INTRODUCTION:
The following details provide some indicative selected features, capabilities and benefits possible to achieve by adapting the new microwave irradiation technology for processing of timber during its conversion from green timber (with a high moisture content) to dry timber with approximately 12% moisture content (or less) as required by the Furniture Industry Standards:

1. CURRENT PROCESSING TIME (HARDWOOD) VS. NEW TECHNOLOGY
   • Current processing conversion from green timber into finished product 8 – 24 months (Australian conditions).
   • Reduction of moisture content (M/C) approx. 40%.
   • Accelerated post kiln drying to 12% or less.
   • Microwave processing in minutes.
   • Application of the new technology will result in producing the finished product in less than 30 days.

2. RESOURCES UTILISATION
   • Suitable for processing both softwood and hardwood logs.
   • The main benefits applicable for hardwood timber are due to the process capability to penetrate through 100% timber volume (this is not possible with current conventional processing technology).
   • The majority of processors currently are using high grade timber (Grade A, B, C) for a high quality end product.
   • New microwave technology can use the lowest grade timber – i.e. Grade E or residual logs, to produce a high value added product on par with higher grade timber quality (i.e. Grade A, B).

3. TIMBER RECOVERY RATE
   • Currently timber processors are achieving approximately 25% recovery rate, with the best up to approx. 30%.
   • Microwave technology can use the lowest quality timber (residual logs) and increase significantly the present recovery rate.
   • Microwave technology can process heartwood thus substantially increase the recovery rate – i.e. well above the current recovery rate.
   • The recovery rate increase presents a substantial increase on the profitability of the operation, efficiency/utilisation of the resource and saving excessive forest logging.

4. INDICATIVE RESOURCES COST BENEFITS - GREEN TIMBER (LOGS RESOURCE)
   • Mountain Ash (top of the timber range) – “A” Grade represents a high-cost timber.
   • Microwave technology will have the option to use low grade timber for processing and specific application i.e. “E” Grade or residual logs (lowest grading timber) of various species.

5. MICROWAVE PROCESSING BENEFITS
   (NOT POSSIBLE TO ACHIEVE WITH CURRENT PROCESSING TECHNOLOGY & METHODS)
   • Substantial increase of permeability from a low to high level.
   • Impregnation of whole 100% volume of timber.
   • Australian Standards (AS) level of preservation and depth penetration - Class H1 – H6.
• Introduction of microwave processing will create the need for new reclassification of Australian Standards and reflect the 100% volume penetration capability.
• Creation of new category of products and timbers.
• Creation of new Supertimber (i.e. Messmate in its natural state weighs approx. 450 - 500kg /m³. New microwaved messmate, impregnated with resins can reach a weight > 900kg/m³.
• New microwaved timbers have superior properties and strength to the current timbers on the market (i.e. MOE & MOR values).

6. NEW PRODUCT AS A RESULT OF NEW TECHNOLOGY APPLICATION

The adaptation of the new microwave processing for timber will result in a range of various new products. The benefits and new processing capabilities are especially highlighted when processing of hardwood timber is undertaken. The new technology provides the capability of treating hardwood throughout the whole volume of timber. The current timber processing technology is not able to undertake such processing and limited to preservative penetration treatment H1 – H6 in accordance with the current Australian Standards. Adaptation of the new microwave irradiation technology for processing of hardwoods will ultimately result in the need of rewriting the existing Australian Preservative Treatment Standards in the future. The following list provides details of some selected benefits and capabilities using the new microwave irradiation technology for processing green timber:

• New level of fire rating capability (hardwood full volume).
• New level of insect proofing capability (hardwood full volume).
• Water resistant thus no possibility of rotting.
• Colouring throughout the whole timber volume (no need to paint timber at all).
• New Supertimber with superior properties (superior MOR & MOE values) designated for the building construction industry.
• Superior longevity, an increase to 70 plus years (indicative current life span of electricity poles in Melbourne is approx. 22 years).
• Vineyard posts and marine timber - new properties & increased longevity.
• Electricity power poles with new properties & substantially increased longevity.
• New landscaping applications.
• Railway sleepers with new properties (offer flexibility during train impact) – new trend emerging now.

7. COST BENEFITS

• Manufacturing costs approx. equal to, or marginally higher (pending the type of product) than current processing costs.
• New product sale prices envisaged to be equal to or marginally higher than the current timber prices.

LIABILITY AND DISCLAIMER:

a) Liability - Except insofar as liability under any law cannot be excluded, none of the Beneficiaries shall have any liability to the Recipient or other person in respect of the information provided herein or related to the new technology introduced in this Document or whether arising under Contract or Agreement between parties concerned, in respect of any sort (including negligence), arising under statute or otherwise howsoever.

b) Disclaimer - Each prospective Investor must make its own independent assessment and investigation on the benefits of the newly referenced technology and the information provided herein, including seeking professional advice as it deems prudent, and must base any financial decision it makes and any determination on participating in the above referenced Project upon such independent due diligence assessment, investigation and advice.
Pilot Plant for the Microwave Modification of Wood

Technical Data:
- MW power - 10-60 kW
- Frequency - 0.922 GHz
- Max dimensions of timber - 90x90x600 mm
- Output - 0.1-0.5 m³/h
- Feed speed - 1-20 mm/sec
- Air heating power - 6 kW
- Air temperature - 20-150°C

Laboratory Experimental Installations
(MW power - 5kW, frequency - 2.45 GHz)
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<th>Abbreviation</th>
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<td>AUSTRALIAN STANDARDS CLASSES FOR PENETRATION DEPTH</td>
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