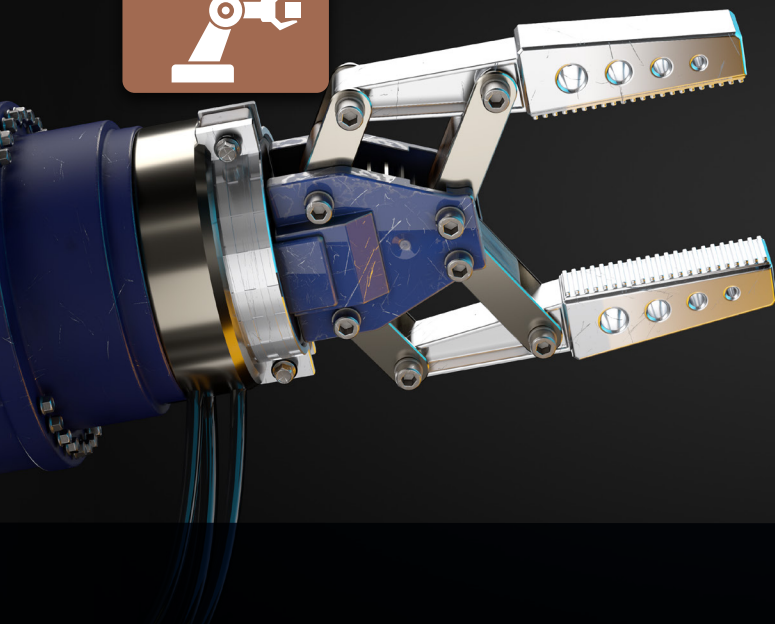




Whitepaper

Industrial



How to cut time to market with value added connector assembly

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Executive Summary

Manufacturers are facing increasing pressures to get their products to market faster. One way to save vital time is to work with a partner who can provide value added design and assembly services. Distributors such as TTI can provide the expertise and resources needed to accelerate these processes. In this whitepaper, we look at the example of connectors, to demonstrate the benefits that can be achieved: reducing risk and saving money, as well as minimizing time to market.



Time to market is an ever-increasing pressure for manufacturers. For example, in the automotive market, in a recent survey 56 percent of responders said their product development cycles had got shorter over the last five years¹. Other markets, such as consumer electronics, traditionally have much shorter development cycles still.

To design a product and bring it to market involves many steps, and engineers need to save time wherever they can. They also want to spend as much of their effort as possible on improving their product and building features to differentiate it – not on the essential, but perhaps less glamorous, parts of the design.

In this whitepaper we'll take one example, connectors, and look at how manufacturers can help reduce time to market with the help of their supply chain partners in connector selection and design.

Time-consuming processes

Selecting connectors can be time-consuming: searching for the right product, choosing the best connector and deciding on any associated cabling needed. Many hours or days can be wasted finding information and making decisions.

For many applications, there will be standards that need to be conformed to, which can add further complications. Connectors must comply with relevant specifications, which may vary from country to country.

Once all the design decisions have been taken, assembling connectors can add delays in production. Of course, connectors are not just one part – manufacturers must also handle the complexity of the multiple items involved, including shells, grommets, seals, heat shrink tubing and strain reliefs.

Every part, however small and insignificant, must be specified, ordered and kept in stock. As the proverb says, for the want of a nail, the rider was lost, and thus the kingdom fell. Similarly, engineers may find that for the want of a grommet, the product shipped late, and the order was lost.

Help from distributors

To overcome these issues, design engineers and procurement teams can turn to their supply chain for help. Franchised distributors can provide value added services that include design and assembly, thus helping to streamline processes, minimize problems and significantly cut time to market.

In theory, you might expect that connector vendors would be an equally valuable source of assistance. In practice, they are nowadays tending to focus more on their core products, rather than providing a design service or assistance in stock management. This means that customers are better placed going to a distributor for assistance.

Customers can also rely on distributors, such as TTI, to keep on top of developments in the market, and to be able to respond with expert advice. For example, in the automotive sector, there is a trend towards weight-saving in vehicles, which is pushing designers towards lighter aluminium wiring in place of copper, and smaller connectors².

At the same time, there are more and more electronics systems in a car, and electric vehicles are becoming increasingly popular, supporting a trend to add higher voltages as well as the conventional 12V systems. For OEMs dealing with these changes, help from a distributor can save them invaluable time in researching how to respond, and which connectors meet new system requirements.

Value added services

Let's look in a little more detail at how TTI helps its customers with value added services.

Firstly, TTI provides an expert design service, with the company's specialists on hand to help customers. TTI's specialists listen to the customer and their requirements, and can then suggest the best configuration parameters, as well as what connector construction is appropriate, be that metal or plastic.

By working with TTI, customers can take advantage of the company's long experience, to make sure they make good choices about suitable connectors and sub-assemblies. This approach is particularly advantageous for the industrial automation markets, as well as avionics and defense – TTI's assembly service conforms to relevant MIL-related qualifications, and the relevant manufacturers certify this every year.

To help designers meet their timescales, TTI can deliver assembled connectors quickly, with a 48-hour turnaround with no minimum order quantity (MOQ). Working with TTI also adds flexibility to the manufacturing process, and provides a good solution for small to mid-size requirements of up to 200 pieces, which can also be particularly helpful during the prototyping phase.

Moving to assembly

Once you're ready to move your design into production, TTI can help through each stage. Figure 1 shows some of the services that help make the assembly process fast and straightforward.

Figure 1: Flowchart of value added assembly services (source TTI)



Figure 2 shows TTI's services, listed for many of the major connector manufacturers. For qualified connector assembly, TTI's capabilities focus on a group of four core suppliers: Amphenol, Souriau, Smiths Interconnect and TE. As shown by Figure 2, you can see that other value added services are provided for a larger group of suppliers.

For example, TTI's facilities near Munich, Germany can provide assembly and kitting for the 38999 series I & III including Amphenol's VG series 96912, 95328 and 95234 circular connectors, as well as Souriau connectors to the EN 3645 qualification³. All products from both manufacturers are QPL-certified and can be produced, on request, within 48 hours.

These services include cutting and respooling for many different ranges of cable, wire and heat shrink tubing, all customized to your requirements. This helps avoid redundant inventory and minimize the storage needed, and can handle tricky challenges due to awkward sizes, weights or quantities.

Figure 2: TTI's value added services capabilities, by manufacturer (source TTI)

Value Added Services Capabilities	Picking	Amphenol	HellermannTyton	ITT Canon	Molex	Nexans	Panduit	Smiths Interconnect	Souriau	TE Connectivity
Qualified Connector Assembly										
Mil-Spec Circular Connectors		■							■	
Commercial Series Circular Connectors		■							■	
Mil-Spec Rectangular Connectors		■							■	■
Commercial Series Rectangular Connectors										■
Industrial Connectors								■		
Value Added Services										
Cable & Wire, Cutting & Respooling		■			■	■				■
Pin Header, Cutting	■	■			■					■
Heatshrink Tubing, Cutting			■				■			■
De-reeling, Terminals & Contacts	■	■			■					■
Customized Connector Kitting		■		■	■			■	■	■



TTI can also modify pin and breakaway headers exactly as needed for an application's specific requirements. This includes cutting pin headers to custom pin counts, and the removal of individual pins as needed.

To reduce the time taken in processing parts, TTI offers customer-specific kitting options. This can also avoid the risk of your assembly line having to grind to a halt due to a part not being available, as well as minimizing the cost and hassle of excess inventory.

Figure 3: Pin header cutting (Source TTI)

Global warehousing system

When it comes to stock availability, size matters. TTI has more than 120,000m² of automated warehousing in North America, Europe and Asia, all connected to a global warehouse management system⁴, that ensures procedures are the same, worldwide.

For the major connector manufacturers, TTI can deliver parts from stock, and it can build more than one million different variants of connector. Parts can also be shipped to an OEM's forecasts, or held as buffer stock to be called off as needed. This means a manufacturer can minimize the amount of stock it needs to hold itself, saving space and money, without the risk of a critical part not being available to order when needed.

TTI has more than 40 years' experience in assembling connectors⁵, and was the first distributor to have all of its warehouse locations around the world certified to the ISO 9001 and ISO 14001 standards. TTI Europe is also certified to the EN9120/EN9100, IECQ-CECC and ISO/IEC 27001 standards, and all of its European sales branches are ISO 9001 certified.

Figure 4: TTI's distribution center in Munich (source TTI)



Conclusion

Overall, working with an expert distributor like TTI, and taking advantage of its value added services, brings a number of benefits.

Firstly, money is saved by keeping BOM costs as low as possible, and avoiding the cost of stocking parts or having unused inventory. Capital commitment is kept low, as parts can be ordered from stock without needing to buy large quantities up-front.

With TTI's huge stockholdings and fast turnaround times, OEMs benefit from more flexibility. They can scale orders up or down as needed to respond to changes in demand for their end product.

Most importantly, value added services can be relied upon to accelerate the design and assembly processes. This means that manufacturers can cut time to market, often substantially, so they can get their product to market as quickly as possible – a vital competitive advantage.

¹ <https://www.jabil.com/insights/blog-main/automotive-industry-trends-point-to-shorter-product-development-cycles.html>

² <https://www.connectorsupplier.com/the-top-three-trends-in-the-electronic-components-segment-of-the-transportation-market/>

³ <http://www.electronics-sourcing.com/2015/08/03/smart-assembly-delivers-hi-rel-at-speed/>

⁴ https://www.ttieurope.com/content/dam/tti-europe/resources/Literature/LineCards/TTI_VAS_v16.pdf

⁵ <https://www.ttieurope.com/content/ttieurope/en/services/connector-assembly.html>



About TTI

TTI Inc. is the world's leading authorized distributor specialist offering passive, connector, electromechanical, discrete, power supplies and sensor components. TTI's extensive product line and supply chain solutions have made the company the distributor of choice for industrial, defense, aerospace and consumer electronic manufacturers worldwide.

TTI's extensive product line includes: resistors, capacitors, connectors, discretes, potentiometers, trimmers, magnetic and circuit protection components, wire and cable, wire management, identification products, application tools, power supplies, sensors and electromechanical devices. These products are distributed from a broad line of leading manufacturers. TTI strives to be the industry's preferred information source by offering the latest IP&E technology and market information through the online MarketEye Research Center. MarketEye includes articles, technical seminars, RoHS, seminars, industry research reports and much more.

TTI's products, personalized service and custom supply chain solutions have earned us the most preferred passives distributor title by CMP Publications. TTI employs more than 5,600 people at more than 100 locations throughout North America, Europe and Asia.

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