RECTIFICATION SYSTEM for GRAPE MUST

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The must obtained is CE 1493/1999 compliant

Water efficient process

SYSTEM PROCESS

The feedstock for grape must rectification is filtered grape juice; this is pumped to the system which consists mainly of a set of ion exchangers. Each column contents a specific load of exchange resins, cationic and anionic, in order to remove weak and strong cations and anions respectively. The weak anion exchange column is also provided with a special macroporous resin that holds polyphenolic and colorant substances.

The flow through the columns is continuous and at the end of the operation the must exits the system partially diluted. The different resins absorb cations (Ca^{+2}, K^{+}, Na^{+}, Mg^{+2}, etc..), anions (SO^{2-}, Ac^{-}, TH^{-}, etc ..), polyphenols and colorants, obtaining a colorless and clear rectified must containing basically the natural sugars of grape (glucose and fructose). The process ends when pH or conductivity levels exceed a fixed value and the regeneration cycle starts.

In the anionic resins, retention of polyphenols, coloring agents, and tartrates occur, therefore is interesting to recover them for their added value. This recovery is made in the regeneration stage.

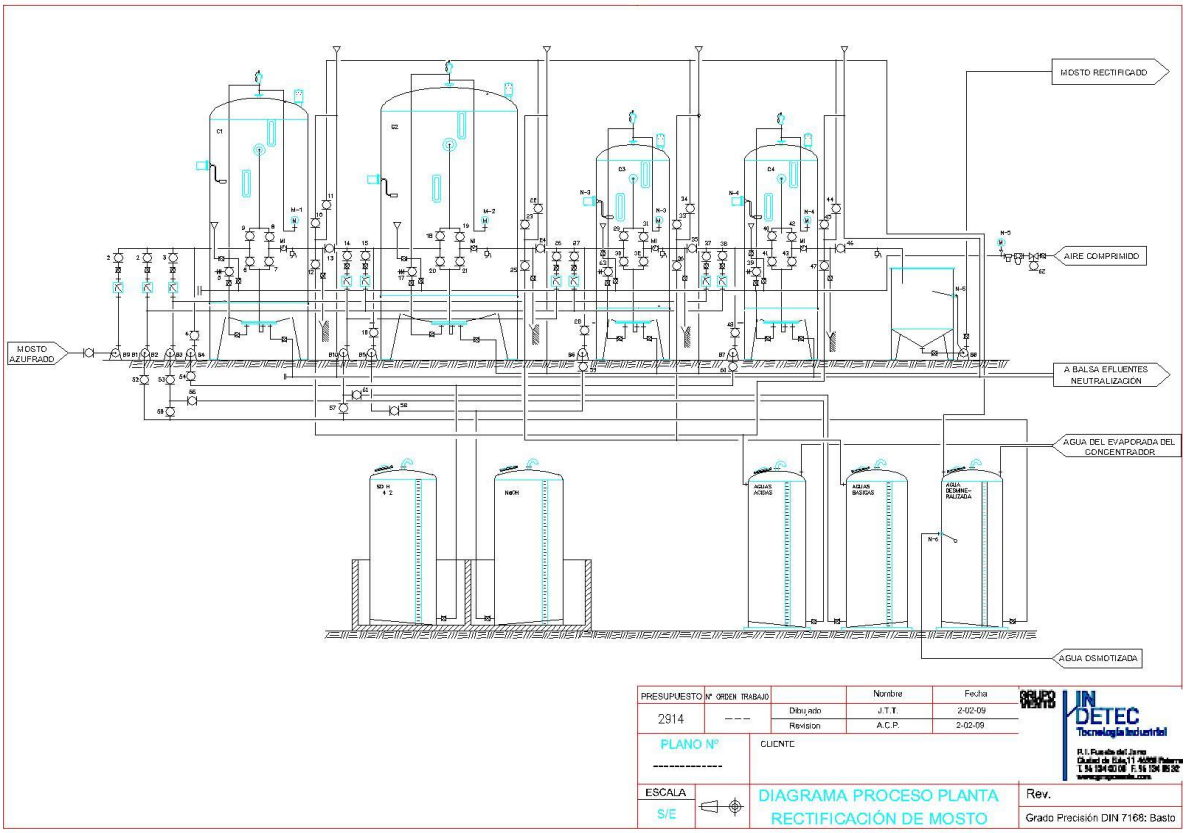
A colorless clear rectified grape must is obtained; containing the natural sugars of grape (glucose & fructose)

The first step in the regeneration cycle is to introduce osmotized water in order to displace the remaining must in the columns. When the glucose content lowers, the water inlet stops and regeneration liquids (H_2SO_4 for the cationic columns and NaOH for the anionic columns) are introduced. When regeneration of the resins is accomplished, it is then introduced water in order to remove the regenerating agent from the resins.

The process is optimized in water consumption, because the wash regeneration water and the evaporation water from the concentration unit is suitable to reuse in this section, achieving an important water saving.

The rectified must is now ready for the next process such as concentration, storage or consignment.

PROCESS DIAGRAM



INSTALLATION EXAMPLES

- Pilot Plant for must rectification at the ESCUELA DE INGENIERIA AGRICOLA TECNICA DE VALENCIA, with a treatment capacity of 2400 L/day

- Grape must rectification system for MOSTOS INTERNACIONALES (MOSTINSA) in Valdepeñas (Ciudad Real) with a treatment capacity of 120.000 L/day

- Grape must rectification system for MOVIALSA in Campo de Criptana (Ciudad Real), with a treatment capacity of 80.000 L/day

- Grape must rectification system for LA CERCA DEL GUADIANA in Pedro Muñoz (Ciudad Real) with a treatment capacity of 200.000 L/day