Accessibility and use of information and communication technologies applied to the wine sector in rural areas

Riferimenti
Tipo di progetto
Gruppo Operativo

Acronimo
TIC VITIVINICOLO

Tematica
Robotica-automazione

Information
Time frame
2020 - 2023

Durata
33 months

Partners (no.)
20

Regione
Piemonte

Comparto
Viticoltura

Localizzazione
ITC16 - Cuneo
ITC17 - Asti
ITC18 - Alessandria

Costo totale
€848.226,00

Fonte di finanziamento principale
Programma di sviluppo rurale

Programma di sviluppo rurale
2014IT06RDRP009: Italy - Rural Development Programme (Regional) - Piemonte

Parole chiave
Farming equipment and machinery
Agricultural production system

Sito web
https://ticvitivinicolo.brizy.site/

Project status
ongoing

Objectives
Improving access and usability of information and communication technologies in rural areas through CLOUD platform implementation. Creation and growth of a shared database among the GO partners that records the winemaking models. Reduction of anomalies of fermentation and therefore obtaining wines with greater typicality and genuineness. Less use of oenological preservative adjuvants. Increases in body, color, intensity, perfumes, aromas in finished wines obtained with higher standardized quality at lower production cost. Reduction of the man hours necessary to implement the winemaking models. Definitive online density measurement solution (patented)

Activities
Cooperation activities between the GO partners: coordination, monitoring and risk management plan of the project activity. Introduction of innovation in companies adhering to the GO for traditional winemaking. Adaptation of innovation for sparkling wine production and production of high-sugar wines through two equipped mobile laboratories (innovative prototype of sparkling autoclave and innovative prototype of BATCH FED winemaker). Dissemination plan experimental results use of the three types of experimental winemaker with RRN and PEI AGRI and other companies at local, regional, national and European level.

Context
The sector interested in the innovative idea of the project is the wine sector. The innovative idea is that of a patented density sensor that solves the problem of density reading in a hostile environment such as fermenting grape must. This idea, which has obtained worldwide patent rights, is the

only one capable of allowing such an online density reading. It will therefore be possible to design around this density sensor of the winemakers able to control automatically and in a very precise way the fermentation process to prevent enological accidents such as stale fermentations, fermentation stops or fermentations that are too rapid. Such a system is very effective and able to solve the problems often encountered by wineries during the fermentation phases. The proposed innovation refers to the "agriculture" sector, which refers to wines made from fresh grapes, indicated in Chapter 22 (22.05) of Annex I of the Treaty on the Functioning of the EU. The project presents a link with the Strategic Plan for Innovation and Research in the Food and Forestry Agricultural sector (2014-2020) "by Mipaaf, in particular with the section 'Relationship between innovation and research'. The TIC VITIVINICOLO project allows the implementation of a significantly improved product, of a process and of an organizational method related to the economic / financial management of the work environment "(Oslo Manual 2005, SCAR 2012). The innovation proposed in ICT VITIVINICOLO is "a new idea that finds success in practice. The new idea can be a new product, practice, service, production process and a new way of organizing things, etc. "(EC, Draft on EIP 06/2013).

Partenariato

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Pratice abstract

Description
The project is based on a patented world-wide and highly innovative technology, subject of continuous study by the main world oenological research institutions (INRA Montpellier, Ecole Changins, etc.) The product is characterized by a high quality / price ratio obtainable with a targeted industrialization and a careful development in synergy with the end user. The benefits of innovation are a significant improvement in the quality of the final product (wine), minor corrections with oenological adjuvants at the end of fermentation, lower addition of sulfur, production of more typical and genuine wines. The degree of maturity of the technology proposed in this project with reference to the TRL (Technology Readiness Levels) scale is TRL 7 - system prototype demonstration in operational environment. Therefore, the proposed technology is in an

advanced phase that can already be used after adaptation of industrialization according to the fermenter where it will be applied

Description
"Prototype of a fermentation vertical tank, with ICT and equipped with patented sensors. It is a worldwide innovative prototype for the alcoholic fermentation of white and red grape musts. The system is computer controlled, and it can correct fermentation anomalies thanks Artificial Intelligence algorithms. The system can be controlled by the operator both locally or remotely with a web inteface. This automated winemaking system includes:
- a vinification tank designed to contain a liquid-solid phase (the grape must);
- a plurality of sensors coupled to the vinification tank, suitable for measuring a plurality of parameters which are relevant for the vinification process;
- a plurality of actuators, including a robotic arm which precisely controls the grape must pumping over
- a pump for pumping over the grape must; the liquid is sucked from the bottom of the tank and pumped to the top of the tank.
- a porous diffuser and a relative dosing chamber, for diffusing oxygen (O2) into the grape must;
- a first and eventually a second cooling jacket wrapped around the tank, either to cool or heat the tank content
- a microprocessor control unit for receiving signals from the sensors, controlling the actuators, exchanging informations both to a local control unit and to a central control unit, connecting to intenet the system, also with wireless tecnology (wifi)"

Description
"Software cloud platform, usable as Saas (Software as a Service), that allows you to:
- create and manage a fermentation model
- send the fermentation model to the fermentation vessel controller (using internet and wifi)
- send alerts to mobile devices
- store a log file of the fermentation process
- automatically correct the fermentation parameters using artificial intelligence algorithms, to prevent the occurrence of anomalies in the fermentation process"

Description
The innovation consists in the realization of a mobile (suitable for palletization, equipped with wheels and transportable on a van) prototype of a winemaking system using a fed-batch fermentation method.
The system consists of two tanks, equipped with patented sensors, connected each other with a dosing pump, that gradually transfers fresh (not fermenting) grape must from the first tank to the second tank, in which the fermentation process actually takes place. This system allows the vinification of grape musts with high sugar content, that are typically difficult to ferment correctly (e.g. Ice Wine, Porto, Marsala, Amarone della Valpolicella, ...).
This system can be controlled via internet and accessed through a web interface; the system uses artificial intelligence algorithms to optimize the fermentation parameters."

Description
The innovation consists in the realization of a mobile (suitable for palletization, equipped with wheels and transportable on a van) prototype of a pressurized fermentation vessel for sparkling wine.
The system consists of a thermally insulated pressure vessel equipped with patented sensors.
The system can also be controlled via internet with a web interface and uses artificial intelligence algorithms for the prevention and correction of fermentation anomalies.

Link utili

Titolo/Descrizione	Url	Tipologia
Sito web del progetto	https://ticvitivinicolo.brizy.site/	Sito web