WYATT SPREE

Project Engineering

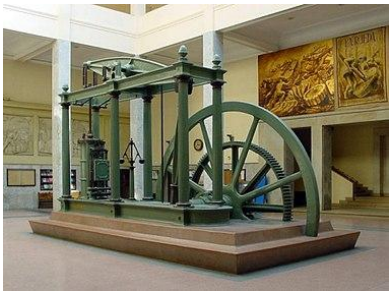
An exploration in design

Introduction

Project engineering includes all parts of the design of manufacturing or processing facilities, either new or modifications to and expansions of existing facilities. A "project" consists of a coordinated series of activities or tasks performed by engineers, designers, drafters and others from one or more engineering disciplines or departments. Project tasks consist of such things as performing calculations, writing specifications, preparing bids, reviewing equipment proposals and evaluating or selecting equipment and preparing various lists, such as equipment and materials lists, and creating drawings such as electrical, piping and instrumentation diagrams, physical layouts and other drawings used in design and construction. A small project may be under the direction of a project engineer. Large projects are typically under the direction of a project manager or management team. Some facilities have in house staff to handle small projects, while some major companies have a department that does internal project engineering. Large projects are typically contracted out to engineering companies. Staffing at engineering companies varies according to the work load and duration of employment may only last until an individual's tasks are completed.

Responsibilities

The role of the project engineer can often be described as that of a liaison between the project manager and the technical disciplines involved in a project. The distribution of "liaising" and performing tasks within the technical disciplines can vary wildly from project to project; this often depends on the type of product, its maturity, and the size of the company, to name a few. It is important for a project engineer to understand that balance. The project engineer should be knowledgeable enough to be able to speak intelligently within the various disciplines, and not purely be a liaison. The project engineer is also often the primary technical point of contact for the consumer. A project engineer's responsibilities include schedule preparation, pre-planning and resource forecasting for engineering and other technical activities relating to the project, and project delivery management. They may also be in charge of performance management of vendors. They assure the accuracy of financial forecasts, which tie-in to project schedules. They ensure projects are



completed according to project plans. Project engineers manage project team resources and training and develop extensive project management experience and expertise.

Fields and topics

The various fields and topics that projects engineers are involved with include:

- Work breakdown structure: a deliverable-oriented breakdown of a project into smaller components
- Gantt chart: type of bar chart that illustrates a project schedule
- Critical Path Analysis: an algorithm for scheduling a set of project activities
- Program evaluation and review technique: a statistical tool which was designed to analyze and represent the tasks involved in completing a given project
- Graphical Evaluation and Review Technique: network analysis technique that allows probabilistic treatment both network logic and estimation of activity duration
- Petri Nets: one of several mathematical modeling languages for the description of distributed systems