

THE FRIDGE-STORAGE SYSTEM IMPLEMENTED IN A DISUSED MINE IN ITALY

The [Melinda Cooperatives Consortium](#) of the Autonomous Province of Trento (Italy) has created an [innovative underground cold storage system for food preservation](#) in an underground cave of the territory.

This innovative solution recovers the traditional techniques of apples conservation in the cellars of houses, in the darkness at almost a stable temperature at all seasons.

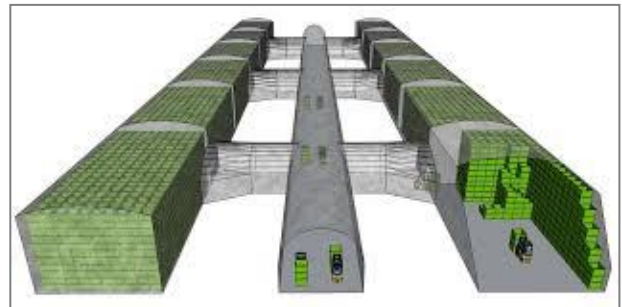
The production of apples represents an important productive chain of the territory and looking for a sustainable alternative to the conservation of fruits after their harvest, the Consortium identified the possibility to take advantage of an unused mine of the place, the *Miniera di Rio Maggiore*, with its 70 hectares of galleries located 300 meters below the roots of the apple trees that grow on the surface.

Based on a specific study of the particular geological characteristics of the rock mass of this mine, the Consortium has designed and built the project of transforming a local heritage into a storage for apple conservation in a controlled atmosphere.

The underground cold storage system for food preservation built by the Melinda Consortium today consists of 34 cells that allow the storage of 30,000 tons of apples. Each cell is 25 meters long, 11 meters high and 12 meters wide, and is capable of holding around 1,000 tons of apples. The temperature for storing apples is raised to one degree, while in the rest of the tunnels it is stable at 10 degrees.

Compared to current stores on the ground, [the new underground cold storage system has the following significant benefits](#) with respect to environment, production and landscape:

- Compared to the solutions on the ground the energy consumption to feed the cooling system of the cells is reduced by 80%. This energy saving is equivalent to the energy that 2,000 people use in a year.
- Reduction of the CO₂ emissions into the atmosphere of more than 40 thousand kg/year, equivalent to 50 hectares of coniferous forest saved.
- Reduction of water consumption of more than 27 thousand m³/year (equivalent to the use of 10 Olympic swimming pools).



- Reduction of the maintenance costs of the structures.
- Complete elimination of the use of artificial insulating panels such as polyurethane, whose disposal generates pollution.
- Improvement and protection of the landscape and the agricultural land, avoiding the construction of new large surface infrastructures and by taking advantage of an already existent mine, otherwise no longer in use.

The territorial system of cooperatives in the Autonomous Province of Trento is characterized by a long tradition and results of great economic and social impact. In 1895 the first Federation of 50 cooperatives was founded in the territory. Nowadays, over a total population of 500,000 inhabitants, 270 thousand people are associated in 540 cooperatives, generating income derived from production and a broad access to high quality services.

In this framework, [the Melinda Consortium was created in 1989 by associating 16 cooperatives](#) representing 5,200 apple producers in two Valleys of the Province. The Consortium provides different services to producers, including the certification and marketing of fruits with a registered brand. The hypogean apple storage project, besides bringing the mentioned advantages, shows the great potential of a territorial cooperative system in innovating by respecting nature, the territory where are based the apple orchards and the families of the producers.

The credibility obtained by the provincial cooperative system as a whole and the strong involvement of local public and private actors has with no doubt contributed to this innovative project which is based on the revitalization of the territory unused resources.

The Melinda Consortium has been recognized and awarded in Italy for its contribution to environmental sustainability and for addressing climate change. On March 5, 2019, the hypogean storage system of Melinda Consortium apples was presented to the European Parliament generating a great interest in the participants.

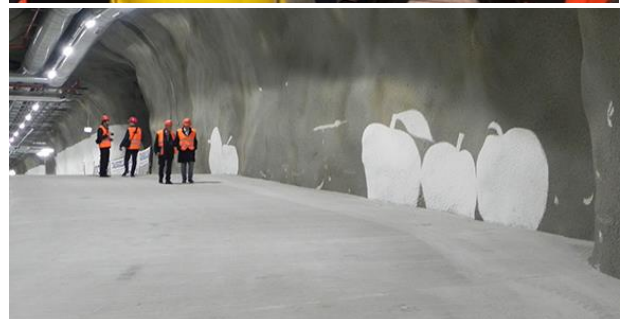
During 2019 the Melinda Consortium worked on the construction of a fourth sector of underground cells. It also made the necessary adjustments to allow the general public to visit in 2020 the futuristic underground construction of the area.

To know more

[Underground cold storage system in Melinda website](#)

[Slideplayer.it](#)

[Consorzio Melinda website](#)



[Article in agronotizie.imaginenetwork.com](http://agronotizie.imaginenetwork.com)

[Article in repubblica.it](http://repubblica.it)

[Article in greenweekfestival.it](http://greenweekfestival.it)

[Article in the guardian.com](http://the-guardian.com)

[Video in Youtube.com](http://youtube.com)

[Video in Youtube.com](http://youtube.com)

[Article in freshplaza.com](http://freshplaza.com)

[Article in installation-international.com](http://installation-international.com)

[Article in wired.co.uk](http://wired.co.uk)

[Article in italiafruit.net](http://italiafruit.net)

[Article in italiafruit.net](http://italiafruit.net)

[Article in italiafruit.net](http://italiafruit.net)

[Article in cooperazionetrentina.it website](http://cooperazionetrentina.it)

[Melinda certifications](#)

