MiTek®

HAZARD ALERT

No. 4

Roller Pressing LVL

A number of truss plants recently reported concerns about splitting at truss joints involving LVL. Timber splits were observed in both directions as illustrated in the photograph below, with longitudinal splitting being the more critical of the two. All seasoned engineered wood products, such as LVL should be protected and handled with care.

In the production process, LVL veneers of exceptionally low moisture content are pressed together during the gluing process into a compressed thickness. If they are exposed at a later stage to prolonged wetting from rain or dew or very high humidity for extended periods during shipping or in storage, an elevation in moisture content causes them to swell. When their moisture content is naturally brought down again later, they do not fully revert back to their original thickness. Continued exposure to weather will cause further damage.

In some of the latest incidences, there was evidence of irregular timber thicknesses and surface checking to suggest that some material may have been exposed to weather. But more broadly, there was a commonality of the trusses being manufactured in a roller press.

The roller action progressively presses a nailplate from one end to the other, unlike a platen press which pushes the nailplate in squarely. This action curls the plate into a banana shape before it is held flat by the embedment of its teeth in timber. But there is now an inbuilt pre-

stress that seeks to reel the nailplate back up again and will therefore exert a little tension force perpendicular to the veneers that could peel them apart if they were previously damaged for any reason. The pre-stress is believed to be greater in thicker and larger nailplates.

Another possible cause of damage could be over-pressing due to insufficient roller gap setting. The pressure the rollers exert depends on the material thickness relative to the gap. If the material is undersized, the pressures are minimal. If the material is oversized, the pressures can be extreme. If it is slightly thicker than gauged timber, LVL will attract greater pressure from the rollers, which can lead to crushing and splitting if the gap setting is undersized.

Recommended course of action:

Check and adjust roller gap settings regularly to match your materials. Although timber accepts some compression, excessive over-pressing can cause damage. The gap in pre-press rollers should only partially press the plates in just enough to hold them intact while the truss is moved to the finishing rollers. The gap between the finishing rollers must not be too tight as to cause timber damage from over-compression.
(Refer to MiTek 20/20 Reference Sheet M2RS-0020 for more information.)

Check material delivery to see if they meet your requirements. If their thickness is significantly different to your main stock of timber (say 1mm or more), they are not suitable for truss fabrication because they attract over-compression in the rollers as well as exceed plating tolerance for timber thickness across joints. The matter should be brought up with your supplier or the product used in other applications besides trusses.

Store all seasoned products under cover and protect them from weather, especially your more valuable products like LVL. Plastic wraps are a temporary measure because they can also prevent ventilation and trap moisture within.

Turn over stock quickly. LVL should be used as quickly as possible before they absorb atmospheric moisture especially in very humid climates which can cause them to swell with time. Do not overstock LVL products for truss fabrication.

Regularly monitor thickness of LVL in your store before using them in truss production. If their thickness is excessive, consider their use in other applications besides trusses.

Add GE plates to your inventory. Being a thinner plate, it adds less to the overall truss thickness and thereby reduces the tendency to crush. It also does not store as much curling energy as thicker GS plates. If necessary, a wider GE plate could be used in a deeper board to achieve the required steel strength.

If despite carrying out the above measures you find a problem persisting, promptly inform your LVL supplier and nailplate manufacturer for further investigation and assistance.

Further information
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