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LIFE_PHIPP LIFE17 ENV/LV/000335

SIA "BALTICFLOC"
Production processing

LIFE_PHIPP pilot production line full production process starts with raw material paper, hemp and BICO fibre transportation to three loading conveyors that consists of 2 parts. First part is intended for material loading and sorting. It is planned to be chain type conveyor with veneer deck able to jointly withstand loading weight of at least 1.5 t. First conveyor is followed by second rubber type conveyor supplying up the sorted material, it is intended for dispensing the material to grinder from the top. Paper will be delivered in pressed batches and lashed with metal strings, hemp in rolls up to 100 kg, BICO fibre pressed in batches. All raw material input works will be done with auto car fuelled by gas.

From loading conveyor hemp fibre are transported to fibre separator with capacity at least 1500 kg/h where automatic division of roll-pressed, baled industrial hemp into two fractions – hemp fibre and hemp sheaves. Fibre is prepared for further processing. Hemp sheaves are packed in big bags.

Paper from loading conveyor and hemp from fibre separator are delivered to hammer – type grinders with loading from the top, for BICO fibre it is not necessary. Grinders are intended for grinding waste paper and hemp fibre to a specific fraction. Hammer-type grinder must ensure simple replacement of hammers (knives) and sieve with size 5 mm. In project proposal hammer – type grinder sieve size was proposed less than 3 mm (raw material fibre size less than 3 mm after grinding). During discussions with potential suppliers and trying out different fibre sizes it was noted that for LIFE_PHIPP product fibre is not needed smaller than 5 mm. In this equipment technical specification changed fibre size separator from 3 to 5 mm. This technical change does not change budgeted amount or any other specifications foreseen in project.

Paper and hemp fibre from hammer – type grinders and BICO fibre from loading conveyor by air supply line are transported to dispensing bunkers. Dispensing bunkers must provide accumulation of material and uniform production flow. Below the bunker are two mixers keeping the material in motion and directing it to the dispensing exit in the bottom. Bunker sides in the bottom part are rounded, pressing against material mixers. Cyclone is located above dispensing bunker ensuring free material flow to bunker, driving away the excess air covered with dust filters that must provide purification of equipment air from dust.

Raw material dispensers are located under dispensing bunkers and its purpose is to dispense material in necessary quantity on collection transport conveyor. On collection transport conveyor from dispenser pours 3 types of raw materials. 100 to 300 kg of material will be on the conveyor simultaneously.

From collection transport conveyor through air supply all raw material are transported to mixing bunker that is intended for mixing different fibres into one mass. Cyclone is located above dispensing bunker ensuring free material flow to bunker, driving away the excess air covered with dust filters that must provide purification of equipment air from dust. Equipment consists of 3 parts material storage part, material feeding part and material mixing and supplying part.

During raw material air supply transportation to mixing bunker chemical dispenser provides chemical supply to materials. Dispenser consists of two separate iron frames with dispensing ducts below. Both chemical ducts are joined and are mixed, ground by a hammer mill and transported to joint material flow.

From mixing bunker one raw material mass through supplying part transports into furnace that consists of 4 parts. In vertical air formation chamber material are laying in uniform layer before heating in furnace. From forming chamber it is supplied to furnace using conveyor with adjustable condensation belt. Special heating furnace operates with natural gas and electric power. Cooling system has 3 positions - immediately after furnace by air ventilation. Air ventilation is followed by shafts filled with cold water. Final cooling is provided also by air ventilation. Calibration takes place in cooling part with cold water shafts, where final material size is formed by decreasing shaft size. Before and after furnace plate cutter is located. Before furnace it performs side adjustment for 1800 mm wide sheet after forming unit. Cut material is returned for recycling. After furnace it must be able to cut material at least into 4 parts.

Material packer provides manual sheet piling with automatically packed sheets in film and transporting it through thermal tunnel tightening film around material. Material is further accumulated on roll conveyor. Pallet wrapper is providing stable, straight pallet wrapping. For visual pilot production line blueprints see deliverable Annex B1.

In project proposal 1 air supply was foreseen, but to supply material transportation through venting tube to mixing unit and discharge dust to dust filters as we have three main components to product we need 6 sets of air supply.

For all of the mentioned equipment in pilot production to be connected Control Panel is necessary. Control panel allows adjusting speed and operation of individual units any errors spotted and overall actions of line adjusted. Equipment control must be provided with a programmable logic controller. In project proposal this equipment unit was not foreseen and thus not included at all, writing technical specifications and making blueprint of production line this was spotted and putted into documentation. Pilot production line cannot work without this central equipment.