DELMIA

ULTRAARC®

The Arc Welding Process Simulation & Robot Programming Solution

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DELMIA UltraArc® is a physics-based, scalable robotic arc welding simulation and offline programming solution. Use UltraArc to quickly and graphically program complex robotic welding systems – from single robot systems to complex multi-robot, multi-axis Master/Slave applications.

The UltraArc Advantage

UltraArc's comprehensive built-in robot libraries, automatic collision detection functionality and superior device building capabilities deliver unprecedented reductions in man-hours and process engineering lead time while greatly improving program accuracy.

UltraArc is a powerful tool for the comprehensive and efficient analysis of Arc welding tools, fixtures and production systems to assure the optimal process plan before robot programs are created.

- *Eliminate collisions*
- *Accurately program robots off-line*
- *Save time and start-up costs*
- *Rapidly develop models*
- *Seamless integration*
- *Create complex simulation programs via simple interface*
- *Extensive application-specific functionality*

Generate Off-Line Programs with Confidence

DELMIA UltraArc's complete line of calibration and off-line programming and tools allow users to accurately program robotic systems off-line, thus minimizing the impact on production schedules. UltraArc saves time and startup costs by programming robots before installation and allowing you to stay in production while programming off-line. Calibration tools let users adjust the simulation model to accurately reflect real world device relationships, while the signature interface enables programmers to easily modify robot devices to gain accurate robot motion. Finally, users download the optimized simulation programs (including weld process information) using UltraArc's post-processors.

Tooling: UltraArc includes a tooling creation and programming module that allows for rapid design and kinematic definition of tooling clamps and fixtures.
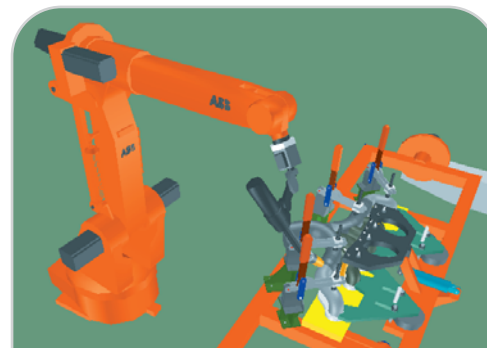
Eliminate Damage & Reduce Risk

UltraArc's standard collision detection functionality allows the user to verify collision-free trajectories. The user can define

groups (collision/near-miss queues) of objects to check for collisions and ensure safe robot trajectories. The user can then analyze robot placement, motion and cycle time to determine the optimal workcell configuration.

Dynamic Cabling

Avoid interferences and entanglements by accurately simulating cable motions. By using single button functions, wire feeders, cables, hoses, and springs can be created or modified. Then, the simulation can verify the capabilities of a fully "dressed" robot. Easily change cable and spring parameters to test extremes of flexibility and rigidity, validating even the tightest conditions.

Rapid Modeling

UltraArc includes the most comprehensive library of arc welding robot models and weld guns available; including the latest robots from ABB, Fanuc, and Motoman. Workcells are easily developed using built-in libraries of robots, standard torches, positioners, gantries, and related equipment. A Visual File Interface system simplifies component selection.
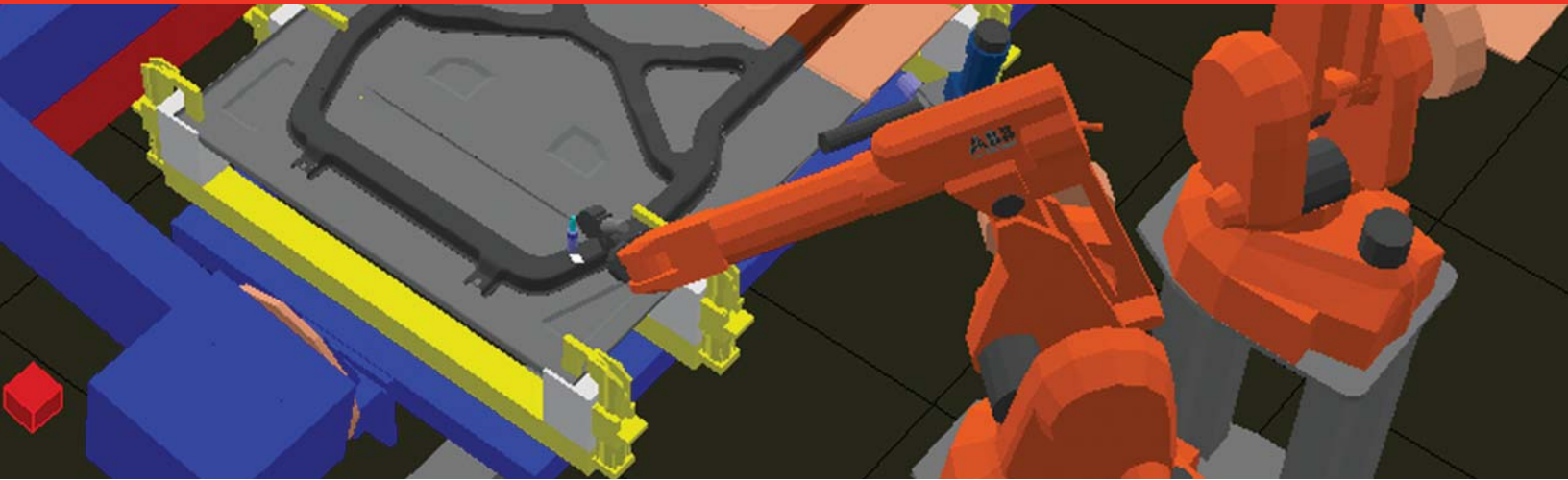
Nonstandard workcell components, such as custom fixtures and positioners can be quickly created in the built-in CAD package, or by importing CAD files via IGES, DXF, and direct translators.

Analyze Real Time Performance

Simulation information can be displayed and charted. Use the RRS (Realistic Robot Simulation) option to obtain extremely accurate cycle time predictions using native robot controller algorithms.

Cell Layout and Robot Path Generation

Use UltraArc's built-in tools to automatically place robots in optimum locations to minimize cycle time. Robot paths can be automatically generated using one of the many path creation and optimization functions including:

- *Importing existing weld paths from CAD systems or from production robots.*
- *Creating complex multi-joint weld paths (including approach, departure, via, flare, weld, safe, and search points) with as few as two mouse button clicks.*

Automatic robot auxiliary axes position programming is supported along with support for robot controller specific multipass procedures. Weld engineers can control user access to key welding parameters during path creation thus ensuring conformance to weld procedure specifications (WPS). Path modification functions restrict modification of certain operations ensuring WPS conformance as well as conformance to robot controller sensor procedures.

Graphical Programming

Create complex simulation programs using UltraSpot's simple graphical programming interface. Use one interface to program an entire simulation, including multiple robots, fixtures and material handling devices. UltraSpot's teach pendant interface offers an alternative programming interface for those more comfortable using robot teach pendants.

Weld Detail Libraries

Libraries of weld details containing pre-programmed weld positions, sensor points, and via points can be created. Or, choose from a library of details provided with the software. Parametric path programming tools allow for quick and easy repositioning of paths throughout the workcell. Track and/or gantry axes values are automatically recomputed based on new path position. Robot programs can be automatically generated from information contained in weld details. Robot controller-specific weld process information (seam tracking, seam searching, speeds, currents, voltages) is also supported.

Reduce SetupTime with Libraries
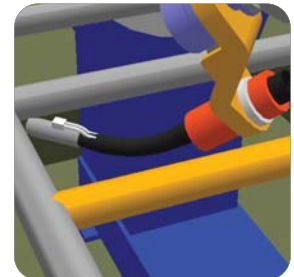
Quickly setup Robotic workcells using UltraArc built-in libraries, which include all the latest robots and weldguns from various manufacturers.

User defined weld detail libraries also help speed up the setup process.

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ULTRA_{ARC}®

PLM

Product

Process

Resource

UltraArc & the Manufacturing Hub

DELMIA's entire solution portfolio work on top a unique data model called the Manufacturing Hub, which allow manufacturers to store, manage and reuse all product, process, and resource information required throughout the product lifecycle.

The Manufacturing Hub is part of a collaborative, PPR data system that supports Dassault Systemes' Product Lifecycle Management solution. This PPR data system ensures the seamless integration between CATIA, ENOVIA, SMARTEAM and DELMIA. CATIA provides the product design solution; DELMIA provides the manufacturing engineering solution; and ENOVIA & SMARTEAM provide the lifecycle applications and decision support tools.

With DELMIA digital manufacturing solutions, companies have the power to capture, manage and share their best practices and ensure everyone has access to the right information, at the right time.

The DELMIA Digital Manufacturing Solution

DELMIA's portfolio of digital manufacturing solutions are categorized in three distinct domain suites, based on how the impact the flow of the manufacturing process. Each domain employs a set of tools that steps through the entire manufacturing process from concept to implementation.

Process Planning

Provides a comprehensive process and resource planning support environment. The resulting process diagrams can provide a clear overview of the sequences and links between processes and resources early in product design conception.

- *Layout Planning*
- *Time Measurement*
- *Process & Resource Planning*
- *Product Evaluation*
- *Cost Analysis*
- *Line Balancing*

Process Detailing & Validation

Employs the structure and diagrams of the Process Planning solutions into the application specific disciplines of manufacturing. Verify process methodologies with actual product geometry and define processes to a greater level of detail within a 3D environment.

- *Manufacturing and Maintenance*
- *Assembly Sequences*
- *Factory/Cell Layouts*
- *Machining Operations*
- *Workforce Performance and Interactivity*
- *Shop Floor Instructions*

Resource Modeling & Simulation

Provides a comprehensive process and resource planning support environment. The resulting process diagrams can provide a clear overview of the sequences and links between processes and resources early in product design conception.

- *Factory Flow Simulations*
- *Robotic Workcell Setup and OLP*
- *NC Machining*
- *Virtual Reality Scenarios*
- *Ergonomic Analysis*
- *Inspection*

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