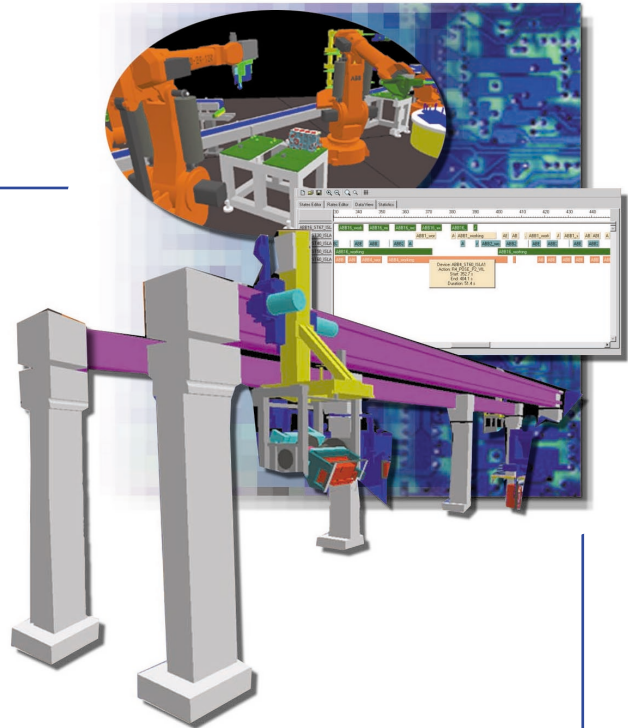# CELL CONTROL

Introducing a powerful 3D solution to design, validate and implement automated production systems

Cell Control is a comprehensive add-on solution for DELMIA IGRIP® that will provide a collaborative 3D environment to design, simulate, test and enhance the performance and productivity of a workcell. Mechanical and manufacturing engineers can precisely design, evaluate and optimize the sequence of operations and logics of the elements within a workcell; while control engineers can simulate, validate and debug PLC programs within the same IGRIP workcell. Concurrently designing the workcell and control scheme will increase the productivity of mechanical and control engineers by enabling them to perform a large number of iterations to optimize performance and confirm targeted production rates without the cost of prototypes parts or workcell mockups.

Cell Control can be used for any type of automated workcell or production line including robotics, gantries, transfer lines and other special machines. Multiple PLCs and automated stations can also be simulated within the same project workcell.

Dramatically reduce workcell design time and development cost

Cell Control can decrease development time by providing a collaborative work process between the mechanical and control design teams. A major portion of the development, testing and optimization of controls is done within the virtual workcell environment, where multiple control scenarios and device designs can be evaluated without the requirement for prototype workpieces or physical mock-ups. Control engineers can work directly within the same workplace as the mechanical design team, which is beneficial when the physical plant is located far from the design office.

Engineers can share data within the same workcell model to detect errors in both the mechanical design and control programs early in the design process before financial investments are made in tooling and control hardware.

Benefits:
- Validate target production rate during design
- Optimize workcell performance and the cost/performance ratio
- Verify control hardware requirements and simplify the ordering process for suppliers
- Simulate and test PLC logic within the IGRIP simulation
- Evaluate and optimize the sequence of operations and logics within a workcell
- Reduce production ramp-up and time-to-market cost

DELMIA

f e a t u r e s

Basic Cell Control Tools

Variables and Simulation Description
The basic data describing the control system is called a project. A project includes all the control-related data in an IGRIP workcell. The expanded user interface provides the ability to create the necessary workcell control data.

Design, Test, Debug, Enhance
The events driving the workcell and related work-piece status can be triggered automatically based on the programmed scenario, triggered by a mouse click or from Soft-PLC executing the PLC logic. IGRIP calculates the time for each device to perform the trajectories, depending on the capabilities of the device, and provides several kinds of events:
- Creation of a workpiece
- End of operations
- Workpiece presence

Workcell Performance Analysis
As a result of the simulation, Cell Control will generate a log file that contains the sequence and time of any events and operations started and finished during the simulation. It will provide a Gantt chart view of the sequence of operations and timing. In addition, performance statistics of the workcell are calculated to provide Production Rate and Device Working Rate.

Control Design

Graphical Editor
Through the graphical editor an engineer can define the control system, states, and logic, without writing any textual language. The user will describe the control of each device separately by describing the possible conditions or states of that device for each operation which can be performed by that device, and the input and output signals associated with each operation or condition. This enables the user to design several possible control solutions, and using the performance analysis tool, choose a solution that best meets the design requirements.
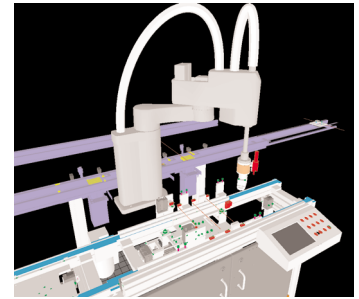
Control Documentation Generator
Design reports, in HTML format, can be easily generated to communicate precise descriptions of the control designs, including a list of variables, sensors, and the graphical description of the control of each device.

Logic Translator
The logic translator generates files supporting the standard languages of IEC61131-3: ST (Structured Text), LADDER Diagram, SFC (Sequence Function Charts).

Control Monitor *Coming Soon!*

All the basic Cell Control tools are supported and the user can drive the IGRIP simulation from a standard IEC61131-3 PLC program. Using the same list of variables, operations, and position sensors developed in Control Design within the PLC program allows the Control Monitor to monitor the simulation of the PLC program inside IGRIP. The user can check the workcell behavior generated by the final program including hardware performances. The connection between IGRIP and the PLC Program is based on OPC technology.

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