ROVISYS®
Automation & Information Solutions

CASE STUDY

Growing the Future:
How RoviSys Built an MES for a Factory Unlike Any Other

A pioneering biomaterials manufacturer was preparing to open the world's largest facility dedicated to growing a next-generation, non-animal luxury material cultivated from mushrooms. There was no industry template, no comparable factory to benchmark, and a product that behaved nothing like the discrete or batch processes most manufacturing execution systems are built to handle.

The company needed more than an integrator. They needed a partner willing to design alongside them to build the digital backbone for a process that was still being discovered.

The Challenge

MES for a Living Product

Most MES implementations start with a well-understood process. This one started with biology.

The facility grows its proprietary biomaterial in trays across a 40–50 day incubation cycle. Hundreds of lots progress simultaneously, each requiring specific operator interventions including colonizing, flipping, tending, adding composite layers on precise days. Tens of thousands of serialized, reusable trays move through an automated storage and retrieval system (ASRS) and a fleet of autonomous mobile robots (AMRs). A delay in one lot can cascade into downstream bottlenecks across the entire operation.

In most plants, the control system is the critical path. Here, the MES had to become the center of gravity, orchestrating activity across every layer of the operation, from scheduling and robotics to operator work direction and contamination response.

Because the biology was still being refined as the facility came online, the system needed to be designed for a process that would continue to change.

Our Role

A Partner for Uncharted Territory

RoviSys engagement began well before implementation. Teams of MES experts conducted on-site design consultations and facilitated a series of working sessions with operations and engineering teams, working to translate an undefined biological process into structured, documentable requirements. This kind of deep pre-implementation consulting set the project up for success.

Three qualities defined the partnership:

Tolerance for uncertainty. The customer didn't have a locked-down process to hand over. RoviSys worked iteratively, building shared understanding through multiple rounds of business requirements, user requirements, and process flow documentation. The team designed for what was known while leaving room for what wasn't.

Disciplined platform use. As a Parsec Strategic Partner, RoviSys brought deep expertise in TrakSYS, Parsec's MES platform. Rather than resorting to custom development, the team engineered creative architectural solutions.

Coordinated delivery at scale. RoviSys mobilized resources across multiple offices and practice areas, unified under a single project lead. Teams remained on-site during commissioning as the facility scaled, troubleshooting and extending the system as the process matured.

The Solution

Four Pillars of a First-of-Its-Kind MES

RoviSys implemented Parsec TrakSYS as the operational backbone of the facility. The architecture addressed four interlocking challenges unique to biological manufacturing at scale.

Capacity-Aware Scheduling
A master schedule defined the ideal sequence of interventions for each production lot. Individual instances were generated for every active lot, allowing operators to delay, advance, or skip actions for a specific lot without altering the master plan. Every change was validated against daily capacity limits preventing operators from inadvertently overloading future shifts.

Concurrent Long-Duration Job Management
Traditional MES architectures handle discrete, short-cycle jobs. This facility demanded something fundamentally different: hundreds of lots progressing through parallel, multi-week timelines simultaneously. RoviSys engineered a pipeline-style production model within the TrakSYS native framework with a combination of custom code and out-of-the-box features.

Full Robotics and ASRS Integration
The MES connected to every piece of equipment in the facility, including the ASRS and AMR fleet. When an operator needed to act on a specific tray, the system knew exactly where it was, what state it was in, and what needed to happen next. Tray identity, pod location, lot lineage, and lifecycle stage were maintained in real time across tens of thousands of serialized assets.

Actionable Operator Guidance
Because the biology was still being understood, the customer relied on the MES not just to track production but to direct it. The system told operators which trays to pull, what interventions to perform, and in what order. Weeks of scheduling became a manageable daily work queue.

The Results

Building the Ship While Sailing It

Over a 12-month engagement, RoviSys developed and delivered the solution while the facility progressed toward production targets. The system didn't just automate what existed. It revealed what was possible. Additionally, the customer discovered capabilities within the Parsec TrakSYS platform they didn't realize were possible during the pilot phase.

Full Tray Traceability — Tens of thousands of trays tracked across entire lifecycle: pod location, lot assignment, intervention history.

Closed-Loop Robotics — The MES orchestrated ASRS and AMR movement, eliminating manual tray coordination.

Daily Work Direction — Operators received clear, prioritized task queues each day.

Contamination Visibility — The system surfaced data to identify and isolate infection zones, critical in a facility with extreme sterility requirements.

Capital Decision Support — By clarifying what the MES was and wasn't using, the customer avoided prematurely activating capital.