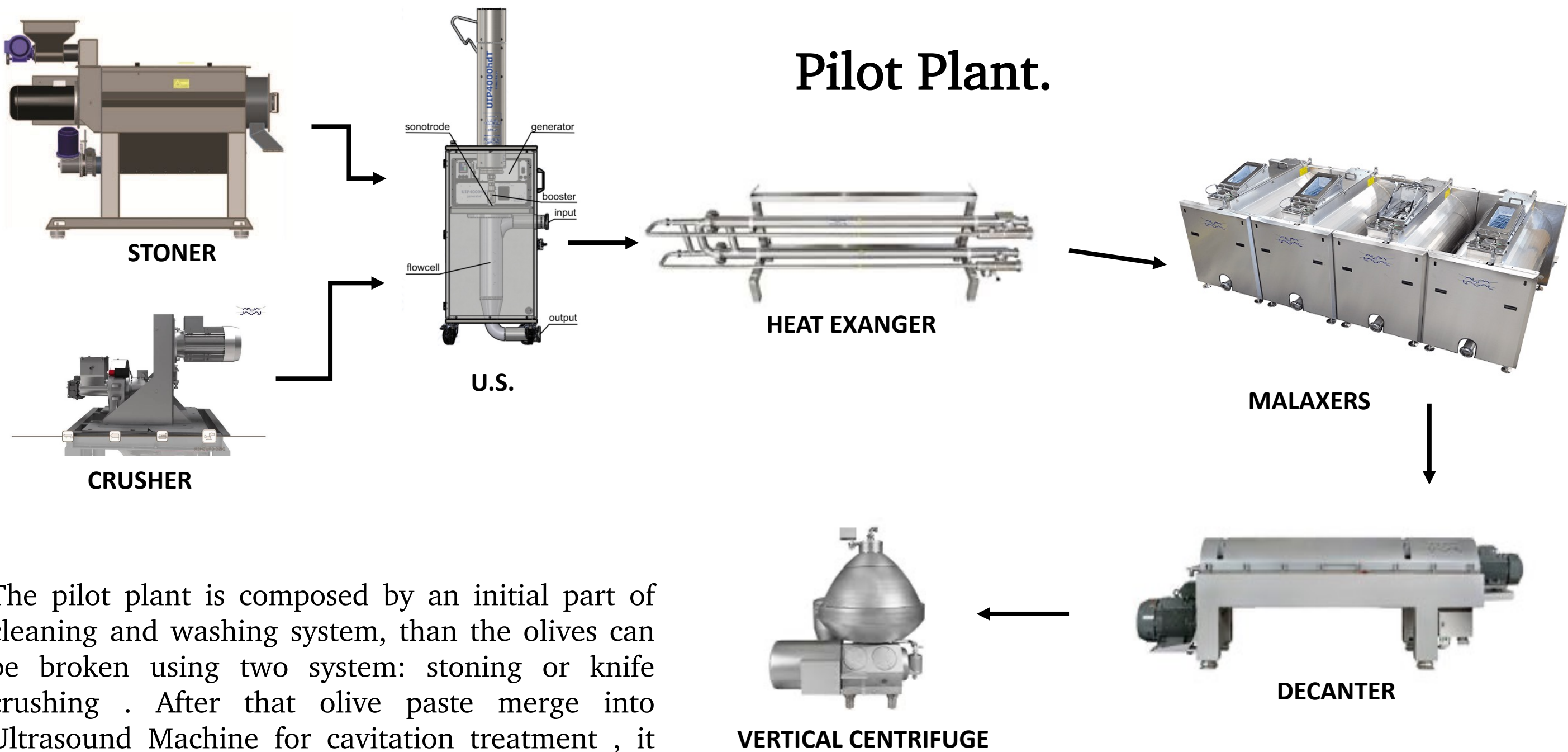
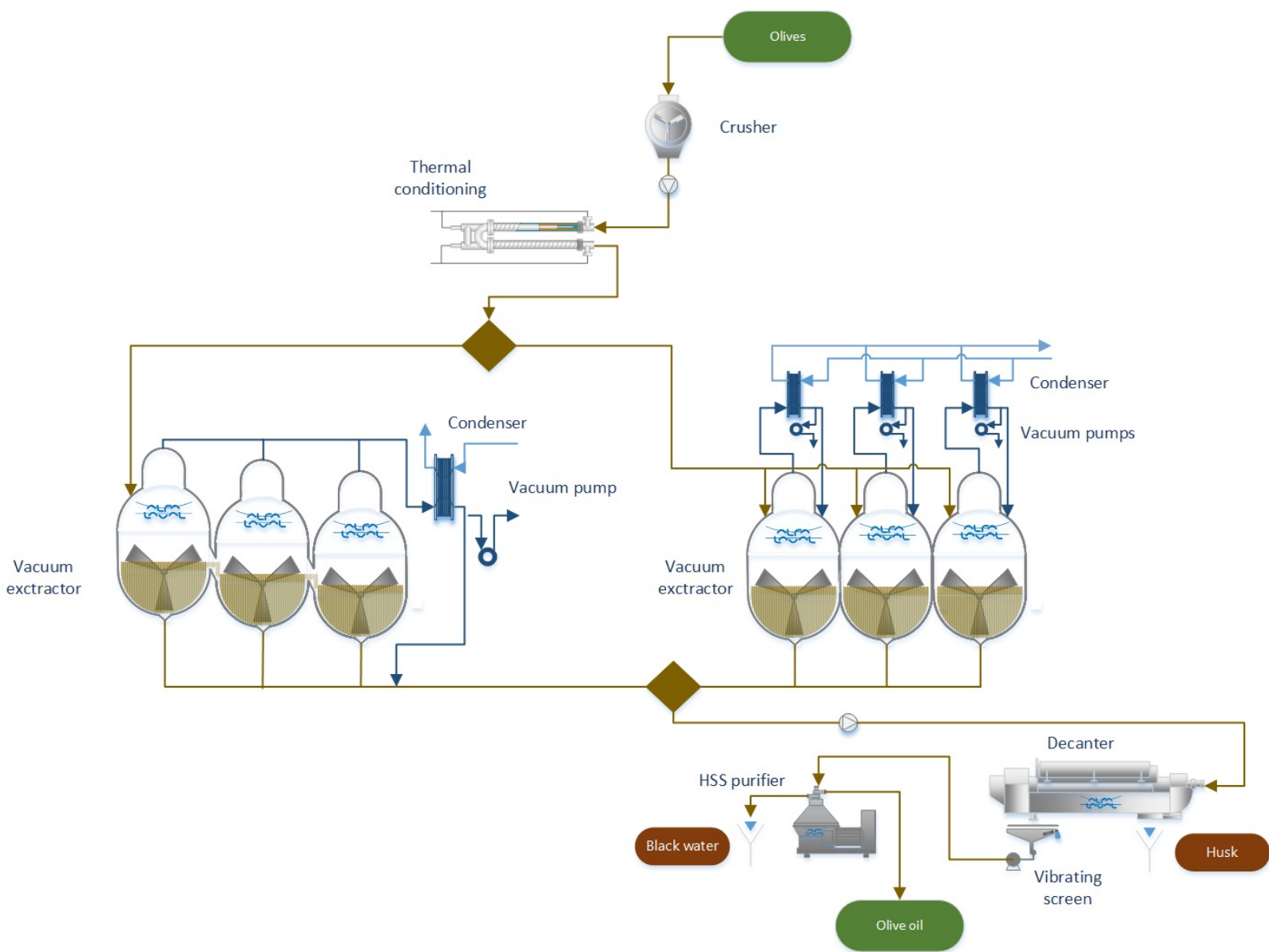


This dissertation project aims to study the application of new technologies in the process of extracting extra virgin olive oil with the aim of improving the final quality and shelf life of the oil itself. It will try to develop a process in which there will be the joint use of stoning technology with ultrasound technology for the treatment of olive pastes with the aim of taking advantage of both technologies and mutually eliminating the disadvantages. Furthermore, the study aims to evaluate all the technological and qualitative improvements brought about by the most recent innovations in the elaiotechnical sector, in particular the use of high vacuum in the malaxing phase and other innovations in the methods of crushing and preparation of the pastes before separation by centrifugation. A great interest in particular there is to understand how the different technological variables manage the activity of endogenous enzymes of olive fruit (LPO, POD, PPO).



The pilot plant is composed by an initial part of cleaning and washing system, than the olives can be broken using two system: stoning or knife crushing . After that olive paste merge into Ultrasound Machine for cavitation treatment , it can be switch on or off due to the scientific trial choice. Later olive paste tmperature it is manage using an high efficence tube in tube heat exanger, than there are malaxers (headspace insulated) in which small oil droplets can meet togheder and increase their diameter to improve phase separation before centrifugal separation. Finally there are a two phase decanter separation and a vertical separetor for clarification of the oil from small solids and water.

High vacuum assisted extraction plant.



Pilot Plant at R.U. of food technology of DSA3, UNIPG.



High vacuum malaxers in a industrial olive oil mill.

Analysis of products and process.
The EVOO oils obtain by pilot plant are analyzed for legal quality parameter, phenols compounds following the method describe by Selvaggini et al. (2014), volatile compounds analysis will be performed by headspace-solid phase microextraction followed by gas chromatography-mass spectrometry (HS-SPME-GC-MS). Analysis will be repeated periodically to evaluate quality parameters and EVOO shelf life. Based on the results could be necessary the assessment of other minor compounds of EVOOs.

Selected References.

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