

## CRYO-BARRIQUES

Sanitization and rejuvenation of barriques

Fresh and toasted wood

Elimination of bacteria and mold

Increased micro-oxygenation

Free of chemical residues



At -78.5° C dry ice has shown some effectiveness in removing mold, spores, bacteria, fungi and many other problems associated with the winery. The barrel cleaning process successfully removed or reduced TCA (Trichloroanisoles), Brettanomyces and volatile acids (VA) from contaminated surfaces.

The barrels cleaning process doesn't use chemical substances but dry ice, which sublimates without leaving any waste, no chemical residue and without changing the taste. This cleaning process sanitizes the barrels and opens the porosity of the wood to restore the taste.



The barrels cleaning uses dry ice that is 99.9% pure, which means food grade that is the highest grade of quality available.

Dry ice cleaning reduces or eliminates the use of toxic solvents, thus eliminating the operator's contact with these substances and reducing the company's responsibility for wine pollution.

## CRYO-BARRIQUES

**Cryo-Barriques** is an afove booth equipped with a system for the collection of the contaminant, removed during the treatment, and for the filtration of the process air, to be re-entered in the environment, as well as for the soundproofing of the process.



The “**sanitization and/or rejuvenation of Barriques**” system, called Cryo-Barriques, is an automatic system for the treatment of wooden barrels through the use of dry ice, for complete sanitization from brettanomyces and lactic acid bacteria and for rejuvenation, by removing a thin layer of wood from the slats, to give new roasting to the wine.

This system uses two programmable reciprocators at 6DoF, in addition to clamp locking of the barriques. The barrel is taken from the clamp and transported in all stages of treatment automatically, than it is released at the end of the cycle. A **dry ice** blaster machine, through a nozzle, allows the treatment of sanitization and/or rejuvenation of the barrel, always with automatic and selectable cycle.



Elimination of bubbles (blisters)

Sanitation/  
Mould removal

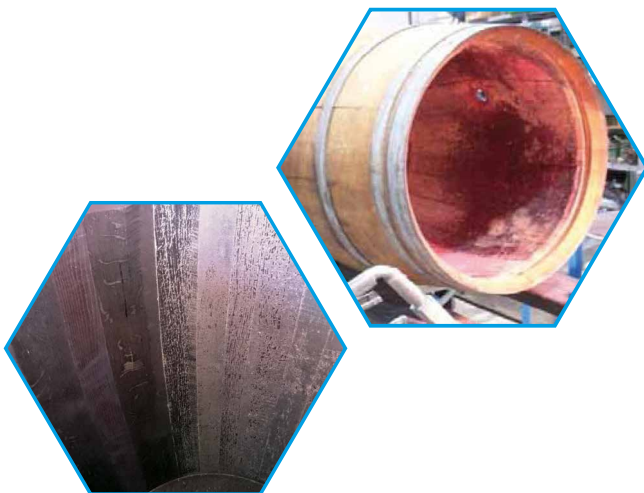
Ripristino della  
micro-ossigenazione

**Regeneration  
process  
Why does it work?**

Low rate of  
wine loss

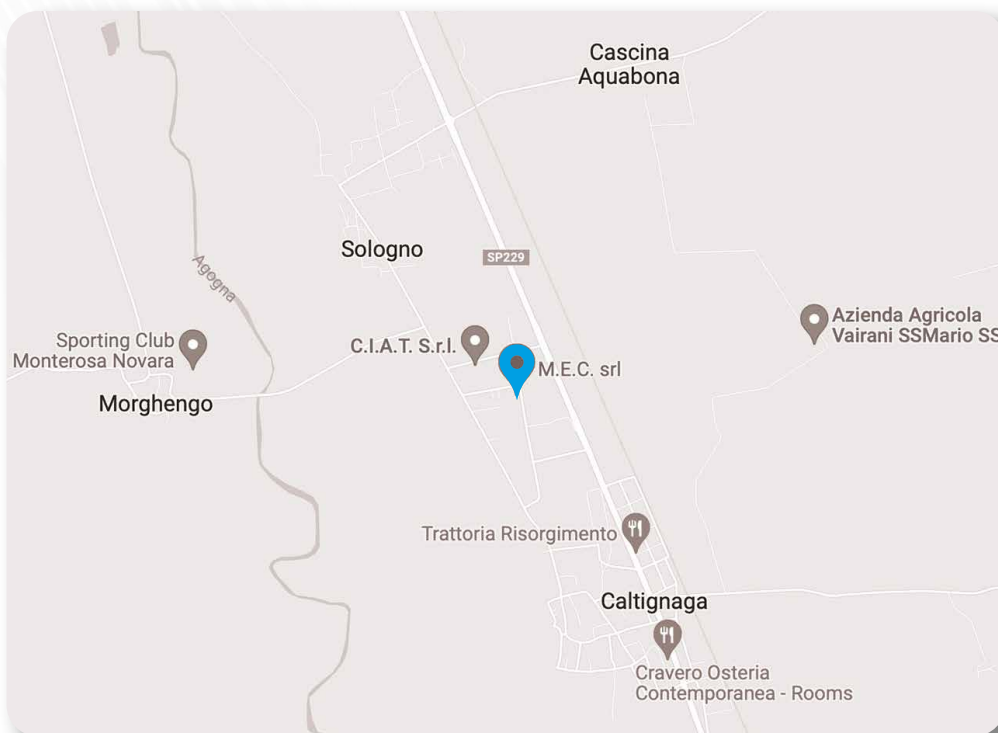
No need  
to re-toast

Cost  
savings



Tartrate crystals, residues of old wine and about 1-2mm of wood are removed. This makes the toasted wood cool and increases the surface area of the cask so that a greater quantity of wine comes in contact with more wood. During the dry ice blasting of the barriques, the lid of the barrel is removed to proceed with an internal inspection. Removing the lid is the only way to ensure that the barrel will be 99% clean **without leaving contaminants**. Both ends of the cask are not opened to avoid compromising their integrity.

One of the applications of cryogenic blasting involves the restoration of “used” barriques using the process approved by EPA, USDA and FDA. 100% of the dry ice sublimates with the impact without leaving any chemical residues so the **tastes are not affected**.



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