

The Quality of Mouldings, Cabinets and Furniture Manufactured from Lesser Utilised Tropical Hardwood Species

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Abstract

The Lesser-Used tropical hardwood species are now being specified widely for mouldings (flooring parquet, and tongue and groove profiles), cabinet and furniture. These items are selected for shops and kitchen fitting, and for living room and office furniture. The familiar tropical species, which were usually specified for these items, are now very expensive and difficult to come by these days.

Some of the problems associated with the processing of the lesser-utilised species, which have led to poor product image, include: inadequate supply, erratic royalty regulations, inappropriately developed grading rules, and inefficient manufacturing processes.

The quality of products obtained after the manufacturing processes and finishing do not compete favourably with similar products from the Asian and North American countries on the international market. Some European countries like Germany, Italy and the U.K. patronised wood products such as flooring and parquet manufactured from tropical hardwood species.

*In this paper, attempt has been made to present the quality control procedures utilised in the manufacturing of flooring from Afena (*Strombosia glauscescens*); cabinet, office and living room furniture from Avodire (*Turreanthus africanus*), and Tongue and Groove profiles from Ofram (*Terminalia superba*). These three species are among, the numerous lesser utilised tropical species found in the tropical high forest including Ghana and are presently under exploitation.*

Proper monitoring and control of the manufacturing processes could improve appreciably, the surface quality of the products fabricated for export.

Keywords: Quality control, manufacturing processes, lesser-utilised hardwoods, International Market.

Background

In recent years, there has been considerable demand for woody items such as furniture, cabinets, and mouldings, although there is stiff competition with similar items made from man-made materials such as plastics. This could be because some wooden items have unique aesthetic values. The advance in computer manufacturing technology has aided the design and production of more sophisticated wooden items. Manufacturers are in constant search for designs, which could offer the best price, and of course are very attractive to the customer both domestic and international.

The competition among producers has also become intensive with regards to quality assurance of the commodities being produced. The manufacturing processes that a piece of factory lumber passes through before being converted into a piece of furniture are now very efficient. This is because of availability of a wide range of innovative workshop equipment, which have been made to ISO 9001 quality standards.

The quality of sofas for example can be examined by testing their reliability and comfortability. Mouldings such as flooring and tongue and groove profiles must be processed from durable timber, which can withstand the abrasion and stresses imposed on them while in use. Both the wood selected and the product must be of good quality. There is usually no problem with the selection of a particular species with knowledge of its physical, chemical and mechanical properties for a specific item. However, without the basic information on their properties, problems that impair quality may develop after a product is made.

Of particular interest to the wood technologist is in the wood before processing. It has been observed that some commodities including living room furniture, cabinets, kitchen fitting, bar and bank counters are being manufactured in Ghana from some selected "new" species including Avodire. There is little information on the technical properties, which is so important in considering a species for a particular use. Customers purchase these products and later complain about defective size and shape, which may not be observed at the time of manufacturing and purchasing. Some customers are unable to explain their requirements to the manufacturers, thus contributing to poor quality work.

Of the new species that grow to good sizes to be exploited and processed into factor lumber in Ghana, the species listed in Table 1 (pink star species) are among others presently exploited below the annual allowable cut (AAC). Research and development are presently being carried out on some of these species in order that they will be promoted on the niche market. Among the species listed are three species currently widely specified for some of the products mentioned earlier. These are Afena, Avodire, and Ofram. In this paper, the quality control measures in the manufacture of wooden items for the domestic market will be described

Value-Addition

Many value-added products can range from low to high capital cost items depending one or more factors; for example:

- Products that require substantial amount of equipment to be added to either a new facility or an existing mill may require a fairly large investment such as A.G. Timbers (finger jointing plant) and FABI Timbers Ltd (moulding plant).
- "Low" cost items - dimension lumber (knotty material) from branches and tops of trees or veneer.
- "High" cost items: - laminated veneer lumber (LVL), Oriented strand board (OSB), Medium density fibreboard (MDF), Composite I beams, Furniture, Mouldings, Cabinets

Also, LUS are now widely specified for living and bedroom furniture (these require preservation treatment), cabinets, kitchen fittings, and mouldings, e.g. floorings, parquets and T & G profiles.

Poor Quality Products on Market

A. Wood raw material

1. Wood structure defects (condition of log/lumber) visible
2. Moisture movement:
 - Internal stresses
 - Surface checks
 - Splits/crack

B. Manufacturing Proces

1. Efficiency of mill/workshop equipment and machinery
 - poor measurements - cutting defective sizes and shapes
 - obsolescence - frequent breakdowns of machinery
2. Improper design and jointing of members adhesive.
 - wood adhesive wood members
 - wood/hardware members
 - wood/connectors:
 - nails, screws
 - hardward/adhesive/dowel joints

The lack of machinery spare parts contributes significantly to poor product quality, improvised replacement are made locally which also aids in defective processing.

Natural defects of wood include reaction wood, checks (surface). The development of internal stress weakens plane of growth rings.

Remedy

*Total Quality Management

- Log yard sorting
- Optimisation in the sawmills
- Process control technology
- Waste recycling (integrated)
- Producing to order/control
- Integrated process planning
- Information technology
- Market data

Recommendations

1. The Forest Products Inspection Bureau and presently GSB provide the wood industry with the means of tackling national problems relating to standardisation and specification. Standard dimensions of wood products, which are checked before export, depend on highly skilled personnel. This is vital for new products. Frequent training programmes for these personnel is very necessary in view of the dynamic nature of the technologies involved in wood products manufacturing.
2. Quality should be tested and checked by millers and manufacturers at all stages of production.
3. Goods inspection. Materials required for production and bought-in-components (for example hardware) must be inspected on arrival at the factor to ensure that they are of the right quality.
4. Furniture, mouldings and cabinets.

Conclusion

To utilise fully the state-of-the-art technologies now available, wood products industries need to complement their investment in equipment with investment in human resource. The rapid pace of technological change and automation within the wood products industry worldwide has led to continuous increase in the skilled workers for the industry. Within the industry, recognition is growing that adequate training is key to productivity and quality and training must match technology for its effective implementation.

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