

HOW TO ACHIEVE EXCELLENCE AND INNOVATION AND QUALITY IN THE WOOD PROCESSING INDUSTRY IN B&H

Ismar Alagić Ph.D., Assistant Professor
Municipality of Tešanj / University of Zenica, Faculty of Mechanical Engineering
Bosnia and Herzegovina

SUMMARY

The Wood Excellence Center (WEC) project in BiH aims to increase the chances of export oriented woodprocessing firms in BiH to implement demand driven R&D and advanced testing activities for the BiH wood processing sector. At present stage production orientated companies in BiH do not have business techniques and required knowledge for expanding to foreign markets. Second disadvantage of the companies in the region is standardizing of quality of their products with demands of foreign markets. Significant number of companies does have possibility to produce final products (CNC machines and high quality materials) but lack the assistance and even if they do have high quality products there is no possibility to get the certification for it. Closest center for certification of wood products in compliance with EU regulation is in Italy. Necessity of product certification is more than evident and therefore the existence of laboratories or other provider of certification centre is more than necessary. Current situation in BiH and the same conclusion could be drawn for whole BiH limits producers from further expansion. Access to foreign markets is multistage process and requires gaining of numerous certificates and achieving standards and other preconditions required by foreign markets.

This article outlines of the key factors related to the competitiveness of the wood products sector in Bosnia and Herzegovina. The author used those key factors as a basis to identify potential high impact information and communications technology (ICT) applications that could become core offerings of the Wood Excellence Center.

Keywords: Wood Excellence Center (WEC), Excellence, Innovation, Quality.

1. INTRODUCTION

Even if the transition significantly changed the face of the forest and wood industry, the role of products from the forest and the companies that process and sell them in BiH is enormous. The value of these goods as well as the services and domestic employment provided is important. The wood processing sector represents today about 20% of the country's exports, 10% of the GDP and 15% of total employment [1]. Currently there are about 1500 wood processing SME in the country producing a wide variety of wooden products for the local (40%) and export (60%) market. The strategic importance of BiH's wood industry is internationally recognized. Nevertheless majority of wood processing companies have started to exploit the vast forest resources that region poses. In this phase SMEs have started with production of furniture but as years were passing by the competition on local market have caused the extinction of smaller an unprepared SMEs. At present stage production orientated companies do not have business techniques and required knowledge for expanding to foreign markets. Second disadvantage of the companies in the region is standardizing of quality of their products with demands of foreign markets. Significant number of companies does have

possibility to produce furniture but lack the assistance and even if they do have high quality products there is no possibility to get the certification for it. Most countries in the European Union have their own institute or 'centre' for the Wood & Wood Products Industry. Separate centres often operated for 'upstream' timber and wood items, mainly divided into forestry, building, construction and structures, alongside those centres researching into furniture and board materials. Closest center for certification of wood products (furniture and joinery) is in Slavonski Brod, Republic of Croatia. Nevertheless this center has the ability to certify the products for placing solely on Croatian market. The sole possibility for our producers to penetrate the foreign markets is to close the deals with foreign partner that performs certification in their respective country and than the placement of product is possible.

ARTECO – Wood Technology Center was established in January 2009. through the EI Project which is financed by the USAID and the Norwegian Ministry of Foreign Affairs (NMFA). ARTECO Ltd. is located in the premises of Artisan, a wood processing company, in Tešanj, BiH. Its mission is to provide technical services to Small and Medium Enterprises (SMEs) in the wood processing sector in Bosnia-Herzegovina (BiH) to increase the competitiveness of these SMEs. ARTECO offers critical and complex services that are not easily accessible and will be a driving force of economic development in the BiH wood processing industry through application of new technologies. Final problem of wood processing SMEs in BiH from field of testing and laboratory services for woodprocessing through WEC will be resolved by MENTOR project implemented by ZEDA Agency and financially supported by EU Delegation in BiH. Second major partner of WEC in project implementation will be University of Zenica with its vast experience in material testing and certification. The Wood Excellence Center (WEC) project aims to increase the chances of export oriented woodprocessing firms in BiH to implement demand driven a R&D and advanced testing activities for the BiH wood processing sector. The implementation of first stage of WEC project will be done in collaboration with the local industry, University of Zenica and backstopped by Swiss partner- HSB.

2. SURVEY FINDINGS

The core ICT offerings for the Wood Excellence Center (WEC) identified through the market survey can be grouped into following five major categories: Education; Marketing and consulting services; Furniture design & prototyping; High impact machines services and Testing and laboratory service. Education was identified as a major obstacle to general improvement of the wood industry in the Market survey. The proposed high impact ICT applications in the educational category can be categorized into: 3D CAD modeling and design education; CNC machine operations training; Operations of machines for wood drying and painting; Education for various quality standards like Chain of custody-FSC, optimization of wood cutting, etc. and; Education in using and implementing expert literature and technical documentations. The market analysis clearly showed that almost all of the surveyed companies agreed that education as listed above is needed. The surveyed companies also indicated that they often acquire such education from machine vendors or international partners, which is often expensive and not readily available.

The research indicates that the market for such services is growing. For instance, in the next three years, companies would like to increase the number of CNC operators by 53% [4]. The surveyed companies realize that in order to compete in such a competitive market they need to invest in people and train them. Moreover, some 60% said they have high demand and 40% moderate demand for increasing the technical knowledge of their workforce. Interviewed companies indicated that after they purchase very expensive machines they realize that they need to invest in training operators as well. Almost all of them answered that they will increase the workforce by some 20% over the next three years. On the management level, the situation is slightly different. Only 7% of managers stated that they have low demand for

management training, whereas another 56% stated that they have high demand for such services. Overall, there is an apparent change in the way SMEs think in terms of training and the investment associated with such training. Managers apparently have started to value such investments. The downfall of this service is that international organizations like GTZ (www.gtz.ba) and RDA's in BiH like REZ (www.rez.ba) offer this service for free or subsidized by government ministries. Consequently, there may be some resistance from the SMEs to pay a commercial price for these services. Also, the interview with the Wood Technology Association in Zadar and some organizations in BiH showed that companies cannot gain obtain substantial profit margins from education and training. Trainers report that often training ends with a slightly positive cash balance. Another downfall of this service is that it cannot be repeated frequently. Wood industry tools and technologies, even ICTs once, do not change every year. The primary research indicates that in the best case scenario training can be repeated periodically when sufficient interest is accumulated.

The market survey confirmed the industry analysis findings as the author identified several companies in the wood industry, such as BH Woodex and Bosnia Beech line, which are successfully offering agent services to other companies. These services are offered predominantly for saw mills and furniture element producers. Other companies offer industry information and consulting services. The market analysis indicates that such service could be easily increased using high impact ICT applications. The proposed services in the category of marketing – agent include: Industry announcements, training calendar, business directory, industry tenders using Internet; Match making service; demand – supply using Internet; Export assistance; Legal advice in wood industry; Environmental, cost and social issues consulting services and; Machine purchasing consulting service and reselling. The market analysis indicated that due to poor knowledge of foreign languages, management skills, market intelligence, pricing strategy, and other related proficiencies, most of the wood industry firms are not able to increase the value of their products since they do not know and understand market demands, they do not get in direct touch with customers, etc. Most of them suggested that they need to know more about trends and new technologies within the industry - better demand and supply information. Almost 60% indicated a moderate demand and some 32% a high demand for an increase in marketing services. A detailed analysis indicates that all the smaller companies indicated a high demand. This is a potential business opportunity for the ARTECO Center since many of the companies in the wood industry are falling in this category. Research indicates that 74% of the companies have web sites and access to the Internet, which shows that this service can be supplied. Moreover, 80% of surveyed companies place high or moderate demand for an increase in Internet usage in the wood industry. Strik Consulting is offering these types of services via a web portal (www.bhwoodex.com). However, it is still too early to talk about positive or negative results of this service. The market analysis indicated that only 15% of companies have low or no interest for developing furniture design for their own needs while the other 85% of surveyed companies place high demand for design services of furniture. Companies that have in-house design teams are at a rudimental level and do not use Computer Aided Design (CAD) to its full potential. The potential furniture design ICT service that can be offered in this category includes: Furniture design using CAD; Rapid prototyping of furniture or furniture parts and; CAD and CNC programming. According to the author, the situation with design development and adoption within the BiH wood industry is unlike that of the technologically developed countries. In addition, with the dissolution of big wood manufacturers such as as Krivaja and Šipad, the BiH wood industry lost its research and development component, because this component was their integral part. The newly formed small and medium enterprises within the wood sector could not invest in this aspect of their business, which resulted in serious development problems and consequently hindered the exports.

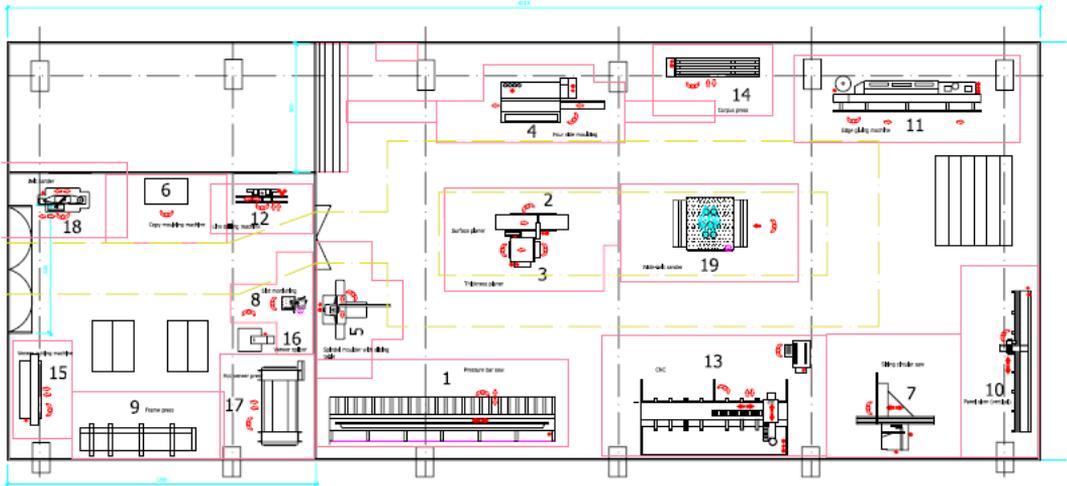


Figure 1. Layout of the Wood Excellence Center proposed by representative of HSB, Switzerland.

The market analysis showed the following:

1. There are more than 78% of companies that declare to have prototyping workshop.
2. Approximately 46% of those interviewed stated that they design and produce their own designs while only 7% is copying from the existing product and 30% is getting the design from their customers.

However, the situation that was observed and recorded during the market survey contradicts the information provided in the questionnaires. The author observed the following:

1. There are only 2 firms that are using prototyping workshops on a higher level; these two firms have the necessary resources to develop the product through all four phases – design, prototype, zero series, and production. Two other firms are proficient in outsourcing their designs or copying from the existing product with sufficient quality. Finally, almost 82% of all observed firms use copying and customers designs.
2. No firm is using testing software to test design and technical problems to confirm the product's functionality; none is performing dynamic and static testing.
3. Everyone is using a trial and error method; 2-3 carpenters that are chosen from the rest conduct a prototype production and assembly.
4. Even though 60% of the surveyed companies are using 2D-CAD application, none of these companies are using its 3D-CAD property that could significantly reduce the adoption time.

Testing and laboratory services have become a very important aspect of the export efforts by the BiH wood industry in past years. Over 70% of surveyed companies export furniture to the EU market, and their products need to fulfill strong export requirements. The EU laws regulate furniture requirements very strictly and demand that furniture pass various test for fire, structural damage and hazardous materials. There is no center in BiH that can perform these tests and issue a valid CE certificate. Consequently, all the tests for BiH furniture are conducted abroad. Currently, companies receive these certificates from international companies. Most of the firms reported using Croatian testing centers in Slavonski Brod and Zagreb. Other companies transfer such liability to exporting partners that perform test and laboratory experiments in their own country. Companies clearly indicated that they purchase this service based on price and certification credibility. Performing the tests in BiH should definitely be cheaper than having it tested abroad.



Figure 2. Testing chairs for office, domestic and educational institutions and tables.

The Wood Excellence Center should employ over 20 experts in fields of forestry and wood industry who will work in specialized laboratories on determination of the quality and quantity of primary and finished products, both the manufacturing process and in the trading process from the supplier to the final customer, who will use the finished products. The fields of WEC's laboratory testing should be:

- Furniture and furniture components;
- All kinds and types of building constructions (windows, doors, shutters, etc.);
- Wood, floor, ceiling coverings;
- Wood elements in building;
- Quality and quantity control of timber, sawn timber, wood elements, packaging, etc.

All above listed tests should be performed according to national (BAS), European (EN) and other international standards, depending on the customer's request. The accreditation certification for testing for testing of furniture and furniture components will be given by the State Institute for Accreditation (BATA) with the expertise evaluation by foreign Institute. Their work will be conducted in specialized laboratories performing testing and quality control of furniture components, building construction (windows and doors), wood processed products and constructions in building as well as all other testing of wood-based materials, which are implemented into the finished product, which will be implemented into the finished product of wood processing industry (e.g. saw logs, sawn timber, wood elements, etc.).

3. CONCLUSION

Necessity of product certification is more than evident and therefore the existence of laboratories or other provider of certification centre is more than necessary. Current situation in BiH and the same conclusion could be drawn for whole Western Balkan region limits producers from further expansion. Access to foreign markets is multistage process and requires gaining of numerous certificates and achieving standards and other preconditions required by foreign markets. Several international organizations (e.g. USAID, SIPPO, GTZ,

UNDP, etc.) maintain continuous relations with SMEs in the region trying to respond to their needs and to remove obstacles set against their business relations. Several activities and separate projects are dealing with issues like improvement of business relations, techniques or marketing skills of SMEs. Final problem of wood processing SMEs will be resolved by Wood Excellence Center and its services.

Development of center will be executed in several stages used to confirm or reconfirm information available to different sources. ARTECO's activities are directed towards providing services in the areas of design, creating of prototypes, operations with 5-axis CNC (Computer Numeric Control) machines, wood processing machines, finishing, preparation, timber drying, assistance in exporting final wood products, training in using technical documentation, etc. These are exactly the focal points in which the B&H wood and furniture industry falls far behind the international competitors. Without improving the situation in this area, domestic wood processing companies will not be able to make any significant penetration to the foreign markets and increase production growth rates in the area of value-added wood products.

4. REFERENCE

- [1] Alagić I.: Market Survey and Identification of high impact ICTs in BH Wood processing Industry, 14th International Research/Export Conference "Trends in the Development of Machinery and Associated Technology", University of Zenica, UPC Barcelona, Bahçeşehir Üniversitesi Istanbul, TMT 2010, Mediterranean Cruise, 11-18. September 2010.
- [2] Alagić I.: Final report on the results of GAP Analysis of the wood processing sector in Bosnia and Herzegovina, Swiss Import Promotion Programme, SIPPO, Zurich, Switzerland, January 2009.
- [3] Alagić I.: Final report on the results of Evaluation of market and production potential in the wood processing sector in BiH and Evaluation of BiH companies for participation in SIPPO match making activities 2009-2011, Swiss Import Promotion Programme, SIPPO, Zurich, Switzerland, July 2008.
- [4] Alagić I., Korjenić I., Identification of High Impact ICTs as e-BIZ Center Core Offerings: Wood Sector, Briefing Paper, Excellence in Innovation Project, USAID/BiH Excellence in Innovation dot-ORG Cooperative Agreement Award No. 168-A-00-07-00101-00 and Royal Ministry of Foreign Affairs, Norway Grant Project number 2070065, Boston, USA, June 6, 2008.
- [5] Alagić I., Petković D., Stautmeister T., Wuthrich K., Some word about Wood Excellence Center as top-priority project of Central BiH, 11th International Research/Export Conference "Trends in the Development of Machinery and Associated Technology", University of Zenica, UPC Barcelona, Bahçeşehir Üniversitesi Istanbul, TMT 2007, Hammamet, Tunisia, 05-09. September 2007.
- [6] Prof.Dr-Ing. T. Stautmeister, M.Bieri: "Prozessreorganisation am Beispiel der automatisierten Fenstermontage und -verlebung", Internationale Konferenz zur „Automation in der Holzwirtschaft“, Proceeding, pages 1-9, Berner Fachhochschule, Hochschule für Architektur, Bau and Holz HSB, Burgdorf, Biel, Switzerland, 12.und 13.October 2006.