

# ADVANCED ENGINEERING

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Genesis' Advanced Engineering group utilizes Delmia V5 and FANUC's WeldPRO robot simulation software to visualize and optimize the manufacturing environment. These software tools allow customers to stay involved and informed throughout the Concept, Design, Build, and Application Process. Our customers see benefits through shortened product launches, overall cost savings and a higher quality solution.

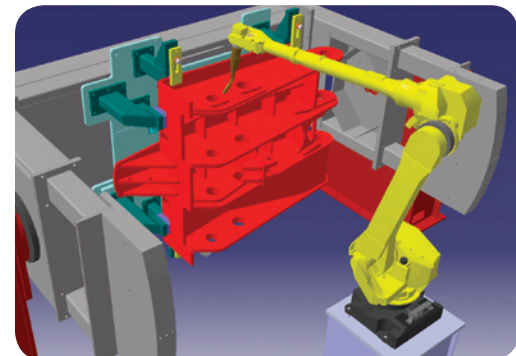
Genesis achieved success in utilizing the software tools on five very unique solutions to manufacture mining equipment.

### PROOF OF CONCEPT

With Delmia V5, this 1st time customer and 1st time robot user, had a 3D visualization of the proposed solution. This allowed concept refinements to best match floor space constraints, eliminate potential material flow issues and optimize production throughput. To understand cycle times and production capabilities, the customer was able to see the system run production through cycle simulation video capabilities.

#### Project Benefits:

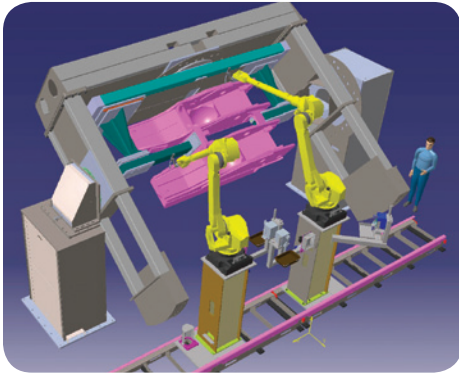
- **Quickly obtained a high level of customer confidence with solution**
  - Created multiple "What-If" scenarios to evaluate
  - Changed concepts real-time during web meetings
  - Five week duration from initial meeting to issue of PO
- Optimized weld torch angles and access
- Used customer plant layout drawing in concept solution
- Optimized throughput thru cycle time reduction & balancing



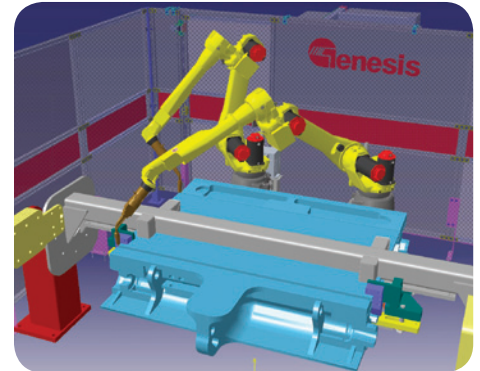
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## PROOF OF DESIGN

Viewing the solution in Delmia V5 with interactive web meetings, the customer was able to quickly and confidently verify our design solution to meet the challenging needs of the project. By utilizing simulation software throughout the design phase, costly design errors were avoided.



Delmia V5 allows precision robot placement to maximize robot reach with 3-D verification of all potential obstacles.



## PROOF OF PROCESS

Utilizing WeldPRO, FANUC's offline programming and simulation software, the customer received a 3D visualization of the proposed weld process. This created opportunities for multi-robot cycle time balancing, verification of tool access and earlier definition of the weld sequence. These activities were done simultaneously with the machine build to reduce tight project schedules and deliver the final solution earlier for a quicker product launch.

### Project Benefits/Outcomes:

- **Validate multi-pass welding sequence and stages**
- **Balanced and optimized robot cycle times ranging from 2-40 hours**
- **Calibration tools provide accurate virtual to real world hand-offs**
- **Reduced travel costs**
- **Reduced project launch by 10 weeks**
- **Customized WeldPRO training course created**

