

Experience of designers and operators are supplemented.

“Design Navi”, which improves efficiency of automotive lamp design process, is developed.

Ichikoh Industries, Ltd., a leading supplier of automotive parts (headquarters: Shinagawa-ku, Tokyo, president: Yukio Ichikawa), developed a new design software called “Design Navi” which realizes substantial improvement of automotive head lamp design processes in cooperation with IBM Japan (headquarters: Minato-ku, Tokyo, president: Takuma Otoshi).

■ “Design Navi”

“Design Navi” is a “design procedure program” which tells you what to be prepared and how to proceed the design process when new design engineers or temporary operational staffs try to design automotive head lamps. When the “Design Navi” icon on the personal computer screen is clicked, the program screen will open to select the type of parts you are about to work on, such as the reflector or the lens. If a work item that you want to know is selected out of the process flow, you can access to the necessary database and manual, and you will be able to proceed with the work according to the manual.

Furthermore, when introducing “Design Navi”, a new design technique utilizing the 3D design application software, “CATIA V5” developed by Dassault Systemes, was established. Design process is standardized by making the design processes into documents and linking to the existing database where know-how is accumulated. In the modeling work where a model is created using 3D graphics, in particular, modeling process for reflector, lens, inner panel, etc., which are the components of a head lamp, can be simplified up to 80% (a work which required 9 steps is reduced to 1 step) by using the knowledge-ware functions*4, such as “Macro*1”, “Powercopy*2” and “Morphing*3”. Even a design engineer with little experience can design a product in a short time and efficiently.

In the future, we plan to promote standardization of design work easy to be understood by everyone while enriching this product by incorporating the functions to manage development schedule or to monitor progress and making it cooperate with various simulation software toward multifunction.

*1 Macro: A function to make certain operational procedure into a program and automate.

*2 Powercopy: A function to make a standardized shape into a model and to use for other purposes.

*3 Morphing: A function to create images supplementing the interim step in a process where motion picture expresses the gradual change from one shape to another shape.

*4 Knowledge-ware function: A function which registers the criteria for judgment, that human being used to make during shape forming, as a database of knowledge and enabling the use of such judgment criteria.

■ Development background

Since the introduction of CAD in 1980 for wire framing, we continued to introduce 2D CAD, 3D product design application software, “CATIA V4” from IBM Japan (developed by Dassault Systemes), and in 2000, started introduction of “CATIA V5”. IN FY2004, an internal project was launched for improvement of design quality and standardization of design processes, thus innovation of the design work has been promoted.

On the other hand, because automotive head lamp is an important part of the total car design as the “face of a car”, there is a frequent change of design, and the process is time consuming for study as each design change affects many parts, and yet required to shorten the turnaround time. Modeling work, in particular, takes many hours because new design engineers or temporary staffs are assigned to this work. And it takes a long time for them to improve their skill level, plus there was a shortage of skilled designers who could instruct them.

■ Improved efficiency by “Design Navi” at each different stage of development.

Parts name	Effect (Man-hour reduction rate)		
	Structure study	Detailed study	Arrangement drawing
Lens			
Reflector			
Housing			
Inner panel			

■ Example of “Design Navi” screen

- ① Open Navi screen List of data to be prepared before the work
- ② Select part
- ③ Confirm input elements
- ④ Select process
- ⑤ Read manual Content of DB

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