



# PHYSICAL ASSET MANAGEMENT FOR CAPITAL PROJECTS

## What is Physical Asset Management for Capital Projects?

A work process that ensures reliability and maintenance are considered during project development so that new facilities will achieve the levels of reliability, availability, and maintainability needed for economic success. The process can be applied to grassroots facilities and plant upgrades.

## What are the Objectives of the Work Process?

The first objective is to ensure that the inherent reliability imparted to the design is compatible with the business objectives and is accomplished at minimum investment cost. The second objective is to ensure the plant will have competitive maintenance cost and operates at minimum life cycle cost. The program also provides direction, focus, and benefits to other areas.

## What is the Work Process?

A systematic approach, consisting of five major activities, which is implemented during all phases of project development. The process starts at the screening stage and ends with plant commissioning. The activities are:

- Management Support
- Project R&M Goals
- R&M Program
- Program Implementation
- Measure Success

## How is the Work Process Implemented?

The R&M Goals are the basis for the specific reviews and activities defined in the R&M Program, which are performed by R&M specialists with support from others. The process is continuous with interactions at all project phases. Checklists are used to ensure a consistent work process.

Profit Improvement

Reliability &  
Maintenance

## How Successful is the Work Process?

The results are facilities whose overall life cycle cost is less and have better availability. An example is a grassroots refinery that made an additional capital investment of 10% for improved reliability and better maintainability. The results were an average reduction of 36% in maintenance cost and a 29% reduction in unplanned downtime.

## Will Project Cost Increase and Schedule Lengthen?

If the work process is implemented in a timely manner with the right resources, and the project business objectives are the basis for decision-making, the schedule should not be jeopardized nor the project cost increased.

## How Can Carmagen Engineering, Inc. Help You Apply the Work Process?

- Review and explain the work process and help the R&M stakeholders prepare an implementation plan.
- Assist in developing the Project R&M Goals based on defined project business objectives.
- Work with R&M stakeholders in preparing and R&M Program for the project that supports the Project R&M Goals.
- Assist in identifying critical equipment and systems that need individual R&M objectives.
- Participate in key reliability and maintainability reviews.
- Help develop a plan for preparing equipment management plans.
- Assist in developing a program to ensuring the R&M objectives were achieved.

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# RIGHT-TRACK REVIEWS™

Carmagen Engineering's Right-Track Reviews™ cover these and other areas. Major net savings in time and/or cost typically result.

- Third-Party Engineering Design Audits
- Hydroprocessing Unit Surveys
- Turnaround Planning
- Construction Methods and Planning
- Construction Safety Programs
- Contracting Strategies and Approach
- Organization and Reporting Relationships for Project Activities
- Cost and Schedule Control

<p><b>HOW RIGHT-TRACK REVIEWS™ WORK:</b></p>	<ul style="list-style-type: none"> <li>• We assign one or more of our staff with strong experience in the particular area for review.</li> <li>• You enable us to gather essential background information (existing plans, organization description, description of needs, etc.)</li> <li>• We prepare a specific program for review, including identification of at-site information sources, and schedule for travel, information gathering, report preparation and presentation.</li> <li>• You facilitate our at-site access to personnel, workplaces, and records as agreed.</li> <li>• Our team conducts the review, prepares findings and recommendations, and develops a report.</li> <li>• Your activity benefits.</li> </ul>
<p><b>WHY RIGHT-TRACK REVIEWS™ WORK:</b></p>	<ul style="list-style-type: none"> <li>• They are quick, thorough, and focused             <ul style="list-style-type: none"> <li>– Identify the strengths and weaknesses of an existing plan of action</li> <li>– Recommend ways to build on the strengths and correct the weaknesses</li> </ul> </li> <li>• They are conducted by our professionals who have “been there and done that,” and who give you the benefit of their learnings and successes.</li> <li>• They are not influenced by any interest in a particular product or process, but only by our Owner Approach and our professionalism.</li> </ul>



Profit Improvement

Time and Money

**EXPERIENCED ENGINEERS:**

**Sam Zaczepinski** has very strong credentials across the process technologies. His 37-year professional experience includes extensive work in process engineering and refining for the central engineering affiliate of a major oil company. In addition, he has worked in and managed units responsible for technology assessment and technology licensing, and has wide contacts with major licensors, international contractors, and refining companies.

**Walter Lambertin** has gained an exceptional command of refinery maintenance, mechanical, and materials engineering technologies during his 33 years of experience with a major international oil company. He led a team that upgraded maintenance work processes for the company's refineries, with resulting multi-million dollar savings in maintenance costs.



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