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AN AVERAGE STANDARD OF A PIECE OF FURNITURE – CHANGES IN FORMS, STRUCTURES, AND FITTINGS OF POLISH FUNITURE OVER A TIME PERIOD OF 25 YEARS

Michal Rogozinski

Wood Technology Institute, Poznan, Poland
Furniture Testing Department,
e-mail:m_rogozinski@itd.poznan.pl

ABSTRACT

Since free market economy in Poland began 25 years ago, it has influenced not only the access to consumption goods, but also the habits or ways of using them. The transfer of technology, access to new wood-based materials, hardware, fittings etc. generated new forms of furniture, smart structure solutions fitted to modern consumer' flats. The wall unit is an example of furniture which has changed gradually during every decade, still in fashion, still universal and popular, especially in small flats.

The aim of the researches presented in this paper is to study the changes in Polish furniture products over a time period of 25 years, showing aspects of metamorphosis of the wall units. These changes occur in the materials, the form, the design and in the hardware. The previous years show transformation in design geometry and tendencies. The changing and transforming norms specify the safety requirements, but they do not require calculating coefficients of mechanical characteristics of furniture structures.

Key words: quality of furniture, strength, durability, safety, design of furniture, standards

1. INTRODUCTION

Since free market economy in Poland began 25 years ago, it has influenced not only the access to consumption goods, but also the habits or ways of using them. The transfer of technology, access to new wood-based materials, hardware, fittings etc. generated new forms of furniture, smart structure solutions fitted to modern consumer' flats. The wall unit is an example of furniture which has changed gradually during every decade, still in fashion, still universal and popular, especially in small flats.
This paper presents the aspects of metamorphosis of wall units over decades.

2. MATERIAL AND METHODS

The author analyzed the samples of furniture provided by different producers by mechanical tests in furniture test laboratory, for testing according to European norms in terms of safety, strength and durability of stored furniture.

3. DISCUSSION

In the 1980s and 1990s wood was not always displayed in furniture, for it was perceived as a classical, obvious and commonplace material. Therefore, in the displayed elements of furniture alternative materials such as glass, metal, leather and plastics were used, for they were considered innovative materials. Mixing of these various materials was also trendy. Since 2005-2010 wood has enjoyed a comeback as a classical material, which was noble, natural, healthy and in vogue again. As a result wood was displayed, even as decorative stuck-on elements bearing no loads. This trend was

reflected in wood-based materials perfectly imitating solid wood (panels and table tops made of cellular panels). After 2005 furniture designers looked for new materials and textures not used before, because of technological limitations. This search resulted in a proposal of box furniture fronts with a stuck-on layer of thin stone, which in fact was a conglomerate of ground stone and adhesive.

The concept of wall unit serving as equipment of a living room has changed in time. Starting from a set of units in the 1970s based on a common form and dimensions (Fig. 1), it evolved through distinct bending and differentiation of the contour line and cubature of forms and adding a symmetrical display cabinet in the 1990s (Fig. 2), then the appearance of module sets (Fig. 3) which enabled customer to select modules with a view to create a tailor-made unit (around the year 2000), to eventually do away with the concept of a standing piece of box furniture in favour of completely hanging modules (2005 and later) – see Fig. 4. The stages of wall unit evolution were accompanied by reduction in its cubature and capacity of storage space, which resulted from a decreasing metric area of an average apartment. The classical wall unit was modified to a large-panel structure and moved from the living room to the hall, where it was called *Commando* (Fig. 5). Originally the name *Commando* was a synonym for a system of large sliding doors. *Commando* style closets are also successors to earlier known built-in closets.

Figure 1. *Examples of sets of furniture, i.e. classical wall units, from the 1980s*

Figure 2. *Wall units from the 1990s*

Figure 3. *Module sets of wall units*

Figure 4. *Sets of hanging storage furniture*

Figure 5. *An example of a modern wall unit (2014 r.)*

Types of tested furniture changes with years, as well as quantities of products. The charts below, show the quantity of tested furniture in mechanical test laboratory, tested in Wood Technology Institute during 1989-2013.

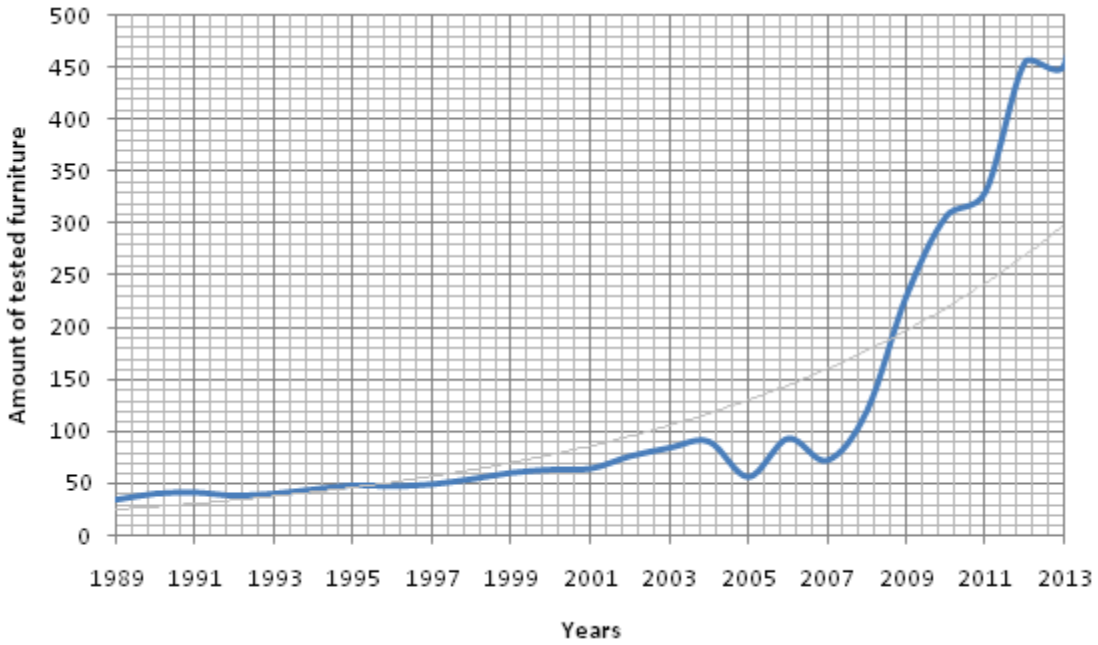

Figure 6. *Quantities of tested furniture of different types over a time period of 25 years in Wood Technology Institute in Poznan, Poland*

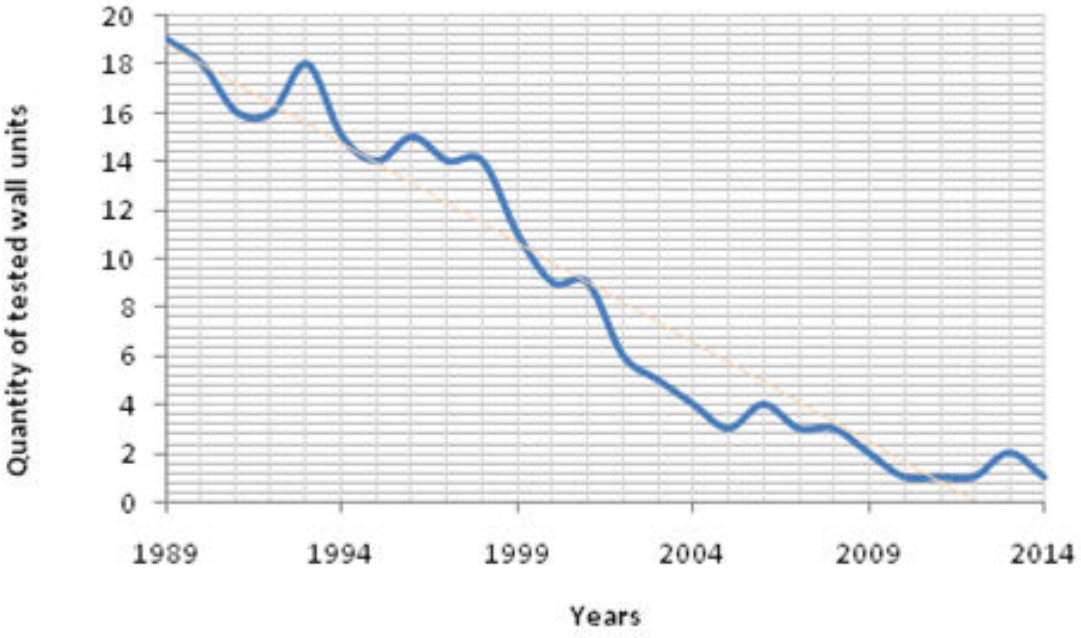

Figure 7. *Quantities of tested wall units in Wood Technology Institute in Poznan, Poland*

The chart (Fig. 7) represents decreasing tendency of tested wall units in the span of 25 years. The reason for this trend is the following:

a) norms changed, so mechanical quality became not required by standard,
b) the form of wall units changed from free standing into wall attached. Accordingly, the rigidity of the structure became less important, because the stiffness was achieved by the building's walls, not by the furniture material,
c) wall units started to depend on individual designs, which had to fit the flat space, and they were not any more displayed in the catalogue of products closets.

4. CONCLUSIONS

Past years have shown transformation within design geometry and tendencies. The changing and transforming norms specify the safety requirements, but they do not require calculating coefficients of mechanical characteristics of furniture structures.

Why were wall units losing their internal local stiffness and rigidity of structure? A change in the rigidity of the body of storage furniture (formerly called box furniture) under the BN-82/7140-12.02 standard for testing strength requirements for furniture, box furniture, rigidity and strength of the body; the key element was body rigidity.

The rigidity of the body was achieved thanks to the use of a one-piece back side fixed into a rabbet or fixed on a furniture body frame using screws (optimum variant) or nails. Bases improved the rigidity of the bottom rim, and thus of the whole furniture body. The rigidity of the body was also assured by partitions, i.e. shelves and vertical partitions inflexibly fixed to the sides or rims. Furniture door, which fitted inside the body when it was closed, added rigidity to the piece of furniture. On the other hand, under the PN-EN 14749:2007 standard for house and kitchen storage units and table tops, requirements for safety and test methods, which replaced the aforementioned standard, the rigidity of the body was no longer a measurable parameter, therefore it became less important. As a result box structures in some cases were characterised by lower rigidity, especially when the back side was made of two parts which were not joined with a rigid rabbet, or in the case of a piece of furniture with frame structure (Fig. 8).

Figure 8. *Examples of storage furniture with framework structure*

Why did the wall unit become furniture which doesn't need to be certified and tested? This is a new approach in storage furniture design: the wall unit's internal rigidity became needless; this kind of furniture takes stiffness and durability of carcass from the building structure. The only important thing is reliability of the moving parts such as sliding doors, drawers, extension elements, shelves. So, it is the hardware that needs to be certified and of high quality.

REFERENCES

[1] BN-82/7140-12.02 norm "Testing of and strength requirements for furniture – Box furniture – Rigidity and strength of the body"

[2] PN-EN 14749:2007 norm "Domestic and kitchen storage units and worktops - Safety requirements and test methods"

The Authors' Address

Wood Technology Institute,
Furniture mechanical tests laboratory,
Winiarska St 1, 60 – 654 Poznan, Poland