

## **Oriented structural straw board properties and applications**

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While the utilization of agricultural residues in panel products has been conducted in many parts of the world for a long time, this application has only been considered commercially viable recently. To date, various efforts have been making non-structural straw panels with a mixed degree of success. Raw material and binder costs plus various technical challenges are making it difficult to achieve commercial viability.

A more attractive area for straw-based panels to enter is the structural panel market. Here, the resin costs are equivalent to wood based panels and the raw material is more cost competitive with round wood. However, making straw-based oriented strand board has proven to be a daunting task. Creating an “open” strand, or split tubule, with any degree of length is difficult; a necessary task to produce structural panels from straw.

The Alberta Research Council’s Forest Products business unit (ARC) has developed a technique in cooperation with Panel Board Holding BV (PBH) whereby a straw tubule can be sheared longitudinally while maintaining a relatively long “strand”. The result of this technology is an “opening up” of the straw tube to allow even distribution of the binder on all strand surfaces. The long strand allows for the development of a high strength to stiffness ratio. This makes the oriented structural straw board (OSSB) comparable to wood-based oriented strand board (OSB) in physical properties at comparable densities.

PBH is building and will operate the OSSB plant. The applications of OSSB will open a new era in building products. OSSB has recently been proposed to use in China as building materials for local housing in earthquake hit areas and rural areas.

Dr. Guangping Han, who is in charge of coordinating the research for PBH, will outline the properties of OSSB panels and its application in China. A comparison in performance to wood-based OSB will also be conducted in the presentation.