



USED TIRES RECYCLING



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Simpro also means **ecology**. To this end, it has developed an innovative technology capable of **separating the used tire components** with a high precision level. The system shreds the tire and then fractures it easily due to the very low temperature reached by introduction of sub-refrigerated air (without using nitrogen). After this, a system of vibrating sieves, together with electromagnets, separates rubber, steel and fibre. In so doing, steel is sent back to the foundry and fibre to the textile industry, whereas rubber, extremely pure, is pulverized in the wanted size, depending on the intended use, by means of a mill at the end of the line. Bitumen for asphalt preparation and rubber industry are the major applications.

Every system, just as all those manufactured and installed by Simpro, is custom-made according to the customer's requirements. The machinery is turnkey supplied, with a full customer service including a 24-hour assistance in case of failure, personnel training and periodic maintenance.





1 - Tire Inventory Control, Tire Pre-Inspection and Sorting Station

This is not part of the TCS per se; this section is needed to control incoming tires from supply sources and truck offloads in a temporary storage area where tires can be inspected and sorted.

Inventories of tires should be maintained at a level commensurate with daily consumption and including a buffer based on the established minimum quantity to be able operate for some duration of time (e.g. 2-3 days) in case regular tire supply is interrupted, or perhaps as a function of the local codes and regulations applicable to the plant location.

Operators feed the pre-inspected tires by conveyor from the receiving area to the initial TCS-1 section, the Tire Preparation Unit.

2 - Tire Preparation Unit

Whole tires, after inspection, will be put through a rasper or a shredder to reduce the tire into pieces that will then be fed into our freezing chamber

3 - Air Plant

The Air Plant cools air to approximately -1230 C by successively compressing, cooling and expanding ambient room air. It requires human intervention at start up but is otherwise run by computer, eliminating the need for operator presence. The cold air goes directly into the Freezing Chamber.

4 - Freezing Chamber

Tire pieces are transported from accumulator silos by belt conveyors to the air lock entrance of the freezing chamber. The pieces enter the freezing chamber at the bottom and are discharged from the top into the fracturing mill. (See section 5 below) Air at -1230 C from the Air Plant enters the top of the freezing chamber and discharges into a recirculation system at the bottom. The super-cooled air freezes the tire pieces in a counter-current manner creating thus an efficient thermodynamic process. The freezing process takes approximately 30 minutes.

5 - Fracturing Mill

The Fracturing Mill receives the frozen, glass-like rubber pieces directly from the freezing chamber exit chute. The fracturing mill is the heart of the entire system; it breaks down sections of the tires into various mesh sizes without cutting or shredding the steel or fiber strands. The frozen treads or sidewalls are disintegrated into coarse rubber powder and the steel wires and fiber strands remain intact, facilitating the separation process (See section 6 below).

6 - Separation System

The wire is removed magnetically and is conveyed to containers and is then sold. The fiber is screened off and is conveyed to containers and can also be sold. The rubber powder is screened to various mesh sizes and packaged for shipment or sent to a regrind operation in the event that customer requirements demand even finer mesh sizes or if the TCS operator needs to modify the output mesh profile to get higher proportions of finer mesh crumb.

