

Temperature control

Functional unit: 15 000 l wine

- Cooling jackets
- Coils / plates
- Shower
- Resistances
- Shower + Resistances

Cooling jackets



Jackets surrounding the tanks allow the transmission of heat or cold by means of a fluid circulating inside them.

A cooling equipment produce chilled water that is pumped to the jacket, in a closed loop. Then, internal heat generated inside the tank is absorbed by it.

Today it is the most widespread temperature control method used in wineries. One of its advantages is that the refrigerant never comes into contact with the product (must or wine).

ENVIRONMENTAL ASPECTS

- | | |
|---|-------------------------------------|
| <input checked="" type="checkbox"/> Energy | <input type="checkbox"/> NHW |
| <input checked="" type="checkbox"/> Water | <input type="checkbox"/> HW |
| <input checked="" type="checkbox"/> Resources | <input type="checkbox"/> Wastewater |
| <input type="checkbox"/> Noise | <input type="checkbox"/> Emissions |

ECONOMIC STUDY

Functional unit: 15 000 l wine

<i>Initial investment:</i> 12 694.40 €	<i>Annual expenditure:</i> 343.14 €
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CRITICAL FACTORS

- | | |
|--|--|
| <input checked="" type="checkbox"/> Large investment | <input type="checkbox"/> Organisation |
| <input type="checkbox"/> Improvement potential | <input checked="" type="checkbox"/> Training |
| <input type="checkbox"/> Technological changes | <input checked="" type="checkbox"/> Quality |

Coils - Plates



The basis is similar to that of the cooling jackets but, in this technique, cold is transferred by introducing plates or coils into the tank coming into contact with the product (must).

Normally, this is used in tanks, such as concrete tanks, which insulate the product well.

The main disadvantage of this technique is that both the installation and the cleaning of the coil or plates are more difficult.

ENVIRONMENTAL ASPECTS

- | | |
|---|-------------------------------------|
| <input checked="" type="checkbox"/> Energy | <input type="checkbox"/> NHW |
| <input checked="" type="checkbox"/> Water | <input type="checkbox"/> HW |
| <input checked="" type="checkbox"/> Resources | <input type="checkbox"/> Wastewater |
| <input type="checkbox"/> Noise | <input type="checkbox"/> Emissions |

ECONOMIC STUDY

Functional unit: 15 000 l wine

<i>Initial investment:</i> 11 274.60 €	<i>Annual expenditure:</i> 343.10 €
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CRITICAL FACTORS

- | | |
|--|--|
| <input checked="" type="checkbox"/> Large investment | <input type="checkbox"/> Organisation |
| <input type="checkbox"/> Improvement potential | <input checked="" type="checkbox"/> Training |
| <input type="checkbox"/> Technological changes | <input checked="" type="checkbox"/> Quality |

Shower



In this technique, water is sprayed into the outside part of the tanks in order to reduce the inner temperature.

Chilled water circulates through a perforated pipe installed on the top of stainless steel tanks, and it is sprayed, wetting all the external surface of the tanks.

Cold equipment is not required but a pump to sprinkle the water is necessary. However, water consumption is very high.

ENVIRONMENTAL ASPECTS

- | | |
|--|--|
| <input checked="" type="checkbox"/> Energy | <input type="checkbox"/> NHW |
| <input checked="" type="checkbox"/> Water | <input type="checkbox"/> HW |
| <input type="checkbox"/> Resources | <input checked="" type="checkbox"/> Wastewater |
| <input type="checkbox"/> Noise | <input type="checkbox"/> Emissions |

ECONOMIC STUDY

Functional unit: 15 000 l wine

<i>Initial investment:</i> 8 500 €	<i>Annual expenditure:</i> 39.26 €
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CRITICAL FACTORS

- | | |
|---|---|
| <input type="checkbox"/> Large investment | <input type="checkbox"/> Organisation |
| <input checked="" type="checkbox"/> Improvement potential | <input type="checkbox"/> Training |
| <input type="checkbox"/> Technological changes | <input checked="" type="checkbox"/> Quality |

Resistances



It is based on the application of direct heat to the liquid inside the tank, controlling the temperature with a digital thermostat to avoid any evaporation of scents. It is generally used for the malolactic fermentation or excessively cold areas.

The main disadvantage of this technique is its high power consumption. Moreover, resistances are in direct contact with the must or wine, so they may affect its quality.

ENVIRONMENTAL ASPECTS

- | | |
|--|-------------------------------------|
| <input checked="" type="checkbox"/> Energy | <input type="checkbox"/> NHW |
| <input type="checkbox"/> Water | <input type="checkbox"/> HW |
| <input type="checkbox"/> Resources | <input type="checkbox"/> Wastewater |
| <input type="checkbox"/> Noise | <input type="checkbox"/> Emissions |

ECONOMIC STUDY

Functional unit: 15 000 l wine

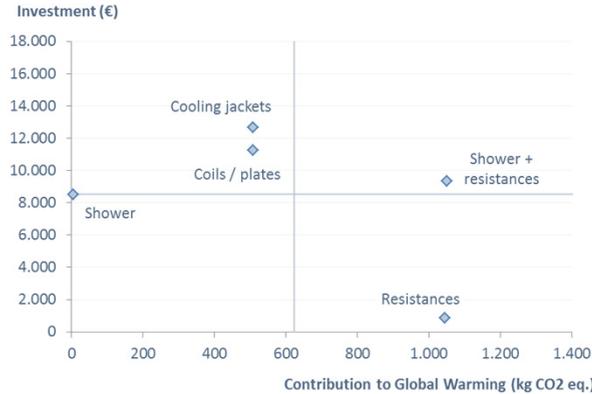
<i>Initial investment:</i> 840 €	<i>Annual expenditure:</i> 624.99 €
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CRITICAL FACTORS

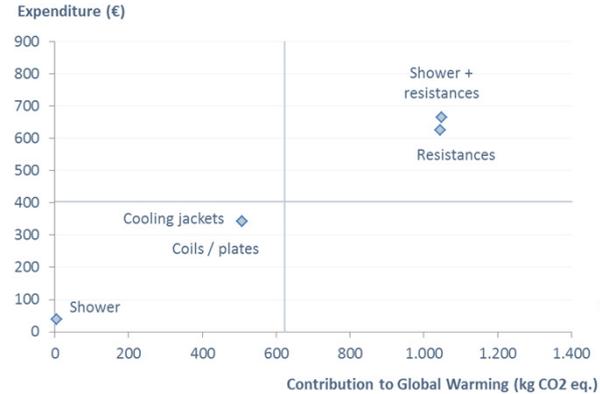
- | | |
|---|---|
| <input type="checkbox"/> Large investment | <input type="checkbox"/> Organisation |
| <input checked="" type="checkbox"/> Improvement potential | <input type="checkbox"/> Training |
| <input type="checkbox"/> Technological changes | <input checked="" type="checkbox"/> Quality |

Economic – Environmental Results

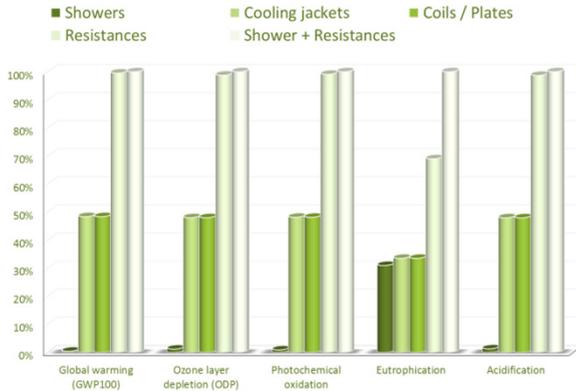
INVESTMENT - ENVIRONMENTAL LOAD



EXPENDITURE - ENVIRONMENTAL LOAD



ENVIRONMENTAL



PRIORITISATION

INVESTMENT - kg CO ₂ eq.	EXPENDITURE - kg CO ₂ eq.	TOTAL	RESULTS
3	3	6	SHOWER+ RESISTANCES
2	3	5	RESISTANCES
2	1	3	COOLING JACKETS
2	1	3	COILS / PLATES
1	1	2	SHOWERS

