

CUSTOM MANUFACTURING OF OPERATOR INTERFACES

# Build-to-print manufacturing for high-reliability industrial HMIs

We transform technical specifications into complete HMI hardware, specializing in precision CNC machining, high-spec surface treatments, and the production of industrial screen-printed front panels.

With 50 years of manufacturing heritage, we ensure your blueprints translate into a dependable physical operator interface, built for long-term industrial use.



## Reliable manufacturing for demanding operational requirements

High-quality physical controls for environments where safety, intensive sanitation, or legacy system continuity are critical to production.



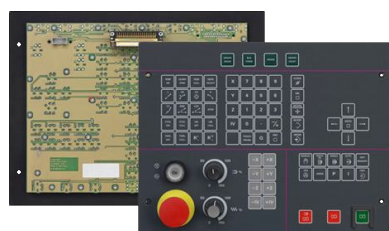
### Hazardous / Ex-ready

Ruggedized HMI panels and input modules for classified environments where sealing, material integrity, and CNC tolerances are mandatory.



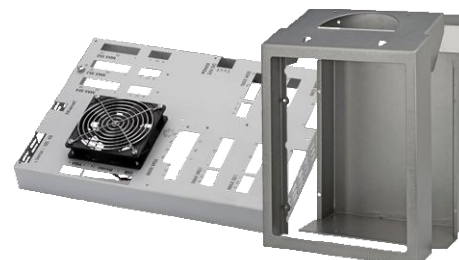
### Hygienic / Washdown

Operator interfaces engineered for high-pressure washdown and chemical resistance, ensuring uptime in sterile or wet production settings.



### Obsolescence / Retrofit

Drop-in replacements for discontinued legacy panels. We recreate the mechanical fit and tactile function to extend the lifecycle of your industrial assets.



### Custom Components

High-precision CNC machining and technical sub-assemblies produced to order, ensuring strict revision control and repeatable quality for industrial supply chains.

ABOUT VERMENTON

# Technical expertise for high-performance operator interfaces

Vermenton combines over 50 years of collective manufacturing expertise with a strict, execution-oriented approach.

We specialize in the contract manufacturing of robust HMIs where mechanical precision and supply stability are critical.



## Our Manufacturing Philosophy

We secure the supply chain for complex operator interfaces through strict process control and deep technical expertise.

Every project includes controlled manufacturing drawings, detailed surface specifications, and defined inspection points for error-free series production.

### The path to reproducible quality

#### Technical Review

Analysis of your CAD drawings to identify mechanical risks or sealing issues before production starts.

#### Manufacturing & Integration

Precision CNC manufacturing and sub-assembly – strictly validated against your target specifications.

#### Revision Locking

We «freeze» the validated process. This guarantees identical results for every repeat order.

### Industrial Standards

#### Responsiveness

RFQ processing within 48–72 hours, including technical clarifications.

#### Strict Revision Control

No unannounced changes. We control every drawing and every material source end-to-end.

#### High-Mix, Low-Volume

Specialized flexibility for small to medium series that large OEMs often cannot offer.

*“Our goal is to be the silent, reliable extension of your production line.”*

HAZARDOUS / EX-READY

# HMI manufacturing for explosive atmospheres and harsh environments

## MANUFACTURING DATA SHEET

This sheet summarizes the materials, high-durability finishes, and sealing features specifically engineered to support your Ex-ready assemblies and target protection requirements.

### CNC PRECISION MACHINING

High-tolerance CNC milling in Aluminium 6082-T6 and AISI 316L Stainless Steel to ensure repeatable, vacuum-tight sealing surfaces.

### SEALING INTERFACE INTEGRITY

Precision-machined gasket lands and mounting patterns designed to support strict IP65/67/69K and explosion-proof mechanical standards.

### TACTILE FEEDBACK ENGINEERING

Advanced switch integration ensuring precise tactile response, specifically optimized for safe operation with heavy industrial gloves.

### SURFACE & CHEMICAL RESISTANCE

Chemical-resistant polyesters and technical finishes (Anodizing, Bead Blasting, Brushing) for extended MTBF in corrosive atmospheres.

## TECHNICAL SPECIFICATIONS OVERVIEW

<b>Base Materials</b>	Aluminium 6082-T6, Stainless Steel 316L, Galvanized Steel, Industrial Polyesters.
<b>Machining Process</b>	Multi-axis CNC milling, high-precision drilling, and exact housing execution.
<b>Technical Finishes</b>	Natural/Color Anodizing, Bead Blasting, Brushing, and Industrial Screen Printing.
<b>Integrated Fasteners</b>	CD Welded studs, Precision PEM® stud insertion, and thermal bonding.
<b>Compliance</b>	Build-to-print execution supporting ATEX, Ex-Ready, and IP65/67/69K targets.

**Operational Note:** Our manufacturing workflow is optimized for 100% traceability and strict adherence to the critical tolerances defined in your technical documentation.

**Certification Disclaimer:** Vermenton manufactures hardware strictly to customer CAD/BOM and specifications. While we ensure the mechanical integrity required for protected systems, the final certification (ATEX/IECEX/UL, etc.) remains the responsibility of the product owner and the corresponding notified body process.

HYGIENIC / WASHDOWN

# Operator interfaces for high-pressure washdown and sterile environments

## MANUFACTURING DATA SHEET

Technical overview of materials, gap-free construction, and sealing solutions engineered for sterile environments and high-pressure cleaning cycles.

### GAP-FREE CNC DESIGN

Precision manufacturing focused on eliminating recesses and bacterial traps, supporting strict requirements for easy-to-clean and hygienic surfaces.

### WASH-DOWN INTERFACE INTEGRITY

Flush-surface designs and HMI assemblies built to withstand aggressive CIP (Clean-in-Place) agents and high-pressure water.

### SEALED TACTILE OPERATION

Integrated switching ensuring precise tactile response and sealing integrity, specifically optimized for longevity under rigorous high-cycle conditions.

### CHEMICAL-PROOF SURFACES

High-grade substrates and technical finishes (Brushed 316L, Polyesters) that withstand industrial disinfectants and UV exposure without degradation.

## TECHNICAL SPECIFICATIONS OVERVIEW

<b>Base Materials</b>	Stainless Steel 316L, Antimicrobial Polyesters, and FDA-compliant elastomers.
<b>Machining Process</b>	Surface-flush CNC milling, edge rounding, and high-precision drilling to eliminate debris accumulation.
<b>Technical Finishes</b>	Grain 240/320 Brushing, Electropolishing, and high-durability sub-surface screen printing.
<b>Integrated Fasteners</b>	Hygienic standoffs, CD Welded studs, and thermal bonding for IP69K sealing.
<b>Compliance</b>	Build-to-print execution supporting EHEDG, FDA, and IP69K target requirements.

**Operational Note:** Our workflow is optimized for 100% traceability and elimination of contamination risks through specialized materials and high-precision construction defined in your technical documentation.

**Certification Disclaimer:** Vermenton manufactures hardware strictly to customer CAD/BOM and specifications. While we ensure the mechanical integrity required for sterile systems, the final certification (EHEDG, 3-A, FDA, etc.) remains the responsibility of the product owner and the corresponding notified body process.

OBSOLESCENCE / RETROFIT

# Replacements and retrofit solutions for legacy operator panels

## MANUFACTURING DATA SHEET

Technical overview of reverse engineering capabilities, mechanical reconstruction, and technology upgrades for the restoration and lifecycle extension of discontinued HMI systems.

### MECHANICAL REVERSE ENGINEERING

Translation of physical legacy parts into precise CNC programming and manufacturing drawings to recreate exact footprints and mounting patterns when original plans are unavailable.

### HMI TECHNOLOGY MODERNIZATION

Replacement of failing legacy components with modern mechanical keys or updated membranes while maintaining the original industrial look, fit, and function.

### LEGACY INTERFACE RESTORATION

Precise reconstruction of graphic overlays and industrial screen printing to restore original aesthetics, legends, and readability of discontinued operator interfaces.

### OPERATIONAL LIFECYCLE EXTENSION

High-precision manufacturing of discontinued HMI units ensuring 100% mechanical compatibility and restoration of operational continuity without system disruption.

## TECHNICAL SPECIFICATIONS OVERVIEW

<b>Base Materials</b>	High-durability polyesters, Aluminum 6082-T6, Stainless Steel 316L, and modernized acrylics.
<b>Machining Process</b>	Reverse engineering, multi-axis CNC milling, and precision mechanical assembly.
<b>Technical Finishes</b>	Legacy-matched color palettes, technical screen printing, and chemical-resistant surface treatments.
<b>Integrated Fasteners</b>	Retrofit-compatible studs, custom mounting patterns, and high-bond structural adhesives.
<b>Compliance</b>	Build-to-print execution supporting mechanical parity with original OEM specifications and IP ratings.

**Operational Note:** Our workflow is optimized for 100% mechanical parity and the extension of system lifecycles through high-precision construction defined in reconstructed technical documentation.

**Certification Disclaimer:** Vermenton manufactures replacement hardware strictly according to provided samples or reconstructed CAD/BOM. While we ensure mechanical and functional parity, final system recertification remains the responsibility of the product owner and the corresponding notified body process.

CUSTOM COMPONENTS

# Build-to-print CNC component manufacturing for industrial interfaces

## MANUFACTURING DATA SHEET

Technical overview of manufacturing capabilities for high-precision mechanical components, industrial overlays, and sub-assemblies produced to customer CAD specifications.

### PRECISION CNC MACHINING

Tight-tolerance manufacturing of front plates and housings in various metals and technical polymers, focused on close tolerances and industrial finishes tailored to your specifications.

### INDUSTRIAL GRAPHIC OVERLAYS

Production of interface layers and protective overlays using high-durability screen printing for extreme resistance to chemicals, abrasion, and harsh environments.

### MECHANICAL SUB-ASSEMBLIES

Supply of install-ready components including integrated fasteners, gaskets, and mounting hardware, optimized for seamless integration into your production line.

### SCALABLE INDUSTRIAL QUALITY

Optimized manufacturing for prototypes and small-to-medium series, ensuring repeatable quality and strict revision control for a stable and reliable industrial supply chain.

## TECHNICAL SPECIFICATIONS OVERVIEW

<b>Base Materials</b>	Aluminium 6082-T6, Stainless Steel 316L, Technical Polymers, and Industrial Polyesters.
<b>Machining Process</b>	Multi-axis CNC milling, high-precision drilling, and exact housing execution to CAD specifications.
<b>Technical Finishes</b>	Anodizing (Type II/III), Bead Blasting, Brushing, and high-durability sub-surface screen printing.
<b>Integrated Fasteners</b>	CD Welded studs, Precision PEM® stud insertion, and high-performance sealing gaskets.
<b>Compliance</b>	Build-to-print execution supporting industrial standards, IP ratings, and material traceability (ROHS/REACH).

**Operational Note:** Our workflow is optimized for 100% traceability and strict adherence to the critical tolerances and revision control defined in your technical documentation.

**Certification Disclaimer:** Vermenton manufactures hardware strictly to customer CAD/BOM and specifications. While we ensure the mechanical integrity and material compliance of individual parts, final system-level certification remains the responsibility of the product owner.

## RFQ CHECKLIST

# RFQ Checklist

Use this checklist to gather all necessary technical data before submitting your request. Providing these details—via our online RFQ form or direct email—ensures a faster, technically validated quotation and engineering review.

### TARGET ENVIRONMENT

- IP Target:** Required rating (e.g., IP65/66/67) and installation details (mounting, gasket land).
- Chemicals & Cleaning:** Exposure to detergents, washdown pressure/temp, and frequency.
- Operating Conditions:** Temperature range, vibration/shock, and UV/outdoor exposure.
- Hazardous Areas:** Area classification and conformity route (ATEX/IECEX scope).

### MECHANICAL CONSTRAINTS

- Dimensions & Mounting:** Overall footprint, cut-outs, hole patterns, and available gasket area.
- Spatial Constraints:** Back-side clearance, connector locations, and cable routing.
- Optical Integration:** Window/display requirements, bezel sealing, and anti-glare needs.

### INTERFACE REQUIREMENTS

- HMI Layout:** Keypad configuration, legends, language, icons, and tactility expectations.
- Illumination:** Backlight requirements, indicator LEDs, and labeling strategy.
- Electrical Interface:** Connector types, pinout definitions, cable length, and grounding.

### SUPPLY & LIFECYCLE

- Volume Strategy:** Quantity range (prototype / pre-series / series) and reorder frequency.
- Timeline:** Required prototype date and series delivery window.
- Legacy & Retrofit:** Existing part numbers/photos and "must-match" dimensions.
- Revision Control:** Expectations for process locking and change management.

### SUBMISSION & CONTACT DETAILS

Ready to submit your drawings and specifications? Use any of the following channels:

- **Online Form:** [vermenton.com/rfq](https://vermenton.com/rfq) (Quick upload for CAD files)
- **Direct Email:** [info@vermenton.com](mailto:info@vermenton.com)
- **Technical Support:** (+34) 962 543 040