



MODAPTO [101091996]: Modular Manufacturing and Distributed Control via Interoperable Digital Twins



1.1.1 Accessing and Viewing the Current Capacity of Production Cells

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Introduction

Production cell capacity monitoring provides real-time visibility into manufacturing operations, enabling informed decisions about resource allocation, scheduling, and bottleneck management. This section details the technical approach for accessing and viewing capacity information within the MODAPTO framework.

Welcome to the Real-time monitoring of Production cells training module of MODAPTO. Real-time monitoring in modular manufacturing refers to the continuous and instantaneous tracking of processes, equipment performance, product quality, and material flow using digital technologies. This approach allows manufacturing teams to identify issues as they arise and respond without delay, minimizing disruptions, enhancing productivity, and improving overall product quality. In modular manufacturing systems, where production is divided into discrete, self-contained units or modules, real-time monitoring becomes even more critical. It enables coordination among modules, ensures consistent output, and supports a more agile and responsive manufacturing environment.

In this module, the trainee will learn how to use the MODAPTO Evaluation and Decision Support dashboard to monitor production cell performance and view its current capacity. This will be extremely useful for end users of MODAPTO, such as Production managers, Shopfloor managers and operators, who want to gain real time insights about the condition of the production cells and make data-driven decisions.

Understanding Production Cell Capacity

Before accessing capacity data, it's essential to understand what constitutes "capacity" in a production cell context:

1. **Cell Capacity:** The maximum throughput capability of a production cell, typically expressed as units per hour or as a percentage of maximum capability.
2. **Current Utilization:** The actual throughput as a percentage of maximum capacity, indicating how much of the potential capacity is being used.
3. **Available Capacity:** The difference between maximum capacity and current utilization, representing untapped production potential.
4. **Capacity Constraints:** Factors limiting the cell's capacity, including equipment limitations, material availability, labor allocation, or upstream/downstream bottlenecks.

Instructions for Accessing Production Cell Capacity

1.1.1 Accessing and Viewing the Current Capacity of Production Cells



1. Once in the general dashboard of the Evaluation and Decision Support, the user can see the option "Production cells". Click on "investigate" to start.
2. The user is transferred to a screen where all available production cells are listed. The production cells are characterized by their name, ID and the modules they include. On the column Actions, the user can click on the "eye" icon to see the details of a production cell.
3. In the next screen, the user can see the production cell's additional information, such as its modules, the current cell capacity, its availability status, the number of the involved employees and respective jobs.
4. This chapter is accompanied by a Demo video with detailed steps on how to utilize this functionality. The attendees of this course are encouraged to watch that video to receive a better understanding of the content of this course. The Demo video is titled "Using the system dashboard to monitor production cell performance and view its current capacity."

Interpreting Capacity Information

When viewing capacity information, consider these interpretation guidelines:

1. **Status Indicators:**
 - "Operational" (Green): Cell functioning normally with sufficient capacity
 - "Warning" (Yellow): Approaching capacity limits or minor issues affecting capacity
 - "Critical" (Red): At or exceeding capacity, representing a bottleneck
2. **Capacity vs. Utilization:**
 - High capacity + Low utilization = Underutilized resource
 - High capacity + High utilization = Efficiently operating cell
 - Low capacity + High utilization = Potential bottleneck
 - Low capacity + Low utilization = Possible technical issue