
Cooling Cap.	A	kW	97,50	103,4	128,3	142,16	162,02	193,58
Input power	A	kW	30,72	34,79	40,83	45,44	53,28	63,32
EER	A	W/W	3,17	2,97	3,14	3,13	3,04	3,06
ESEER	A	W/W	3,68	3,45	4,07	4,04	3,93	3,91

Heat pumps

ANL H	Vers		050	070	080	090	102	152	202
Cooling Capacity	°	kW	13,29	16,37	20,32	22,06	25,75	31,71	40,58
	P / A	kW	13,51	16,63	20,62	22,42	26,34	32,49	41,47
	N / Q	kW	-	-	-	-	27,07	33,70	43,70
Input power	°	kW	4,14	5,01	6,51	6,87	8,82	10,48	14,28
	P / A	kW	4,01	4,84	6,3	6,6	8,83	10,7	14,52
	N / Q	kW	-	-	-	-	8,49	10,58	13,83
EER	°	W/W	3,21	3,27	3,12	3,21	2,92	3,03	2,84
	P / A	W/W	3,37	3,44	3,27	3,40	2,98	3,04	2,86
	N / Q	W/W	-	-	-	-	3,20	3,18	3,16
ESEER	°	W/W	3,74	3,82	3,12	3,71	3,85	3,99	3,94
	P / A	W/W	3,37	3,97	3,8	3,95	3,96	3,64	3,82
	N / Q	W/W	-	-	-	-	3,61	3,74	3,62
Heating capacity	°	kW	14,12	17,44	22,4	24,46	29,31	35,35	45,78
	P / A	kW	13,89	17,18	22,1	24,1	28,7	34,56	44,9
	N / Q	kW	-	-	-	-	28,56	34,34	44,64
Input power	°	kW	4,42	5,04	6,5	7,12	8,87	10,45	13,76
	P / A	kW	4,28	4,87	6,29	6,85	8,9	10,71	14,07
	N / Q	kW	-	-	-	-	9,30	10,72	14,08
COP	°	W/W	3,19	3,46	3,45	3,44	3,30	3,38	3,33
	P / A	W/W	3,25	3,53	3,51	3,52	3,22	3,23	3,19
	N / Q	W/W	-	-	-	-	3,07	3,20	3,17

NRL H	Vers		0280	0300	0330	0350
Cooling Cap.	E	kW	52,80	61,70	68,70	76,70
Input power	E	kW	18,10	20,30	23,30	26,90
EER	E	W/W	2,92	3,04	2,96	2,85
ESEER	E	W/W	3,85	3,77	3,85	2,85
Heating cap.	E	kW	59,25	69,35	76,33	86,40
Input power	E	kW	17,55	20,65	22,83	26,20
COP	E	W/W	3,38	3,36	3,34	3,30

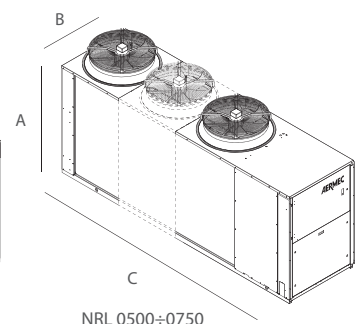
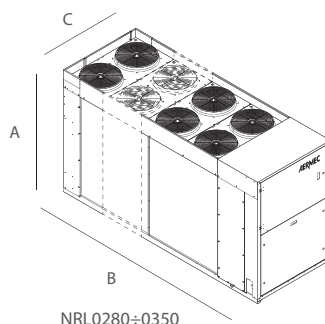
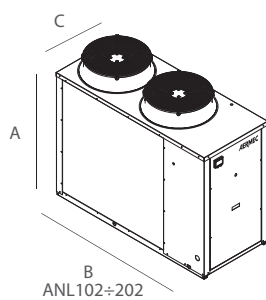
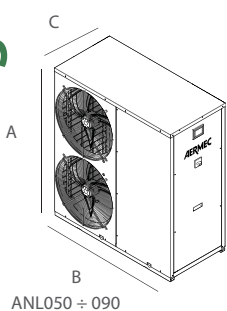
NRL H	Vers		0500	0550	0600	0650	0700	0750
Cooling Cap.	A	kW	93,60	99,50	121,50	137,40	149,30	179,00
Input power	A	kW	30,80	34,10	41,50	48,50	52,10	64,20
EER	A	W/W	3,04	2,92	2,92	2,83	2,87	2,79
ESEER	A	W/W	3,71	3,48	4,13	4,09	3,98	3,98
Heating Cap.	A	kW	103,50	110,60	135,70	152,80	172	205,40
Input power	A	kW	31,70	34,40	40,80	45,70	53,10	62,70
COP	A	W/W	3,26	3,22	3,33	3,34	3,24	3,28

Weights & dimensions

	Vers.		050	070	080	090	102	152	202
Dimens. A	°/H/HP	mm	1252				1450		
			1281						
Dimens. B	°/A/HA	mm	1124				750		
			1165						
Dimens. C (*with anti-vibration plots)	°/H/P	mm	384/428*				1750		
	A/HA		550						
Weights ANL	°	kg	120	120	120	156	270	293	329
	P	kg	127	127	163	163	288	314	350
	A	kg	147	147	147	183	338	364	400
Weights ANL H	H	kg	120	120	156	156	295	322	358
	HP	kg	127	150	163	163	313	343	379
	HA	kg	147	150	183	183	363	393	429

	Vers.		0280	0300	0330	0350	0500
Dimens. A	Alls	mm	1606				1875
Dimens. B	Alls	mm	1100				
Dimens. C	Alls	mm	2450	2950	2950	2950	3010
Weights NRL	Alls	kg	686	751	761	767	955
Weights NRL H	Alls	kg	730	795	805	811	1099

	Vers.		0550	0600	0650	0700	0750
Dimens. A	Alls	mm	1875			1975	
Dimens. B	Alls	mm	1100			1500	
Dimens. C	Alls	mm	3010	3010	3010	4010	4350
Weights NRL	Alls	kg	959	1142	1155	1323	1663
Weights NRL H	Alls	kg	1103	1204	1212	1390	1748



Customised solutions

With an extensive range of accessories and different unit configurations to choose from, Aermec offers custom made solutions designed to meet your every specific need.



Shell and tube heat exchanger on plant side (depending on model).

AISI 304 steel hydronic kit (depending on model).

AISI 316 stainless steel plate desuperheater for partial heat recovery, insulated externally with closed-cell material to reduce heat loss.

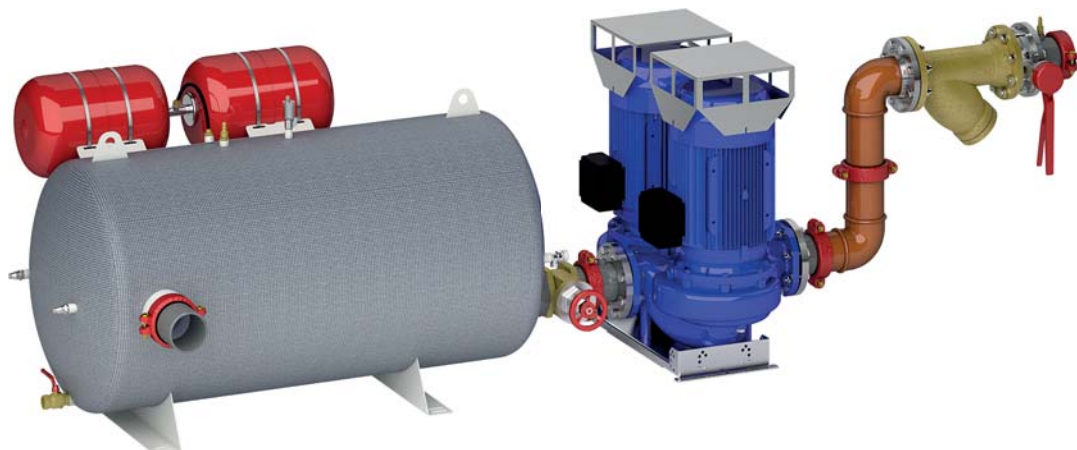
Inverter-driven fans for continuous air flow control.

Oversized fans to overcome pressure drops in ducted systems.

Condensing temperature control device (DCPX), with continuous fan speed adjustment via pressure transducer.

Electronic thermostatic expansion valve for improved superheating control, optimizing the evaporation under all conditions and improving the efficiency levels.

Primary side inverter-driven pump with two step settings (depending on the set point), of benefit especially during installation as it adapts automatically to the system head pressure.



AISI 304 storage tank with dual in-line pumps featuring programmed sequencing and automatic changeover.

System management

The remote management systems Aermec offers allow each system component to be controlled and monitored locally, via a central system and remotely.

AERNET

The device allows the control, the management and the remote monitoring of a chiller (with maximum 6) with a PC, smartphone or tablet using Cloud connection. Also, with a simple click is possible to save a log file with all the connected unit datas in the personal terminal for post analysis.

MULTICONTROL

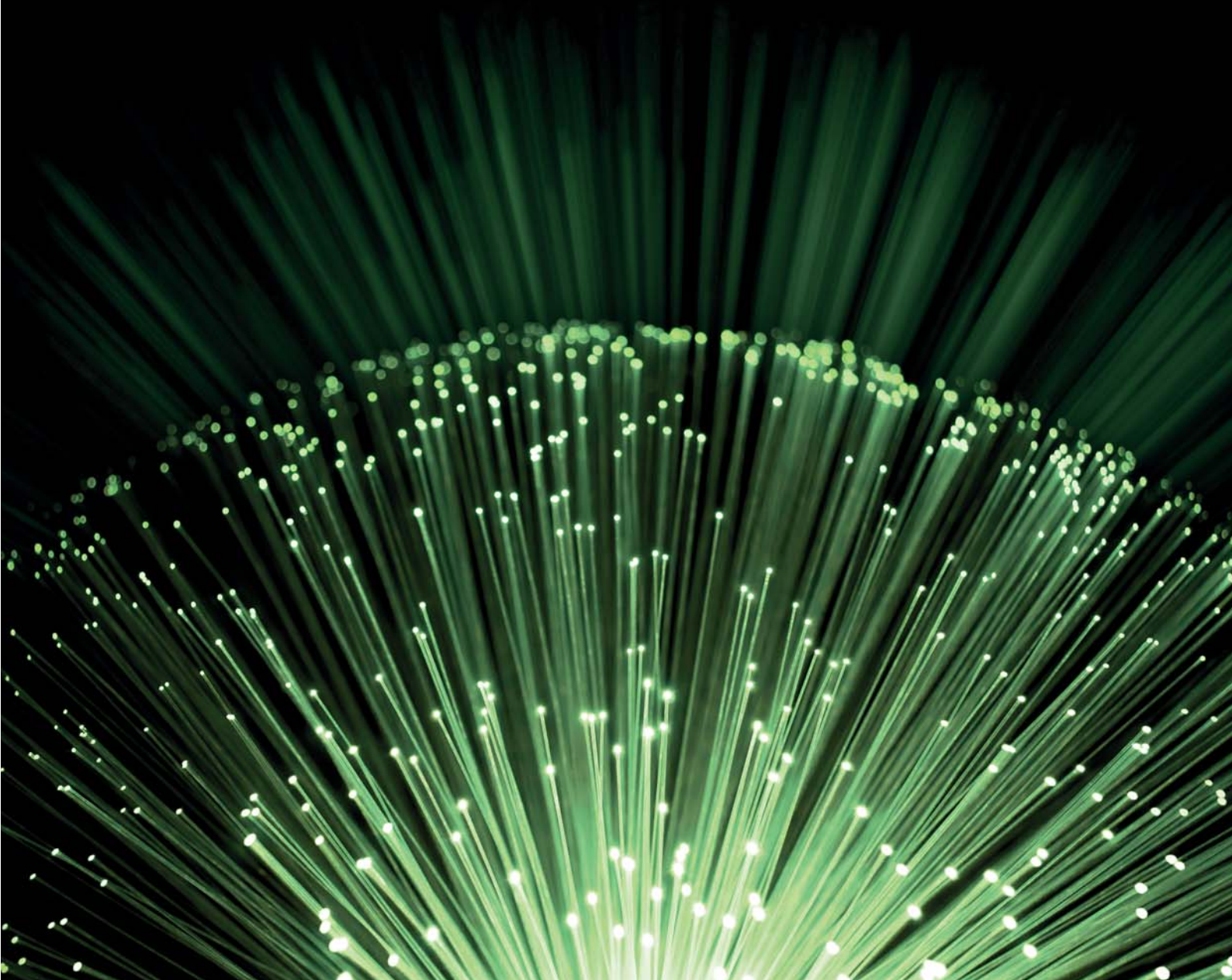
Enables simultaneous control of up to 4 units (installed in the same system) fitted with the MODUCONTROL unit. For more complete control, the Multicontrol unit can be used in conjunction with other VMF system accessories.

MULTICHILLER

Allows you to control, switch on and switch off individual chillers in a system fitted with a number of appliances running in parallel, ensuring a consistently steady flow to the evaporators.

VMF

Designed to allow either local or central control of each individual component of a hydronic system; ideal in ambients such as reception areas, tasting rooms and offices.



Aermec: a force to be reckoned with



A leading brand

Aermec, founded in 1961, can be considered one of the first, if not the very first, supplier of air conditioning equipment in Europe; a true pioneer and continuous innovator, Aermec swiftly expanded into new applications, including process cooling and wine cooling; in fact today Aermec is a major player within wine applications covering numerous nations on a worldwide scale. Renowned global OEMs and famous vineyards worldwide have chosen Aermec for their vinification process needs.

Today the Aermec Group, whose turnover has grown beyond €300m, combines 6 Centres of Excellence, over 1600 employees and 8 production facilities, distributing its products via 6 distinct Group brands.

Worldwide presence

With 10 Sales Subsidiaries and Affiliates and more than 70 international Distributing Companies Aermec covers every continent worldwide, offering dedicated customer consultancy and support serving a global clientele.

Aermec offers its products with numerous 50Hz and 60Hz supply voltages, as well as CE certification in Europe, cUL listing in North America and other leading certifications worldwide.

Global service support

Aermec places high value in supporting its customers at all times, offering dedicated service support in all countries it serves. All Aermec service partners are continuously updated concerning the latest Aermec solutions and technologies.

Rapid spare parts support is ensured on a worldwide scale, combining local stocks with advanced supply logistics.

Technological Expertise

Aermec's sophisticated R&D facilities include Europe's largest calometric chamber, both Eurovent and AHRI certified and capable of testing single units up to 2MW. Highly accurate testing with precision levels of $\pm 0,2^{\circ}\text{C}$ can be achieved with ambient temperatures ranging from -20°C to $+55^{\circ}\text{C}$. Other laboratories cater for noise, aerualic and enthalpic testing. Aermec's quality is guaranteed by renowned certifications, including Eurovent in Europe, AHRI in North America and many more beyond.

Furthermore countless customers visit Aermec every year to witness personalised tests in Aermec's dedicated customer testing facilities. Rigorous design phase procedures, including the selection of renowned suppliers, extensive prototype testing, field testing and vibration testing, ensure that all Aermec products withstand even the toughest working conditions.

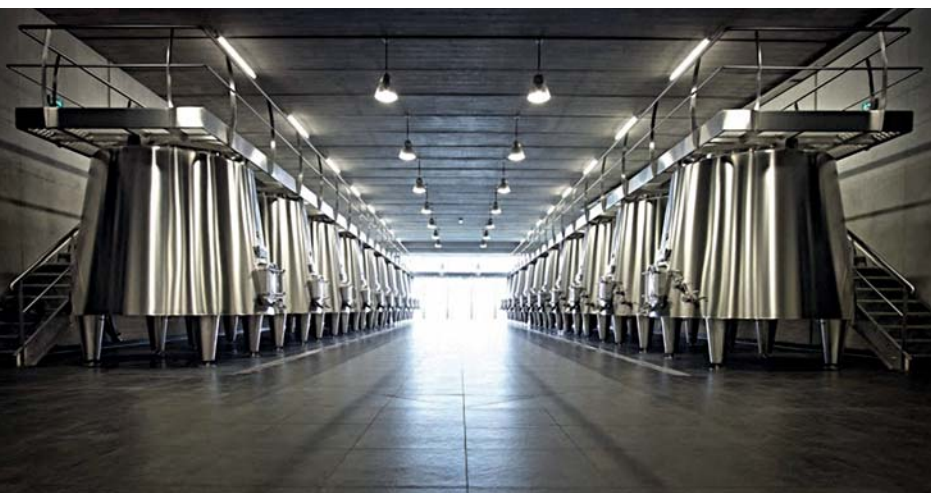
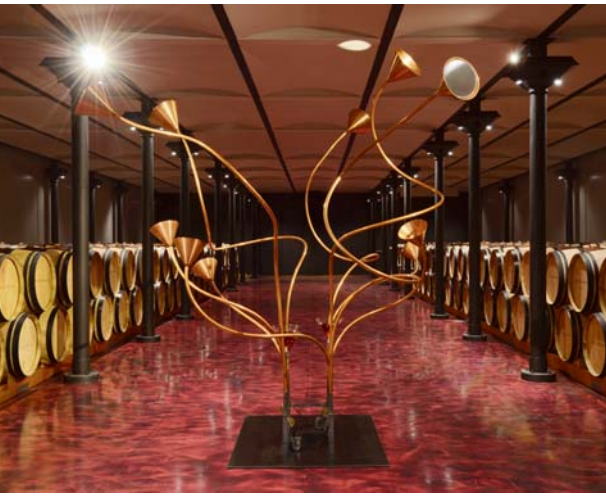
Advanced Logistics

Highly robotised production facilities combined with the latest logistical advances, including Enterprise Resource Planning (ERP), ensure rapid product delivery times, high flexibility to customer personalisation requests and elevated product quality levels; each and every unit leaving the Aermec factories is subject to extensive individual testing covering operation, safety and performance at nominal conditions.

Highest Energy Efficiencies

Aermec is an ISO14001 certified company dedicated towards minimizing carbon footprints within all its activities. This is true within its own facilities but also within the product solutions it offers its customers, which benefit from the lowest electrical power consumptions achievable, combining advanced product design, technologies allowing freecooling and high partial load energy savings and unique system control algorithms.





References

When it comes to the vinification process or air conditioning of interiors, Aermec is the supplier of choice to leading wineries around the globe, who value the reliability offered by Aermec solutions and a highly qualified team always on hand to provide prompt support.

Italy

Piedmont

Conterno Giacomo,
Monforte d'Alba (CU)

Trentino Alto Adige

Cantina Vivallis,
Nogaredo (TN)

Sicily

Feudo Principi di Butera,
Butera (CL)

Tuscany

Ornellaia,
Castagneto Carducci (LI)

Tenute Loacker - Corte Pavone,
Montalcino (SI)

Veneto

Speri Viticoltori,
Pedemonte (VR)

Worldwide

Canada

Robin Ridge Winery,
Keremeos (British Columbia)

France

Château Cheval Blanc,
Saint-Émilion (Aquitaine)

Château Smith Haut Lafitte,
Bordeaux Martillac (Aquitaine)

Portugal

Aveleda,
Penafiel (Porto)

Slovakia

Elesko,
Modra (Bratislava)

South Africa

Ladismith Cellar,
Ladismith (Western Cape)

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