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Vessel Parametric Seat Modeling for Change Enhanced Usability

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Abstract:- Vessel designers have to go through many processes of input/change of numerical values of each part on vessel seat since the implementation of the automation of vessel design drawings. This paper is intended to relieve the consequent discomfort and provide convenience by identifying something in common in the series of steps and making a routine out of the found common facts.

Keywords:- Vessel, Seat Modeling, Standard Type, Special Type

I. INTRODUCTION

There are many courses and skills in nesting processing. Some processes, which are not necessary during the work, come up and interrupt the courses of nesting such as losing face of processes and missing some delicate parts of the work. For fixing such problems, the nesting is proposed to provide convenience and better work performances[1,2]. Three functions are trim, polyline, and overline. Those can improve the nesting processing speed and save the product resources. Recently a lot of vessel design drawings are generated thanks to the design automation. Among these drawings, those with different forms of numerical measurement are considered to be different vessel seat even if their shape is very similar or exactly the same. Like this, if there are similar drawings when they are being generated, the efficiency of drawing generation can be improved by only modifying the dimensions of the drawings rather than generating new drawings. In addition the convenience may be maximized by programming a series of overlapping processes.

To implement this, knowledge is necessary on the overall functionality of the AM and modifying of the seat. On UI, which provides the convenience, are shown the information that the user requires, 3D configuration, and the shape to be changed to.

This better optimization is expected to be applied to other designs such as heavy industries as well as the vessel's seat.

II. CHANGING THE PARAMETRIC SEAT

Trim connects an object to the other one by finding an intersection point between two objects. Also it gets rid of unnecessary work that is not meant. This course will improve the nesting processing speed. Several series of process are needed in order to modify and identify the attributes and 3D geometry of the seat from the existing AM. After the detailed information on the seat is confirmed from the drafting, more detailed can be viewed or modified by entering commands in the Command Window. The changes in 3D shape can be checked in the out-fitting. Changes in the dimensions, which make 3D shape, can be made of course in the drafting. However, it is inconvenient to change all the materials one by one if the kinds of them of the parts are too many. This kind of problem of repetitive tasks through the Command Window mentioned earlier can be solved by receiving and processing the input values with the implemented program.

Using the implemented UI, faster identification of information that needs changing is possible, and checking the information saved in the CVS file is also possible to find information that does not exist in the AM. In this respect, it is possible to improve working speed, accuracy and readability, and to minimize the execution of the out-fitting for checking of 3D modelling.

III. ALGORITHM OF PROPOSED FUNCTIONS

In Fig 1, information can be imported from the DB in the AM through the name that is set in the seat. Fig 2 shows the modification and saving of the imported information.

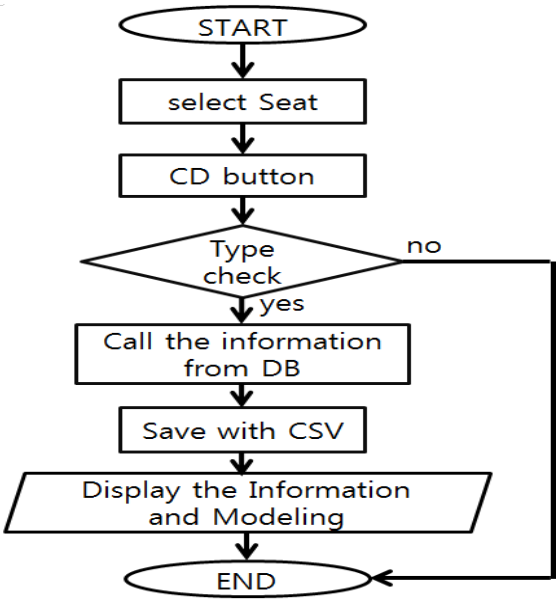

Fig. 1: Flow chart of Information

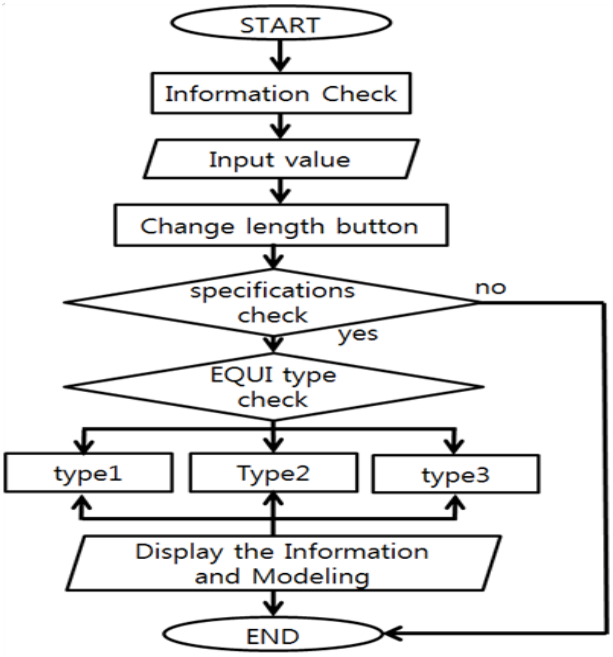

Fig. 2: Flow chart of SCTN Length

The currently implemented function is for the length. Since the position becomes other type when changed, the program has been made to allow change only length information and to the extent that the shape can be maintained after the change.

IV. IMPLEMENTATION

The seat name and block shall be output in UI, and the project number is displayed in vessel No. The type of the corresponding seat is displayed in Type. If there is length information on the attributes window, type borrows the same symbol from the CSV file to display; and in case of order code, the order code that has the same length level as the type is brought to be displayed. If there is no information of length, on the other hand, the symbol is left blank and the order code shown in the attributes window is read and displayed. If there is length in the standard type, Kg value is read from the CSV; if not, Usrweight value is imported from attributes window. Special type outputs special-weight value, and if necessary, applies the devised method of calculation for the output.

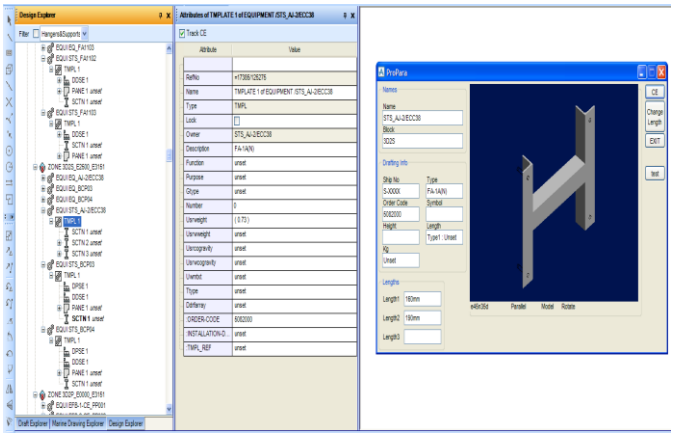

Fig. 3: Display of seat's information

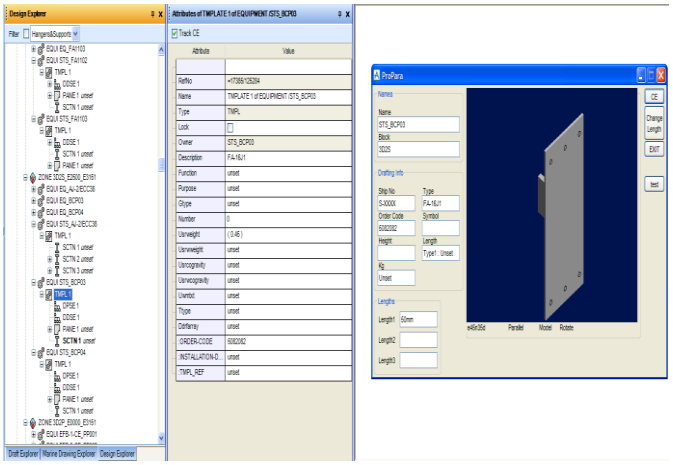

Fig. 4: Display of Seat's information

The ChangeLength button, this program's main function receives and modifies the sub-located Length1, Length2 and Length3 values. The displayed information is checked and the Length value is modified using CE button, followed by execution by pushing the ChangeLength button. This time, the modified modeling and information are output once more to check for the changes.

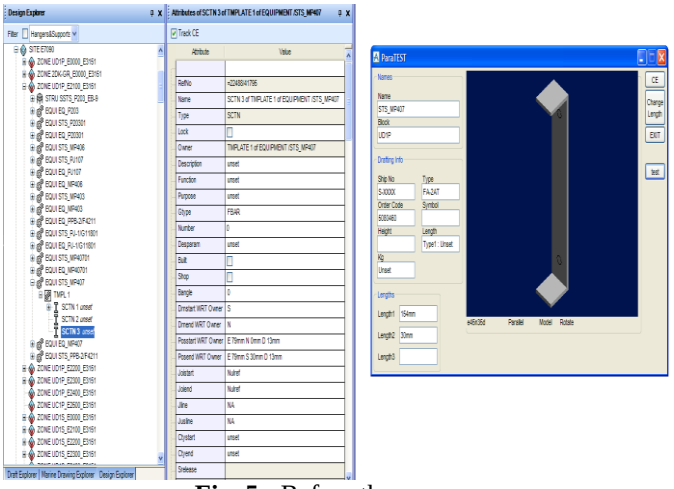

Fig. 5: Before the process

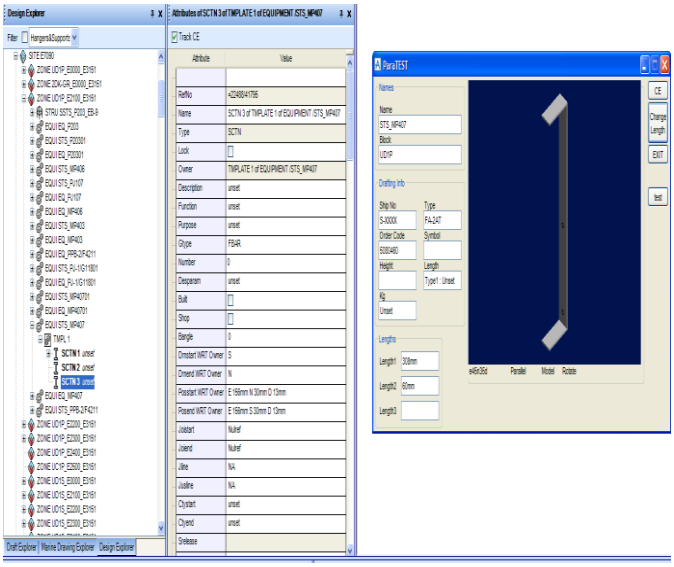

Fig. 6: After the process

A function to change the position was implemented to make this feature. Though one function is enough for the implementation, it was made for flexible applicability by the type by making functions that change the starting and ending points respectively because flexibility could not be attained if applied by the types.

V. CONCLUTSIONS

The current program may be fully applied, if it can be applied to most types, for parts that have SCTN. Problems are found when positions are changed with PANE included, and when applied by types. At this point, additional work is needed when the DB is updated. If improved a little further, it is expected to provide the convenience through applying and modifying for the specifications including PANE, CONE, CYLI as well as SCTN.

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