The shipyard's aid to risk aversion

Cost planning requires estimations which are combined with uncertainties. These uncertainties can be handled efficiently by special methods and systems. Report by Dr. Jan O. Fischer, of costfact*, and Professor Dr. Ing. Gerd Holbach, of TU Berlin**.

Cost planning in shipbuilding always requires estimations. Especially in the early project phases those estimations are combined with uncertainties. The software system 'costfact', which supports the planning, analysis and control of the product's costs throughout all of the building phases, offers special functions to handle those risk estimations. costfact gives an overview of the distribution of different risk classes and calculates how much the expected cost will probably differ from the planned cost.

Cost management in shipbuilding

Cost pressure in shipbuilding has intensified over the past few years substantially. Many shipyards have already gone bankrupt through worldwide competition and the inability to keep to their original budget that the offer was based on. In the naval sector it is not unusual to double the originally estimated costs when building the vessel.

As up to 90% of the total costs are fixed at the start of production (Figure 1) it is obvious that approaches to optimise costs have to be considered in design and engineering. However, this is complicated by the fact that there is only insufficient cost information in these early phases.

Therefore, estimating and planning the ship's costs is a protracted process. Simultaneously the pressure of time limits leads to difficulties with determining exact and robust cost information. Last but not least, the existing data base, generated in past projects, is far from complete, caused by the lack of an integrated system for managing and providing the cost
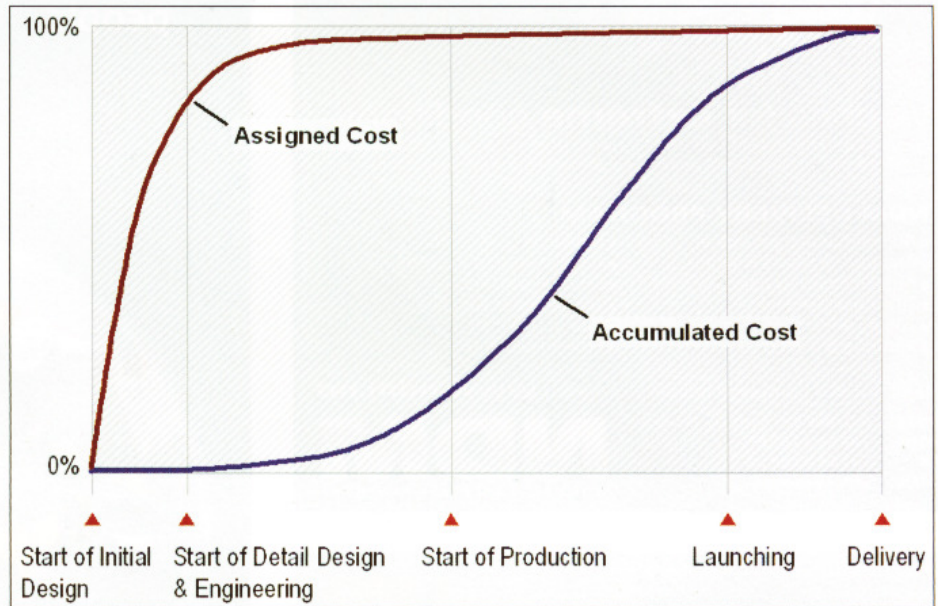
Figure 1. The greatest part of the costs is fixed after the initial design.

information. Hence, it can be said that there is a big gap between existing cost optimisation systems and of controlling the allowable costs.

Against this background a software solution ('costfact') was designed by the company of the same name, of Cologne, and the department of design and service of maritime systems of the University of Berlin (EBMS). costfact is based on an existing tool that has already been applied in plant engineering. The modification of costfact for the maritime industry is based on experience, which the head of EBMS gained by more then 10 years experience at Flensburger Schiffbau-Gesellschaft shipyard in leading positions and with responsibility for cost estimation and budgetary control.

Cost planning in shipbuilding with costfact

The main value of costfact is its ability to enable the user to determine and describe the cost of projects and new ships easily and precisely. In addition costfact can analyse
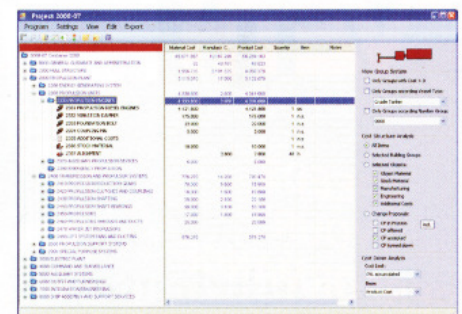

Figure 2. Cost calculation according to the ship's building structure.

the cost of complex projects with a high degree of transparency. To achieve these targets the programme offers the following functions:

Display of the costs according to the ship's building structure defined by the user: With costfact the planning of costs, both top down and bottom up, is done within the vessel's parts list, differentiated by cost types (e.g. material costs or manufacturing costs) and objects (e.g. stock material or additional costs). costfact contains complete building structures of ships like