

Resource Modeling For Advanced Technology Facilities

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Abstract

To meet the technology requirements outlined in the International Technology Roadmap for Semiconductors (ITRS), semiconductor-manufacturing facilities must be built quickly, more cost effectively, and with high quality standards. The construction industry has traditionally experienced difficulties in maintaining a balance between supply and demand of labor for these high tech facilities due to the cyclical swings and localized nature of the semiconductor industry. When construction is in high demand, skilled labor generally is in short supply. This is particularly true for a semiconductor manufacturing facility where unique skill sets are pivotal for successful completion of a fast-paced, capital-intensive project requiring high caliber skilled labor.

How can the design/construction industry deal with this issue of unavailability of skilled labor? One approach could be to better utilize existing training resources. Alternately, improved resource forecasting could result in plans that would better match the number of new employees with projected industry needs. To address these issues, a research project was undertaken by CREATE, an advanced technology research consortium at Arizona State University, to identify the resource requirements for the design and construction of a semiconductor manufacturing facility. The research study outlines the skills and labor requirements from programming (initial design) to the completion of a model base-build facility. The results from this research indicate a high demand for a skilled labor force, especially for the mechanical and electrical trades, during the

construction phase. Data collected from additional fabrication facilities will help create a resource model, which will assist in forecasting the demand of skilled labor for a proposed project.