



**MECART**  
CLEANROOMS

# MODULAR CLEANROOM MANUFACTURER

An efficient modular system that accelerates the development and commercialization of innovative, life-changing technological products and therapies.  
With you, at every step, on your journey for a better tomorrow.

KEY TOPICS

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YOUR SOLUTION TO SUCCESSFULLY DELIVER LIFE-CHANGING PRODUCTS

With 50 years of expertise in mastering controlled environments, MECART stands as a distinguished North American manufacturer specializing in the design, construction, and global installation of premium cleanrooms.

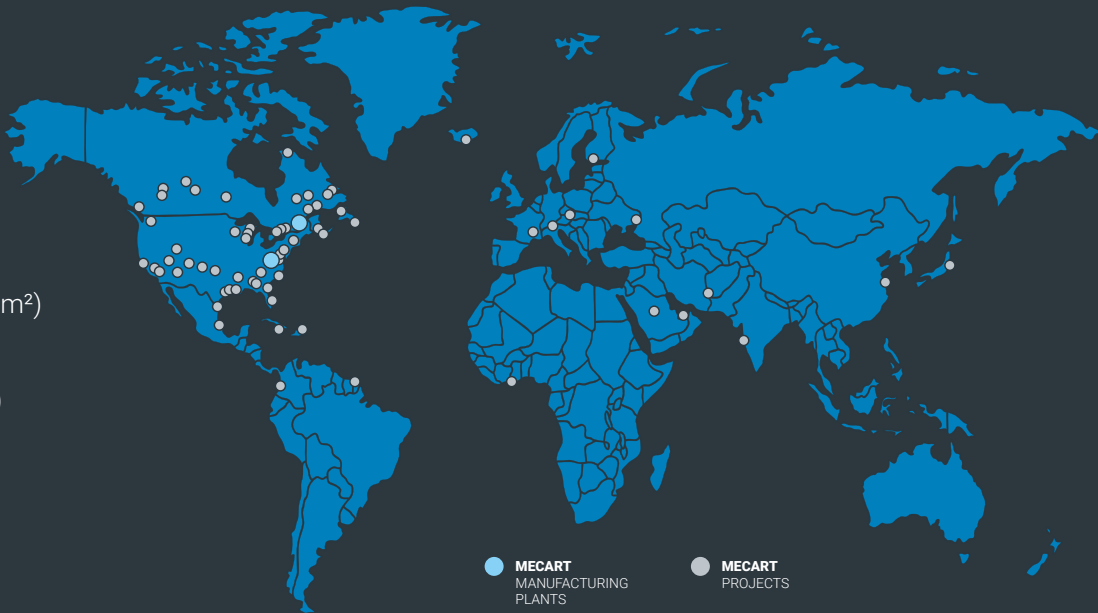
Our company provides flexible solutions through our comprehensive in-house engineering, design, and manufacturing capabilities, all executed in accordance with a sophisticated Quality Assurance system certified under ISO 9001. MECART manages high demand and meets strict delivery timelines through its manufacturing capabilities in both Canada and the United States.

MECART is committed to delivering customers premium cleanrooms with competitive pricing, on-time deliveries, and exceptional customer service. Our goal is to help our customers swiftly bring life-changing medications and technologies to market.

MECART HIGHLIGHTS

- Over **4,000 projects** completed worldwide
- **150+ employees**
- Canada: **32,500 sqft** (3,020 m²) manufacturing plant
- USA: **31,500 sqft** (2,926 m²) manufacturing plant
- **ISO 9001** Certified System

Learn more on our website:  
[mecart-cleanrooms.com](https://mecart-cleanrooms.com)



## INNOVATIVE IDEAS FOR COMPLEX OPERATIONS & REGULATIONS

### PROVEN TRACK RECORD

With hundreds of completed cleanroom projects across the globe, MECART boasts an extensive portfolio and a wealth of expertise spanning three decades in the field of designing, manufacturing, and delivering cleanrooms.



### IN-HOUSE SPECIALISTS

Our team of highly skilled professionals, including engineers, HVAC specialists, architects, technicians, and installation experts, will provide comprehensive guidance and support throughout every stage of your project, ensuring successful completion.

### GUARANTEED COMPLIANCE & PERFORMANCE

Our approach and system guarantee the compliance and performance of every cleanroom we manufacture. At MECART, our top priority is to deliver your project on schedule and meet your performance requirements. Our integrated approach allows us to maintain complete control over every step of the production process, resulting in a high level of quality, consistency, and precise delivery timelines.

- Guaranteed compliance
- Guaranteed performance (ISO, GMP, FDA, USP, etc.)
- Guaranteed quality
- Guaranteed on-time shipping and delivery
- Guaranteed price



*"I feel a great sense of ownership from the MECART's project managers, so much that sometimes they feel like part of our team...it's clear that they want us to succeed, and that means a lot to me."*

- Thomas Hansen, Vice President of Northern RNA







## UNIQUE PRODUCT FEATURES

### SELF SUPPORTIVE CLEANROOM STRUCTURE

The cleanroom system we offer is fully self-supported, eliminating the need for any rods or anchors connected to the host building.

Its construction is entirely independent of the main building's roof structure and relies on the assembly of our proprietary MECART panels and floor moldings. Each wall panel can support up to 3,000 lbs of compression force.



### WALKABLE CEILINGS

Once assembled, MECART's self-supportive cleanroom construction provides a fully walkable ceiling, offering easy maintenance access for your crew.

This feature removes the need for costly and obstructive mezzanine or catwalks, while simplifying future service needs.



### CUSTOM DESIGN & MANUFACTURING

Our cleanrooms are tailored to meet your unique specifications, guaranteeing a seamless integration with your environment and meeting all of your specific requirements.

**We focus on providing the perfect fit for you without upselling.**



## MECART CLEANROOM WALL PANELS

MECART cleanroom wall panels are built using two strong 16 gauge galvanized steel panels sandwiched to create a 4" heavy-duty panel, providing ample space for integrating mechanical components, electrical outlets, and all necessary utilities within them. 6" and 8" panels with integrated low-wall air returns are also available. The panels are custom-made, pre-engineered, and prefabricated to make sure they fit perfectly together, to provide a quick and smooth install of the cleanroom on-site.

### WALL-TO-CEILING COVING

Coved corners are used for hard-to-clean right angles on wall-to-ceiling (and wall-to-wall) joints inside the cleanroom. These are generally required where aseptic operations are being conducted and in more stringent classes such as ISO 5, ISO 6 and GMP.

### ADVANTAGES

- Assembly is done with **minimal disruptions** as no cutting and fitting is required
- Enables easy **future cleanroom expansions**



## SELF-SUPPORTIVE CLEANROOMS

MECART cleanrooms are constructed using self-supporting panels, which results in a completely independent structure. Our freestanding cleanroom system functions as a room within a room - completely detached from the main building structure.

### ADVANTAGES

- **Potential savings of \$50,000 to \$250,000** if your roof requires modifications
- **No permanent attachments**
- **No internal columns** (or very minimal)
- Zero attachment means more **future flexibility and adaptability** to process/regulation changes or expansions





## WALKABLE CEILING SYSTEM

When the self-supportive walls are securely anchored, the ceiling panels can be assembled. Once the panels are all interconnected together, the ceiling can bear significant weights, making it suitable for walking on and supporting the installation of various equipment, such as the HVAC system, atop the cleanroom.

### ADVANTAGES

- MECART's grid-free ceilings offer a **seamless and flush installation**
- No costly mezzanine or catwalks
- Allows **easy access to the cleanroom's** mechanical, electrical, and HVAC systems
- **Can support heavy loads and equipments (HVAC)**
- **Designed without tiles**, creating a smooth and easy-to-clean surface

### PRECONFIGURED UTILITIES

MECART ceiling panels come preconfigured with integrated filtration, lighting and ready for sprinkler head installation. Maintenance tasks, such as servicing lights and cleaning filters, can be conveniently performed from within the cleanroom or optionally from above. The panels offer extensive customization and integration options such as: Lighting, HEPA/ULPA filters, strobe/alarm system, cameras, WIFI network, speakers, gas penetration, other utilities.



## HVAC SYSTEM

### IDENTIFYING THE IDEAL HVAC SYSTEM TO MEET YOUR STANDARDS

With a dedicated team of HVAC specialists, we take pride in our capability to custom design and manufacture cleanroom HVAC systems, precisely tailored to meet the unique requirements of each client.

Whether you have a specific design in mind or prefer leveraging our expertise to execute your vision, our seamless collaboration is at your service. MECART goes beyond manufacturing by assuring the successful integration of your preferred supplier's HVAC system into our modular cleanroom system.

## MECART GUARANTEES HVAC PERFORMANCE AND EFFICIENCY

### CONTROL & MONITORING

To achieve and maintain your specific conditions inside the cleanroom, MECART will provide dedicated control panels and proprietary control sequences. We can provide BACnet communication, which easily integrates with most of the popular BMS systems and respects all your security needs. If ever needed, our support team can easily assist you remotely on any troubleshooting that you may require.

Our team of experts can provide an energy efficient solution, tailored to your needs, that complies with applicable code and regulations and meets 21 CFR requirements. By centralizing solutions with MECART, we can further increase measurement precision, establishing reliable communications between control and monitoring systems.





## CASE STUDY

### FREESTANDING CLEANROOM FOR MEDICAL INJECTION MOLDING



**LOCATION**  
New York, USA

**INDUSTRY**  
Medical Devices

**APPLICATION**  
Medical Injection Molding

**DIMENSIONS**  
18,000 sqft

**CLEANROOM CLASS**  
ISO 7, ISO 8 & GMP Grades

This Rochester-based 18,000 sqft cGMP-compliant cleanroom expansion project was built during the peak of the COVID pandemic. The Fortune 100 company manufactures plastic components for vaccine manufacturing.

#### PROJECT DESCRIPTION

The cleanroom is divided into 5 rooms, including a molding room, quality assurance (QA) lab, gowning room, and multiple material airlocks (MAL) and personnel airlocks (PAL). All rooms have elevated airflow to support GMP requirements for manufacturing medical devices.

The cleanroom is entirely independent from the existing facility, and is self-supportive with an entirely freestanding structure. No connections were made to the existing building's walls or ceilings.



#### A MOLDING ROOM FOR MEDICAL-GRADE PLASTIC COMPONENTS

Medical-grade plastic components are used in vaccine production. This client uses a dedicated molding room with 22 automated machines to inject plastic into different molds to supply a range of diverse laboratory plastic components.

The plastic pieces manufactured in the cleanroom facility will be used in the research and development of vaccines, manufacturing vaccines, and diagnostic testing kits for various infectious diseases.

*"Thermo Fisher Scientific would like to recognize MECART for outstanding team performance resulting in the flawless execution and early delivery of the first Matrix 2-Shot closure mold. Your efforts enabled our company to successfully expand the capacity of our Laboratory Plastics Essentials business and make a direct impact in the fight to end a global pandemic."*

- Thermo Fisher Scientific

**CASE STUDY**  
**A VACCINE MANUFACTURING FACILITY BUILT IN UNDER 5 MONTHS**



**LOCATION**  
Montreal, Canada

**INDUSTRY**  
Pharma / Biotech

**APPLICATION**  
Vaccine Production and Biomanufacturing

**DIMENSIONS**  
14,000 sqft

**CLEANROOM CLASS**  
GMP (Grade B, C & D)

The new GMP-certified Biologics Manufacturing Centre supports the manufacturing of vaccine candidates and/or biologics in response to the current and future pandemics. Both Phase 1 and Phase 2 were awarded to MECART. Phase 1-a 14,000 sqft cleanroom, was completed in the summer of 2021 and Phase 2- a 10,000 sqft cleanroom, will be completed in the fall of 2022.

This 14,000-square-foot cleanroom (phase 1) was delivered in less than 5 months. The entire biomanufacturing facility was completed only 10 months after breaking ground.

Multiple GMP Class B, C, and D cleanrooms in a biologics manufacturing & vaccine facility. The cleanroom suite includes a media preparation room, a packaging room, two subculture rooms, and a buffer preparation room. To accommodate equipment, the main production room includes a dual level ceiling, from 10 feet to 14 feet high.



**MODULAR CLEANROOM: A FASTER SOLUTION**

Modular panels are manufactured off-site simultaneously as the conventional (stick-built) construction breaks ground, allowing projects to be completed 30 to 50 percent faster than traditional construction alone.



*"Modular was the better choice for a faster completion. It was 100% exactly what we expected! MECART really delivered the product that was intended."*

- NRC-CNRC



CASE STUDY  
CLEANROOM FOR SEMICONDUCTOR MANUFACTURING AND R&D ACTIVITIES



Arizona is emerging as a significant hub for the semiconductor industry. MECART successfully provided a 10,000 sqft cleanroom to our customer that was expanding in this region.

The Class 10,000/ISO 7 cleanroom is dedicated to supporting process development (R&D) and microdevice manufacturing activities.

THE SEMICONDUCTOR RESEARCH & DEVELOPMENT CLEANROOM

MECART created a 3,700 sqft custom cleanroom, responding to the customer’s request for a dual-purpose space, catering to both process development and a sophisticated showroom.

MECART tackled this challenge by designing one of the walls to feature an extensive array of large windows, stretching across its entire length.

This strategic design allows clients and potential investors to observe the R&D process firsthand, enhancing transparency and engagement – all while never having to enter the cleanroom and abide by complex gowning procedures.



THE MICRODEVICES CLEANROOM & ISO 8 MAINTENANCE CORRIDOR

The manufacturing cleanroom, the facility’s largest at over 4,500 sqft, features a lowered ceiling by 2 feet, reducing both operational and initial construction expenses.

The maintenance corridor serves as a shared access point for the two cleanroom environments. Custom openings in the adjoining wall panels facilitate equipment feeds (mechanical, electrical and plumbing), streamlining maintenance tasks without disrupting cleanroom operations.

KEY FEATURES

- Custom chilled water HVAC system with cost-saving night mode
- **Dual-height ceilings** (11.5 ft: R&D cleanroom, 9.5 ft: manufacturing cleanroom)
- **Custom-made oversized doors** for frequent equipment replacement
- Ballroom-inspired design
- **Raised floor with dual-height air returns**
- Self-supporting modular cleanroom structure

## CASE STUDY

### CGMP 503B COMPOUNDING CLEANROOMS



**LOCATION**  
Columbus, Ohio

**INDUSTRY**  
Compounding

**APPLICATION**  
503B Sterile Injectables  
Manufacturing

**DIMENSIONS**  
2,775 sqft

**CLEANROOM CLASS**  
ISO 7 & ISO 8  
USP 797/800



#### FREESTANDING CLEANROOM FOR 503B COMPOUNDING PHARMACY

STAQ Pharma, a 503B pharmaceutical compounding company, partnered with MECART to supply them with USP 797 & USP 800 cleanrooms in response to the US drug shortage crisis.

The cleanroom is set up at their new operating facility in Columbus, Ohio, where they focus on manufacturing sterile injectables. The 2,774 sqft cleanroom is divided into 4 rooms - 2 compounding suites and 2 NPR laboratories.

#### OPTING FOR MECART'S MODULAR CLEANROOM SYSTEM TO ADDRESS ARCHITECTURAL CHALLENGES

Based on a thorough examination of the building's structure, it was determined that the roof structure was unable to bear any additional weight, making it unsuitable for any attachments.

STAQ Pharma sought a cleanroom that would function as a self-contained structure, a box within a box. MECART's self-supporting cleanroom system proved to be the ideal solution.



The walkable ceiling, with its easy maintenance access and capacity to support utilities and HVAC, the use of high-quality materials, and the flush finishes that meet cGMP compliance standards also contributed to MECART being the ideal partner for their cleanroom needs.



*"The whole MECART team was really committed to collaborating with us, working as a team on the whole project, and that showed throughout the entire process. We had a great experience with the project team, and with the installers. It was really top quality and professional."*

- Jon Hicks, Director of Pharmacy at STAQ Pharma



## CLEANROOM DOOR

MECART offers several cleanroom door and window options. MECART-made cleanroom doors can be configured as single or double swing doors (manual or motorized operation) and can be entirely customized. All doors are easy to clean with smooth surfaces as well as corrosion resistant panels.



### ERGONOMIC HANDLES

- Compliant material to meet your cleaning needs
- 9 inch C-shape pull handle on the outside with push plate on the inside
- Custom handles

### OTHER OPTIONS

- Stainless steel push plates
- Stainless steel kick plates
- Automated openers (motorized operators)
- Interlocks
- Touch free
- Automatic drop down door seal
- Empty preparations to integrate additional security features

### WINDOW DESIGN (DOUBLE GLAZED, TEMPERED GLASS)

- Rectangular design with right angles (16" x 42" or 24" x 60")
- Custom-designed window

### FULLY FLUSH WINDOW

Our recessed window construction allows for each glass to sit fully flush with the wall. The absence of edges makes them easy to clean since there are no corners or trims to collect dust particles and micro-organisms, perfect for GMP applications.



## POPULAR OPTIONS

- 1 Full Flush or Semi-Flush Lighting System with Room Access
  - 2 Wall-to-Ceiling Coving
  - 3 Interlocked Doors with Touch free / Wave-to-Open Control
  - 4 Pass-Through
  - 5 Wall-to-Wall Coving
  - 6 Hands-free Stainless Sink
  - 7 Fully Integrated Air Return
  - 8 Pharma-Grade Vinyl Floor or Cleanroom-Grade Epoxy with Floor-to-Wall Coving
  - 9 Digital Pressure Gauges
  - 10 Dual Height Ceiling To Accommodate Equipment
  - 11 Miscellaneous device integration (Clocks, Operation Monitor, Fire Cabinets, etc.)
- + Additional Options**
- Air Shower
  - Acoustic Insulation
  - Eyewash Station
  - Bumpers & Corner Guards



DATA SHEET - PANEL

MATERIAL

16-Gauge galvanized steel (2.5mm), satin finish

PAINT - COATING

Powder-coated paint  
Hardness - 2H (highly scratch resistant)  
Adherence - 4B-5B

SURFACE FINISH

Gloss, 80 ±5% at a 60° angle

HIGH CHEMICAL RESISTANCE

UV  
Alcohol Isopropyl (IPA)  
Coverage 256 Pur (Steris)  
Ethanol  
Hydrogen Peroxide, 3 to 20%

STRUCTURE

Added as needed within our walls and ceiling panels to allow for spans of up to 45’ without additional columns.

STANDARD CORE

Meets the requirements for Class1/A when tested per ASTM E2768 and ASTM E84 (tunnel testing) for flame spread and smoke development measurements.

- FSI Flame spread index – 0
- SDI Smoke development index – 50
- Limited combustible NFPA 259 ≤ 3,500Btu/lb

NOISE REDUCTION

Standard sound transmission class: STC-35

DIMENSIONS

4” thick, ±0.0625” on linear DIM (length and width), allowable surface flatness: 

0.500

COLOR

MECART Ultra White (other colors optional)

MECHANICAL CAPACITY

3,000 lbs of compression resistance per panel  
Walkable ceiling; 20 lbs/square foot (standard)

HYPO-CHLOR, 0.25 to 5.25%  
Quaternary ammonium  
disinfectant  
Sporklenz disinfectant (Steris)  
Vesta Syde Pur (Steris)

PREMIUM CORE - FM APPROVED  
PANEL (OPTIONAL)

MECART panels meet FM4880 and FM4882 for potential insurance savings. Class 1 interior wall and ceiling materials or systems for smoke sensitive cleanroom occupancies.

- Inert face with non-combustible core

THERMAL RESISTANCE

Standard insulation value: R-15.5

DATA SHEET - CLEANWELD  
RIGID, RELIABLE BOND AND SEAL

To bond and seal MECART walls and ceiling panels, accessories, moldings, and trims, we can use a two-component, ultra-white, high-strength structural blend. It has a rigid and durable high-gloss finish, has no odor even while curing, and is environmentally neutral after curing.

- **NON-FLAMMABLE** – does not require explosion-proof equipment
- **ENVIRONMENTALLY RECOMMENDED** – no VOC content; does not contain ozone depleting chemicals
- **ENVIRONMENTALLY/UV RESISTANT** – resists weathering, humidity, and salt spray; bright white color that will not yellow
- **CHEMICALLY RESISTANT** – solvent resistant when cured. Painting and most cleaning processes do not affect bond strength
- **NON-SAG** – full-bodied formula holds bead pattern on horizontal surfaces, allowing for greater processing flexibility; non-slumping
- **FAST CURE** – can be handled within 60 minutes, ideal for smaller bonding and sealing applications

TYPICAL PROPERTIES\* OF MIXED SOLUTION

	Part A and B
Mix Ratio by Volume, Resin to Curative 1:1 1:1	01:01
Viscosity, cP @ 77°F (25°C)	100%
Working Time, min @ 77°F (25°C)	45
Purge Time, min @ 77°F (25°C) 2 - 3 10 -15	10-15
Time to Handling Strength, hr @ 77°F (25°C)	5-6
Cured Elongation, %	166%

\* Data is typical and not to be used for specification purposes. Given a 1/2" (12.5 mm) diameter bead.

TYPICAL PROPERTIES\*

	Part A	Part B
Appearance	Translucent Paste	White Paste
Viscosity, cP @ 77°F (25°C)	40,000 -160,000	130,000 - 230,000
Density - lb/gal	9.64 -10.04	9.95 -10.25
Density - (kg/m3)	(1155 -1203)	(1192 -1228)
Flash Point (Closed Cup), °F (°C)	>200 (>93)	>200 (>93)

\* Data is typical and not to be used for specification purposes. Given a 1/2" (12.5 mm) diameter bead.

Application Surface Preparation	Surfaces should be free of grease, dirt and other contaminants. for optimum bond performance.
Mixing	Mix resin with the appropriate curative at a 1:1 ratio, by volume. Handheld cartridges will automatically dispense the correct volumetric ratio of each component.
Applying	Apply adhesive/sealant using handheld cartridges. Assemble parts within working time of the adhesive/sealant.
Curing	MECART’s adhesive/sealant will cure to full strength in 24 hours at room temperature, 77°F (25°C), or in 45 minutes at 140°F (60°C). Adhesive/sealant will cure to full strength in 48 hours at room temperature, 77°F (25°C), or in 45 minutes at 140°F (60°C).
Cleanup	Clean equipment and tools prior to the adhesive cure with organic solvents such as acetone or methyl ethyl ketone (MEK). Do not use alcohol. Once adhesive is cured, heat the adhesive to 300°F (149°C) or above to soften the dhesive. This allows the parts to be separated and the adhesive to be more easily removed. Some success may be achieved with commercial adhesive strippers.

1. Tests carried out according to ASTM D1308 2. Refer to MECART’s cleaning process for more detailed information



NOISE CONTROL

CLEANROOMS

STUDIOS



**MECART**

CONTROLLED ENVIRONMENTS

**Manufacturing Plant, USA**

208 Old Fork Shoals Rd,  
Greenville, SC, United States 29605

**Manufacturing Plant, Canada**

110, Rotterdam Street,  
St-Augustin-de-Desmaures, QC, Canada G3A 1T3

[mecart-cleanrooms.com](http://mecart-cleanrooms.com)