

## 2. PRODUCTION PLANNING SERVICES

Production planning is a process, which starts already with the first outlines of the ship project. Major decisions on ship structures and details are closed at the project and pre-design stage and therefore the participation of production planning organisation to these decisions is important.

The key questions to production planning are:

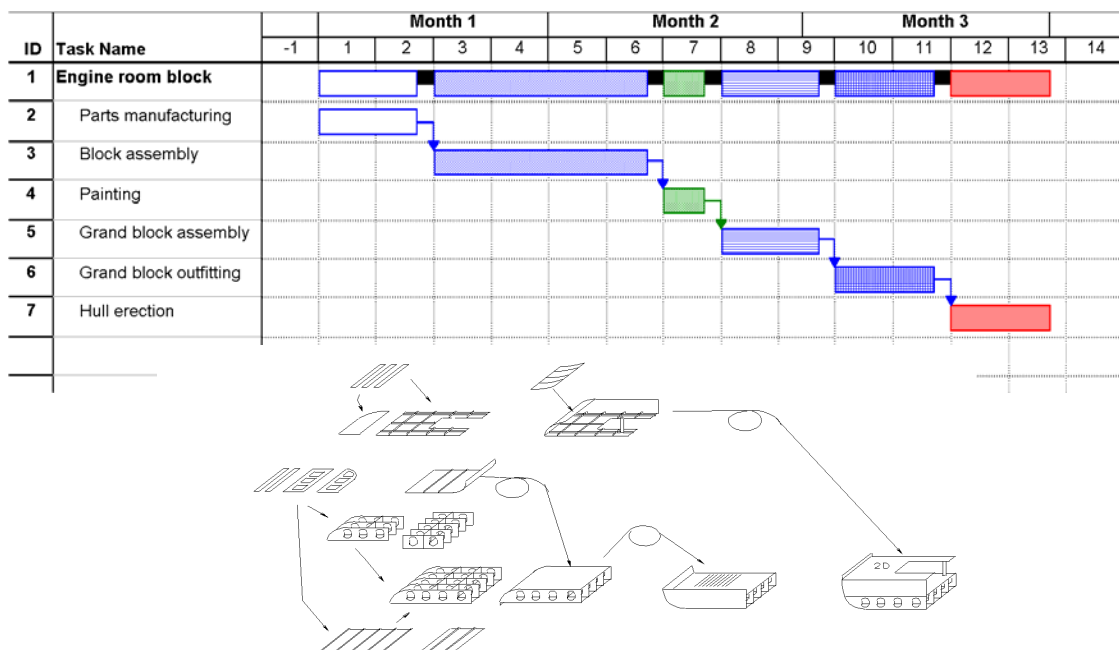
- What is the most efficient way to build the ship?
- How much time and resources are needed?
- How much the building costs of the ship will be?

Deltamarin as a design office is heavily involved in the whole shipbuilding process and has gained considerable expertise on production planning activities when working with shipyards round the world. The role of the design office has also changed in today's shipbuilding process and therefore Deltamarin has taken the initiative to offer support and solutions to production planning problems.

Deltamarin provides production planning services, which may be separated into three main categories:

1. Shipyard specific planning
2. Ship type planning
3. Turnkey co-ordination

These topics are not exclusive: in many cases our commission consists of comprehensive analysis of the situation and features from each category are included. Our task will be always tailored to suit the Client's actual needs.



*A sample of typical building strategy and schedule.*

## **2.1 Shipyard evaluation**

Shipyard evaluation is an important part of the shipyard's development process. Typical reasons to perform a comprehensive shipyard analysis are:

- Introduction of new ship type
- New investment plans
- Increase of productivity
- Recognition of bottlenecks and potential areas of improvement in the building process

Deltamarin can prepare an objective study of the shipyard's status and give the client correct and reliable information for decision making. An independent party can achieve objectivity, which is often very difficult inside the yard's own organisation. We can also fully utilise the experience from working with different kind of shipyards, and give valuable input into the yard development plans.

The actual scope of commission depends on the goals of the survey, but following topics are typically included into our work:

- Production processes
- Production technology
- Design process
- Scheduling
- Procurement
- Turnkey and subcontracting
- Project management
- Quality assurance

A complete overall picture of the shipyard's performance and possible potential areas of improvement is created during the evaluation process. The facts and findings are reported to the shipyard together with the development proposals.

## **2.2 Ship project evaluation**

Ship project evaluation can be performed at the same time with the shipyard analysis or as a separate project. Often the ship type in question is new to the shipyard. In that case the shipyard looks for information on production methods, ways to build and specific production problems for this particular newbuilding. A typical problem the shipyard may have to tackle in the project is the handling of thin plates.

The first phase will be the evaluation of the shipyard facilities and their suitability for the newbuilding under consideration. This part of the analysis is following the process of the shipyard evaluation.

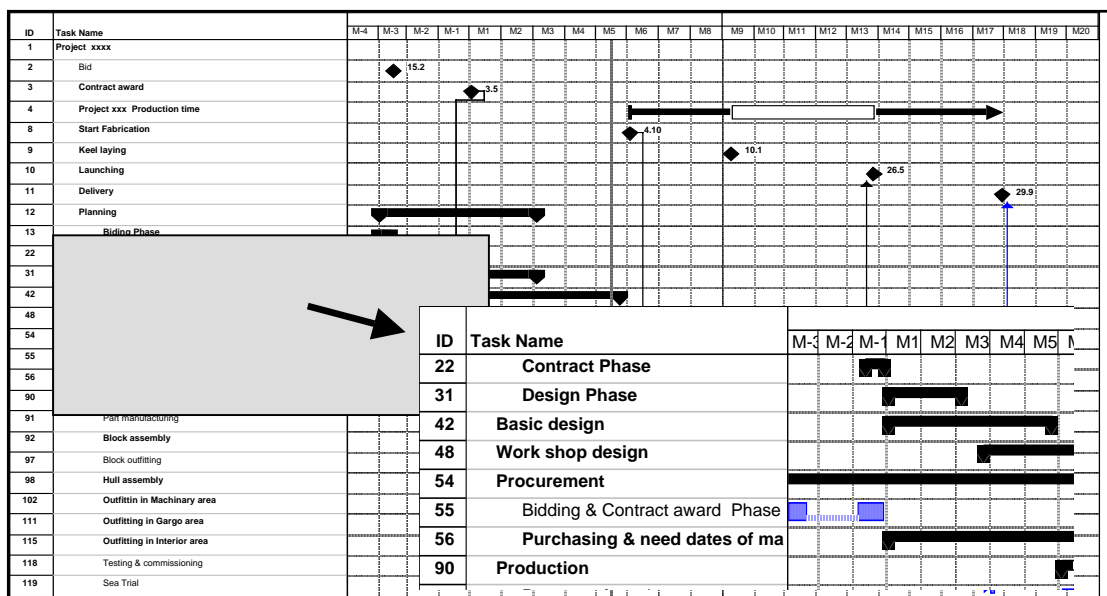
In the second phase the actual ship project will be analysed and proposals for master planning, build strategy, etc. will be made. It is also possible to make

estimations of production hours if required.

Ship project analysis may include at least the following activities:

- Block subdivision
- Master planning
- Design and production scheduling
- Area subdivision
- Turnkey plan
- Timing of main equipment, procurement schedule
- Cost and working hour analysis
- Building strategy

Technical and economical evaluation of the ship project itself is typically included in this evaluation as well.



Master plan for a vessel.

### 2.3 Turnkey project co-ordination

Most of the modern shipyards are assembly factories relying heavily on different types of turnkey contracts. This makes the yards very dependent on the efficiency and reliability of the sub-contractors.

Turnkey companies must therefore be capable of managing sometimes very complicated contracts and the yard must have a total confidence in this performance.

For smaller and sometimes inexperienced turnkey companies this can be more than they are prepared to handle. Our experience comes into good use in such a case.

We can provide assistance at every stage of the project including schedules, material management and follow-up systems.

Following typical services can be provided for a turnkey project:

- Scheduling
- Resource management
- Definition of yard and subcontractor responsibilities
- Co-operation between the yard and subcontractor
- Definition of the follow-up and reporting system between the yard and the subcontractor
- Providing a project manager

## **2.4 Selected References**

- AESA Sevilla yard, Spain: Evaluation of a newbuilding project
- Fincantieri yard, Italy: Evaluation of the Newbuilding project for Disney Cruise
- Hellenic Shipyards, Greece: Shipyard Evaluation and build strategy of a ro-pax vessel
- Ingalls Shipyard, USA: Shipyard Evaluation
- Nuovi Cantieri Apuania Yard, Italy: Shipyard Evaluation
- NASSCO, USA: Shipyard Evaluation
- Hyundai Shipyard, Korea: Shipyard Evaluation
- NASSCO, USA: Evaluation of the shipyard and build strategy for Project America
- Howaldtswerke-Deutsche Werft, Germany: Shipyard evaluation
- Aker MTW Werft, Germany: Evaluation of the shipyard
- Aker MTW Werft, Germany: Build strategy and Master plan for a Cruise vessel project (Aida Cruises)
- European Commission: Participation in a study on automation and integration of processes in shipbuilding industry
- Aker MTW Werft, Germany: Development of a progress follow-up system for newbuildings
- Turun Prosessiasennus, Finland: Scheduling and follow-up system for a turnkey contract
- Cammell Laird yard, UK: Evaluation of the Costa Classica lengthening project
- ENTMW, Alger: Evaluation of selected Spanish shipyard candidates to build a new car ferry for ENTMW
- Brodosplit Shipyard, Croatia: Shipyard evaluation