Wood Fiberboard Pilot Line

INNOVATION

The Advanced Structires and Composites Center's pilot-scale Research and Development (R&D) facility for wood fiberboard supports both established and emerging manufacturers in the region. The ASCC distinguishes itself through a commitment to green engineering, reinforced by the University's expert talent pool and an abundance of diverse materials in Maine. Furthermore, the facility's goal of enhancing process-to-product sustainability by utilizing low-grade fiber from underutilized species contributes to the improvement of local forest health. This positions ASCC as a strategic hub for fostering sustainability and advancements in the wood fiber industry.

MAINE'S OPPORTUNITY

- Global market analysis supports **opportunity** for an MDF mill in **Maine**.
- Softwood's suitability for quality MDF production and the **ASCC's strategic location** to serve East Coast markets make it attractive.
- **Abundance** of pulpwood and sawmill residues further enhances the attractiveness of locating an MDF mill in Maine.
- The University of Maine ASCC R&D facility is the innovative force innovating provide **diverse** and **sustainable** wood products.

The robust **Maine forest industry** fuels an impressive **$8.5 billion**, constituting 5% of the state's GDP, sustaining over **33,500+ jobs** throughout the State.

1865 THE UNIVERSITY OF MAINE

IAS ACCREDITED Testing Laboratory

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PILOT LINE CAPABILITIES

Resin Blending

Currently, the pilot line is limited to use of "dry-process" systems. Dry (~12%MC) fiberboard furnish is sourced or otherwise manufactured. Resins, waxes, and other additives are introduced to the wood furnish via air atomization into a closed loop blowline resin injection system supplemented by a ribbon blender. Furnish is then moved to the forming bin via two fans each having a 2,200 cfm capacity. Variable frequency drives are used to adjust air velocity, while air pressure of the resin injectors can be regulated to achieve consistent adhesive and additive application rates.

Forming

Material is fed from the mat forming bunker by means of a bottom conveyor belt and multiple picker rolls. These rolls, used for breaking up the material, convey the furnish uniformly and continuously to another set of dissolving rolls, which deposit the mix into a forming box situated on a drag chain conveyor. The two conveyors, and two sets of rollers, are controlled via variable frequency drives such that discharge speed of the furnish onto the mat can be adjusted.

Pressing

Boards are pressed in one of two press systems:

450 ton Dieffenbacher steam injection press (provides 725 psi on a full sized 34"x34" mat), controlled by a PressMan PLC system. Composite mats can be pressed and heated with thermal oil (up to 450°F), and/or steam injection (up to 50 psig).

4' x 8' Erie Mill & Press: 1800 ton hydraulic press (provides 725 psi on a full sized 52"x100" mat). The press is PLC controlled, with complete data collection for printout of press scheduling data and graphs. The press can be controlled in either position (to within 0.003") or pressure control (within 2 psi). Energy is provided by hot oil (up to 500°F) heated platens.

Testing & Evaluation Capabilities

As an ISO 17025 accredited testing laboratory, the University of Maine Advanced Structures and Composites Center is capable of conducting testing to most internationally recognized standards on wood composites.

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