CAD FM
Computer Aided Design
Product Design Services
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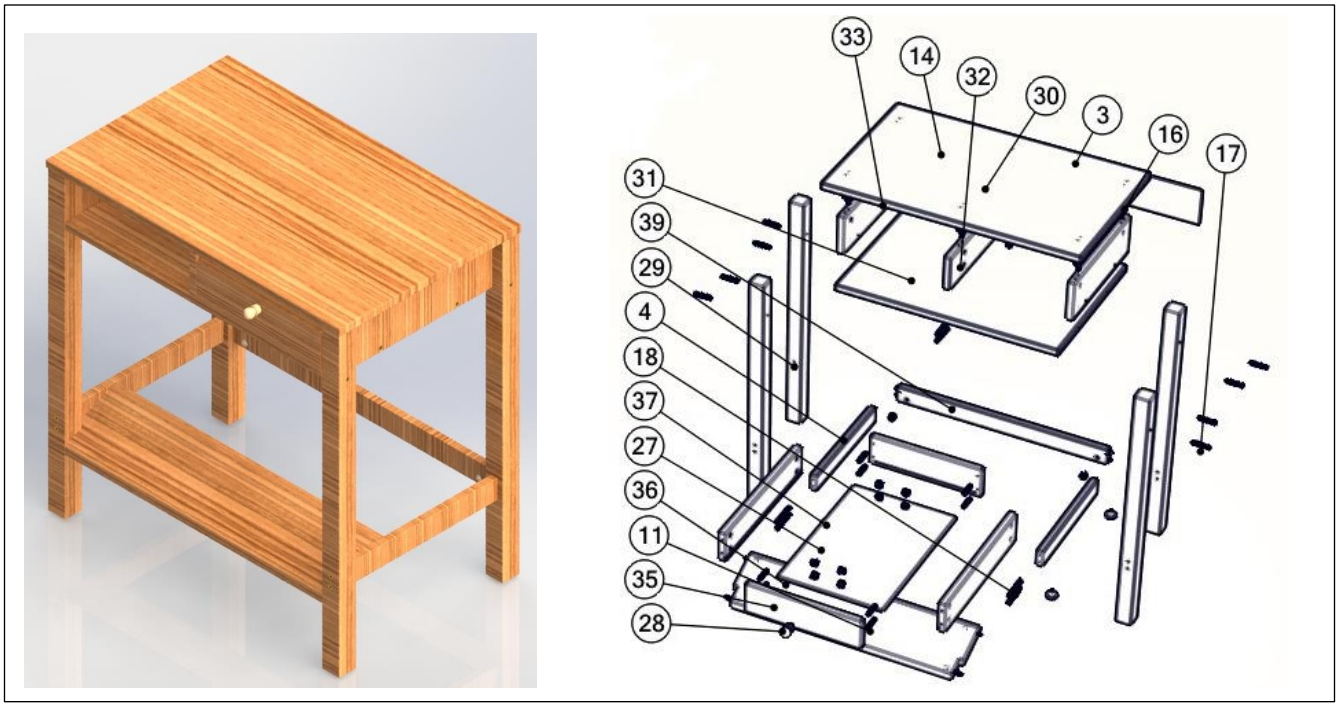
Dressing Table – Case Study

How CAD FM improved comfort and ease of assembly

TRANSLATION: Improve your Presence/Image



Project Background

Flat pack furniture, ready-to-assemble furniture, knock-down furniture, or kit furniture are all synonymous and represent a class of furniture that requires customer assembly. The furniture exhibits numerous advantages compared to its counterparts: lower cost, storage, transportation and manufacturing. The furniture includes dressing tables tailored to facilitate beautiful people getting ready for special occasions. These tables are required to meet two rudimentary features: i) ease of assembly and ii) reasonable comfort level.

Unfortunately, all of the knock-down dressing tables available on the market fail to achieve these two basic features. Most often, the end user needs a pro-joiner to help install/assemble these dressing tables, which increases the customers' frustration, time to use and cost. Moreover, the tables fail to achieve the comfort level during use, in views expressed by several buyers of designer furniture — discounting the two fundamental purposes of flat-pack.

Goals: The goals of this project were: i) to ease the assembly procedure, and ii) to improve the comfort level for long-time use. The proposed assembly methodology can be used across all other kit furniture to facilitate assembly instructions.

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Problems

Two problems were addressed in this research:

i) Although the flat pack furniture, including the dressing tables, come with assembly instructions, it is often challenging to put them together due to vagueness in instructions or lack of technical knowledge about the different types of nuts and bolts or other fasteners.

ii) Besides assembly issue, customer surveys and complaints highlighted that there was a substantial comfort problem as well. The users were experiencing fatigue whilst sitting longer than 15 minutes.

"…I installed it myself following YouTube instructions because the *ones (assembly instructions) in the box are not big help…*"
Carolina – review for a designer

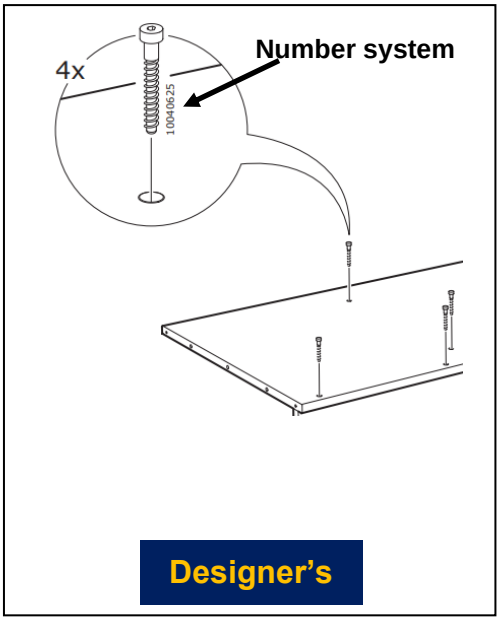
"…Everything seemed to go smoothly *until* we got home and *started to assemble*…"
Laurie of Durand – review

CAD FM Solution

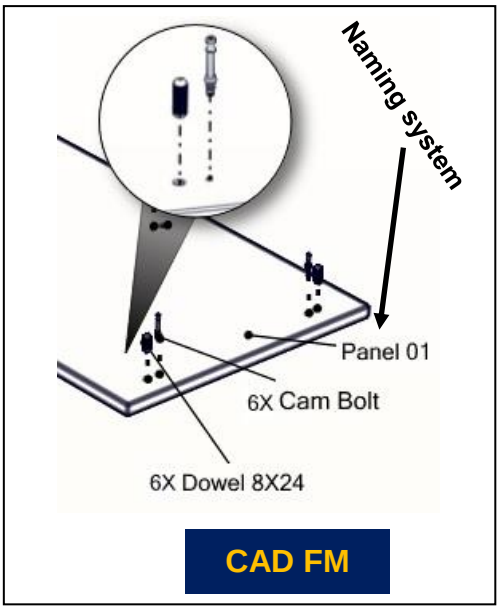
Dr Farrukh Makhdum divided the problem into two sets: i) pre-assembly, and ii) post assembly. The pre-assembly problem constituted all those engineering issues customers faced prior to use, whereas, the post-assembly problem addressed the comfort level.

The pre-assembly issue was solved by adding to the assembly process by providing a detailed animation video. Produced by CAD FM, all steps were clearly presented in this easy to follow video. Moreover, the assembly instruction drawings were improved by simplifying and presenting the part names instead of using the component numbers, unlike famous designer furniture/dressing table cases.

An additional footrest was introduced in the improved dressing table design with the aim of improving the comfort level, solving the post-assembly concerns.



Designer's



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Validation

A survey was conducted with the help of 15 female participants ages 18 to 60 years old. Ten out of fifteen participants (first dataset) were presented with the designer dressing table and were asked to assemble those tables. Later, the same dataset was presented the CAD FM dressing table design with the improved assembly instruction drawings. The remaining five participants were given the flat pack CAD FM dressing table without instruction drawings, but with the assembly animation video. The comfort level was also investigated, whereby all fifteen ladies were given a chance to use the CAD FM dressing table for over 2 hours continuously.

Designer Dressing Table

Results

Eight out of those ten (the first dataset) failed to assemble the designer dressing table due to the ambiguity of the designer instructions.

When the same dataset were given the CAD FM designed table, along with modern assembly instruction drawings, everyone assembled the tables in less than 50 minutes, with the minimum record time of 35 min without the video. The remaining five ladies built the CAD FM dressing table furniture in less than 30 minutes, with the minimum record time of 20 min – whilst using the assembly animation video.

The above study proved that the CAD FM proposed procedure is intuitive and fast, requiring very short assembly time with 100% success rate.

Lastly, all fifteen ladies were given time to use dressing table for two hours. The ladies enjoyed using these tables and benefitted from the footrest. The additional footrest improved the user experience and improved the pleasure of using such furniture.

CAD FM Dressing Table

"I have never seen such a video that helps step by step furniture assembly. The instruction-drawings were easy but the video makes it like a piece of cake. I loved using the table and never got tired - CAD FM great design and brilliant video"

Jenna Johns (age 58) – Survey participant

"I always wanted a video assembly like this since I first saw my parents struggling to assemble my first dressing table when I was 5. I never even imagined the ease of assembly and use like this. I love this footrest as well. CAD FM you're great "

Emma Blake (age 19) – Survey participant

Skill Used

Product Design, Furniture Design, Engineering Design, 3D CAD Modelling, 2D Drawings, Assembly Design, Design for Assembly, Assembly Instructions, Assembly Instruction Videos, Case Study and Survey.

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