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Abstract

Engineering materials can be broadly classified as natural and man made materials. The Man made materials like steel, plastic excellent mechanical properties, but not easily disposable after use. Natural materials like wood, fibers like cotton, jute, hemp etc, can also be used as engineering materials for suitable applications. They have comparable mechanical properties with man made materials. Natural fibers are advantageous in easy disposing after use, no

release of CO₂ production for their manufacture but they absorb CO₂ in photosynthesis; they increase the employability of rural farmers. Natural fibers are widely used to make natural composite materials, hybrid composite materials, ropes, threads and textiles. Natural fibers are hydrophilic in nature, they absorb moisture. In rainy season they absorb moisture and lose strength. The fibers also be affected by atmospheric and environmental conditions. Bacteria and fungus will attack on the fiber and degrade them. By these processes the fiber becomes weak and becomes useless for engineering applications. To avoid the catastrophic failure of an engineering component made of wood, the natural fiber be examined at macroscopic and microscopic levels. The macroscopic observations made by naked eye and microscopic observations may be done by microscope, more sophisticatedly SEM Scanning Electron Microscope. The surface of the material can be observed and percentage of the decayed area can be found. The image analysis gives accurate measurements and also performs the required calculations. A number of Image analysis software is available in market used for medical and engineering applications. In this paper the applications of Image analysis to examine natural fibers is explained with illustrations. When the fiber is found to be decayed, the component can be replaced by a new one to avoid failure. The damaged fiber will also change its color and texture, the change in color can be easily found by Image analysis.

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