

# IMP

## Intelligent Maintenance Planner & Inspection. Knowledge-based Maintenance Management Systems

### CHALLENGE

The competitiveness of manufacturing companies is increasingly determined by the availability of plants and systems. For this reason the importance of an efficient and high quality maintenance is rapidly growing. Due to an increasing system complexity, it is becoming more and more difficult to detect signs for the need of preventive maintenance as well as to derive the best possible time-slot and the ideal scope of maintenance. Subsequently, maintenance must be scheduled considering the availability of all required skills, the adherence to constraints and objectives (e.g. costs) and then executed within the given time allocation meeting all planned deadlines. Upon detection of deviations from the plan (e.g. additional tasks, longer durations, problems during recovery), affected maintenance tasks have to be altered and re-scheduled. Due to the variety of maintenance tasks and the fact that more and more maintenance cases are becoming delayed, maintenance activities are the need for more individualization. This means that maintenance staff can build up less routine over time and frequently encounter themselves in new territories on site. At the same time, the rising time pressure further prevents employees to prepare well for maintenance tasks (e.g. by reading instructions). Despite the increasing complexity and the decreasing time budget, the demand on quality of maintenance execution is on the rise.

### OBJECTIVES/METHODS

IMP explores new methods and tools for improving maintenance planning and execution in highly demanding and complex production systems by intuitively guiding, supervising and optimizing scheduling. This includes the following priorities:

- (1) detection and classification of maintenance tasks from the analysis of machine and operating data;
- (2) automatically deriving appropriate tasks and work instructions;
- (3) scheduling these tasks taking, constraints and objectives into account;
- (4) intuitive guiding of employees using technologies such as augmented reality;
- (5) automated documentation and quality assurance by observation and interpretation of the executed activities;
- (6) learning new instructions through the observation and interpretation of tasks carried out successfully.

### RESULTS/FINDINGS

The methods and techniques developed within this project will provide the basis for future maintenance assistance systems as well as a proof of concept. Main insights include the manageability, applicability and robustness of the chosen methods.

#### PROJECT OVERVIEW

##### INSTITUTIONS

PROFACTOR GmbH  
University of Applied Sciences Salzburg  
Ing. Punzenberger COPA-DATA GmbH



##### TYPE OF PROJECT

Research project  
FFG EUREKA  
Period: 2014-2016

#### WANT TO KNOW MORE

Reinhard Mayr, Product Manager  
Ing. Punzenberger COPA-DATA GmbH  
ReinhardM@copadata.com  
[www.copadata.com](http://www.copadata.com)

