Exsys Case Study

Construction Equipment Selection, Simulation & Analysis

Construction Engineering and Management

There are many factors to consider when selecting appropriate equipment for construction projects. A simulation system was developed by integrating a knowledge automation system with popular construction simulation software. It assists users in:

◆ Selecting a suitable piece of earth moving equipment (scraper versus truck, shovel versus bulldozer) user a given set of job conditions

◆ Selecting an appropriate simulation file

◆ Performing simulation analysis and output costs and production rates.

Two knowledge automation system routines were developed. The first routine is a system that helps to select the most appropriate loading and hauling systems based on project conditions. The second routine allows the user to choose a specific equipment model. Both modules are placed in a batch file and are activated sequentially.

For example, if the first knowledge automation system suggests a conventional scraper for the job, the second module allows the user to choose a specific model such as a CAT 657G. It then provides the simulation program with cycle time, capacity, and the cost information for this model. The knowledge automation system provides a simplified front-end to the simulation package that enables the user (i.e. construction engineer) to perform simulation analysis without having to be an expert in simulation modeling.