

# Guide to Custom Wire Harnesses with MarVac Assemblies

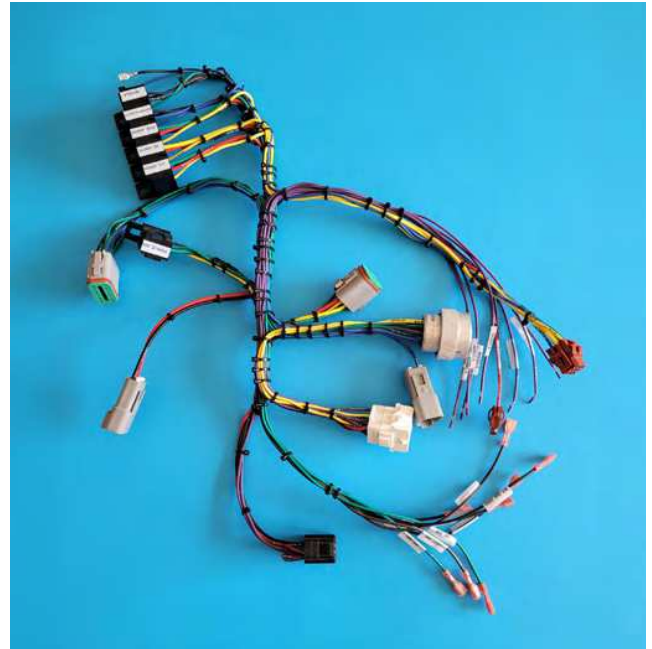
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MarVac Assemblies offers an extensive range of value-added services, including custom wire harness production, product modification, and inventory management. Wire harnesses from MarVac serve as a space-saving way to route cables and wires while also protecting them against harmful environmental conditions, such as friction and extreme temperatures. Our custom wire harness assemblies are a safer, more centralized alternative to running multiple cables in a parallel circuit.

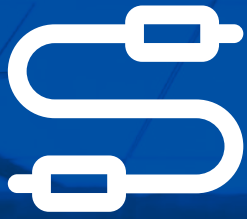
As the foundation of digital parts, wire harnesses are essential in many components. At MarVac, we create custom solutions for the military, off-road commercial vehicles, food and beverage, industrial, and other applications. In this eBook, we will explain how our custom wire harness production process works and what you can expect from each stage.



**Wire Harness and Cable Assembly**



**Wire Processing**



# Custom Wire Harness Manufacturing Process with MarVac

Wire harnesses support a diverse range of technologies and must be designed according to the needs of each application. Wires, connectors, and terminals can be configured in many possible ways, so MarVac can help you develop the safest, most durable solution while meeting cost and installation time requirements.

The process begins with developing several custom designs and prototypes prior to manufacturing. Prototyping can eliminate potential risks and narrow down the best possible components and materials for your application's needs. At MarVac, our engineering team takes the time to understand your project's needs and bill of materials (BOM). After reviewing this information, we make suggestions and provide you with a quote.

While we do not create wire harness designs, our knowledgeable team will evaluate your prints and help you find the most cost-effective source for your required components. Since we have numerous franchised lines, we can offer our customers lower-cost components to help minimize expenses. For example, we are franchised owners of the tooling to manufacture certain connectors. This allows us to make recommendations for components beyond what you are tooled for, such as particular die sets, applicators, and other equipment. This increased flexibility will ensure you get the best pricing and quality for your wire harness.

# MANUFACTURABILITY ASSESSMENT

After you've reviewed your quote, we move on to the manufacturability assessment. This involves a production part approval process (PPAP) and/or a first article inspection process to demonstrate repeatability and adherence to IPC/A620 standards. Our team tailors each custom wire harness project to your industry's requirements and regulations. We can manufacture the components you need according to your production schedule or stock for an inventory management program specific to your project.



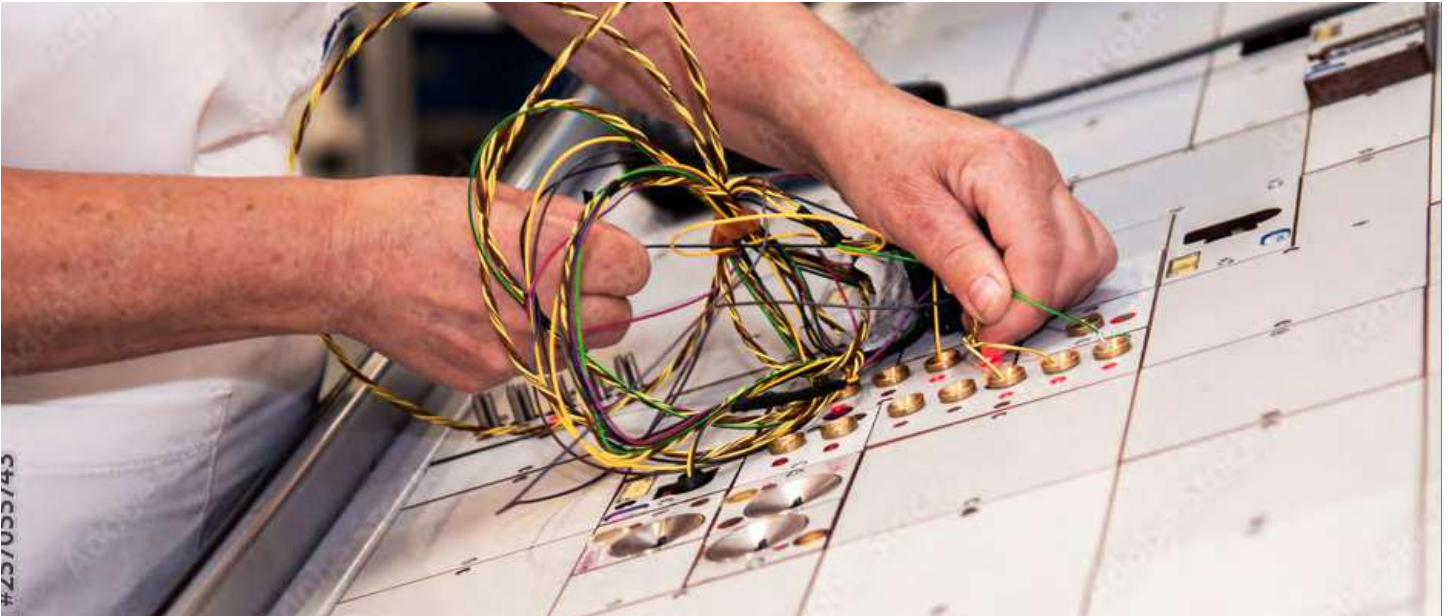
## Materials

Wire harnesses can be made from many materials, which are selected based on the demands of each application. For example, each wire must be protected with a carefully chosen sheath material that varies in thickness and flexibility. After understanding your application's needs, our team will help you select materials that meet your performance requirements.

As a high-mix, low-volume company, we work with an extensive variety of materials. Each option provides varying levels of UV resistance, chemical resistance, temperature protection, thermal insulation, and moisture resistance. Some of the most common sheath materials include:







## WIRE PROCESSING MATERIALS AND TECHNIQUES

Wire harnesses consist of two or more independent lead wire assemblies that must be carefully configured and bound together. Wire processing involves numerous techniques, such as cutting and stripping wires, crimping, twisting, and more. The types of wire we work with for this process include:



Automotive wire



Marine wire



Silicone



Hypalon



PVC



Teflon



Modular: phone, cat5, serial



Multi-conductor wire

Each wire harness is unique and may require various techniques to create the finished assembly. Some of the most common wire processing techniques we perform include:

- ✓ Cutting, stripping, or marking of 000-32 AWG wire
- ✓ Crimping: 000-28 AWG
- ✓ Wire twisting: 14-22 AWG
- ✓ Flat cable: Up to 64 conductors
- ✓ Cutting tubing or sleeving for PVC, shrink, fiberglass, PTFE, and corrugated loom

# HARNESS CAPABILITIES

Our team manufactures both single-lead and multi-conductor harnesses. Backed by decades of experience, we are equipped to handle even the most complex wire harness designs. Our capabilities include:

 Component preparation	 Electromechanical assembly
 Indicator light assembly	 Kitting and bagging
 Special packaging	 Soldering RoHs and non-RoHS
 Terminal block assembly and marking	 Twisted pairs
 Lead tinning	 Potting
 Ribbon cable assemblies	 Wire leads to component



# Needs for a Seamless Process

For your custom project to run as smoothly as possible, our team will need key information from you:

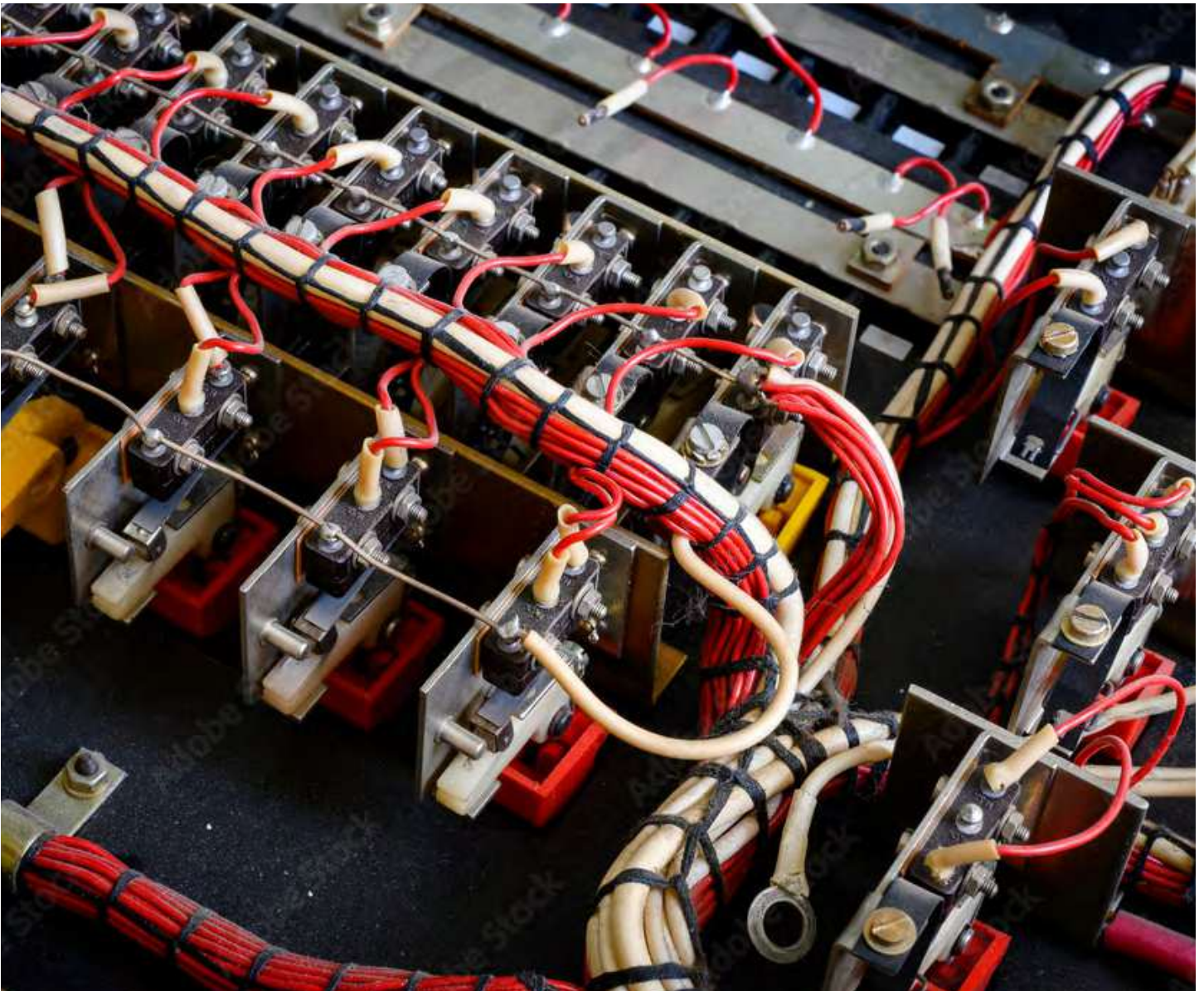
- Wire types or UL style
- A complete BOM with manufacturers' part numbers
- Dimensions, including tolerances (if tolerances are not provided, we use IPC/A620 Imperial English Tolerances)
- Any top-level assembly number certification, like UL CSA
- Any company or industry-specific workmanship standards
- Special packaging instructions
- Your expected time frame or production start time
- Your main priority for the project (price or lead time)
- Any specific testing procedures you require, beyond our standard continuity testing

MarVac performs thorough point-to-point continuity testing on each harness to confirm that every wire contact has been crimped properly. We ensure the integrity of each circuit and will also perform any other testing procedures you require.



# Our Promise to You

Each custom wire harness is carefully made according to your specifications and delivered in the way you request. We can accommodate virtually any packaging, labeling, and marking requirements. We always aim to minimize turnaround time, so after receiving the necessary documentation from you, our average time for the quoting process is two weeks. Production can last up to three weeks past the longest lead time component. However, we also offer several inventory management options to negate any lead time issues.







# Frequently Asked Questions

We receive many questions about our custom wire harness services. You can explore the most common inquiries we receive below and [reach out to our team](#) if you can't find the answer you're looking for. We're always happy to help.

## WHAT QUALITY STANDARDS DO YOU ADHERE TO?

Meeting demanding quality standards is important to us. We adhere to the following compliance standards:

- ✓ ISO 9001:2015
- ✓ ESD Safe
- ✓ RoHS Compliant Components and Soldering
- ✓ Hi-Pot Testing
- ✓ Continuity Testing
- ✓ WHMA/IPC A620 Certification
- ✓ UL Recognized
- ✓ In-Process and Final Inspection Team

## WHAT LEAD TIME CAN I EXPECT?

Since wire harnesses involve many components, lead times vary based on how thorough your documentation is, component sourcing, and other factors. In most cases, you can expect to receive your quote in two weeks. Production typically is completed three weeks after we've obtained all of the components needed for your harness.

# WHAT ARE YOUR WORKMANSHIP STANDARDS?

Workmanship standards are the criteria by which a product is made. We carefully inspect each wire contact to verify the integrity of the circuits in your wire harness. Each product we work on undergoes thorough inspections and testing to guarantee quality, reliability, and repeatability.



## MarVac Assemblies for Your Custom Wire Harness Needs

MarVac Assemblies has decades of experience building reliable custom wire harnesses for some of the most challenging industry needs. We can help you build a product able to endure even the most severe environmental conditions while meeting your budget and project timeline goals. Our team is UL-recognized, ISO 9001:2015 certified, and RoHS-compliant for components and soldering. To get your next project started, [contact us](#) or [request a quote](#) today.



# Begin Your Box Build, Mechanical Assembly, and Panel Assembly with MarVac Assemblies

Regardless of your box build or cable assembly needs, MarVac Assemblies has the expertise needed to deliver a high-quality finished product.

For more information about our specific box build and panel assembly capabilities, contact us or request a quote today. Our team is ready to discuss your particular project requirements and help you find the right solution.

[Contact](#)[Resources](#)

As an integral part of the Marsh Electronics formula, our Value Added Division known as MarVac Assemblies can provide a wide variety of assembly services, product modification options, and inventory management programs that can enhance quality, and reduce inventory liability. Marsh Electronics and MarVac Assemblies operate within a QPM and APQP Quality program and are driven to adding value to our customers. Contact a member of the MarVac Assemblies Sales Team and find out how our capabilities can add value to your business.

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