

### About On Time Systems, Inc.

On Time Systems brings sophisticated state of the art optimization technology to industrial problems. Our products focus on scheduling and route planning. OTS was founded in 1998 to commercialize optimization technologies invented at the University of Oregon's Computational Intelligence Research Laboratory. For more information, visit the On Time Systems web site at [www.otsys.com](http://www.otsys.com).

### PSOP Product Overview

The Project Schedule Optimization Package (PSOP) from On Time Systems is a scheduling addon that can be used to enhance the quality of schedules produced by Primavera\* project management software. With just a few mouse clicks, PSOP's patented algorithms can produce schedules that are 30% shorter than those produced by Primavera's software, and generally reduce the amount of resource overload as well.

### For more information:

Call 541.346.0468 or visit the On Time Systems web sites at [www.otsys.com](http://www.otsys.com) and [psop.otsys.com](http://psop.otsys.com).



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\*Primavera is a trademark of Primavera Systems, Inc.



**Faster.**

**Better.**

**Cheaper.**

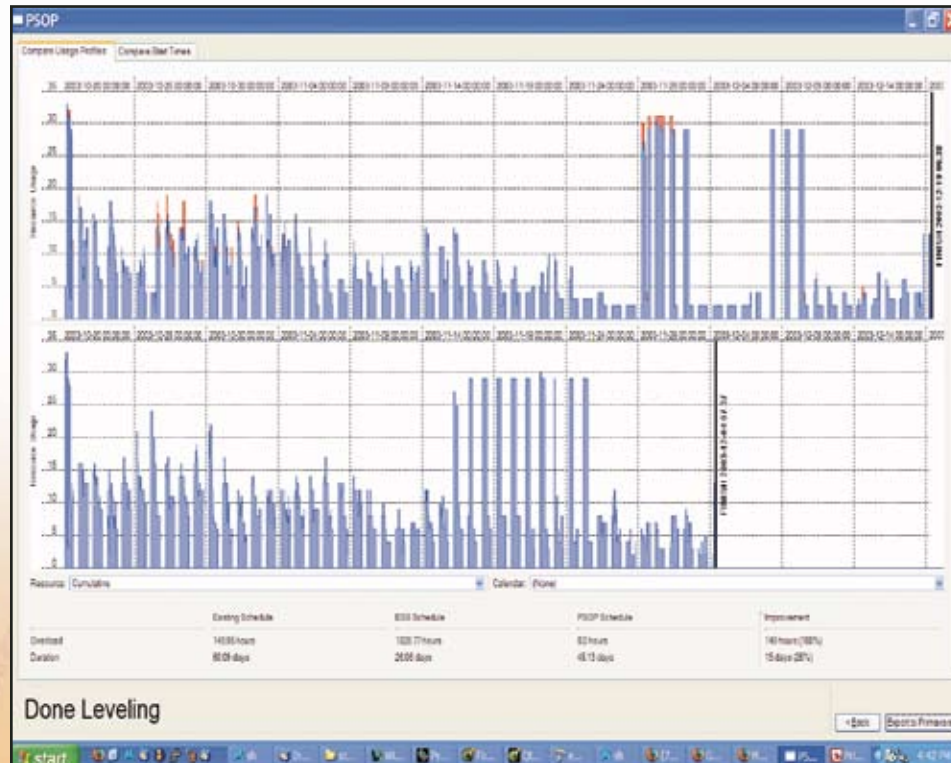
**Project Schedule Optimization  
Using PSOP**

## PSOP Optimization Results

The following table shows some typical results that were obtained by evaluating actual projects from the construction industry.

Type of Construction	Approximate Number of Activities	Improvement Over Primavera Leveler	
		Project Duration	Resource Overload
MUNICIPAL UTILITY	2,700	14%	32%
RESIDENTIAL HOME CONSTRUCTION	12,300	30%	0%*
MANUFACTURING FACILITY	33,000	13%	0%*
OIL REFINERY FACILITY MAINTENANCE	12,200	15%	74%

\* The Primavera leveler removed all resource over-allocations; no additional reductions were made by PSOP optimization.



The graphs show resource utilization for an aircraft assembly problem. The Primavera-levelled schedule is on top and the PSOP schedule on the bottom. Overload is shown in red. The PSOP schedule eliminates the overload and is approximately 30% shorter as well.

## Scheduling: Current Practice

Scheduling systems in use by construction and other industries today rely on a few basic techniques to develop schedules. Specifically, they try to schedule tasks as early as possible, subject to constraints and resource availability profiles. Existing scheduling applications do not attempt

to optimize the schedules they produce. The closest they come to improving an as-entered project schedule is to build a single schedule in an attempt to level over-allocated resources. As a result, manual intervention is typically required to deal with overloaded resources and other related difficulties.



## PSOP Technology

OTS has developed a new approach to scheduling that operates with Primavera. The resulting system is capable of schedule optimizations that typically exhibit significant improvements to resource utilization while simultaneously shortening the schedule and maintaining useful float. These results are achieved while honoring activity dependencies and constraints as specified in Primavera.

The PSOP optimization technique takes an iterative approach to improving resource utilization. PSOP searches for an optimal solution by evaluating thousands of different schedules to find the shortest schedule that meets resource availabilities and all project and task constraints. It is not feasible for a project manager to perform these “what if” scenarios manually.

If a project has been created with few resources or perhaps only subcontractor resource assignments, PSOP can still be an effective tool for reducing peaks in on-site personnel. However, a more detailed schedule will produce better results.



## PSOP allows construction schedulers and project managers to:

- Manage employee and subcontractor utilization.
- Predict and manage the number of concurrent workers on site.
- Know with confidence what resource levels and activity start times are necessary to meet project deadlines.