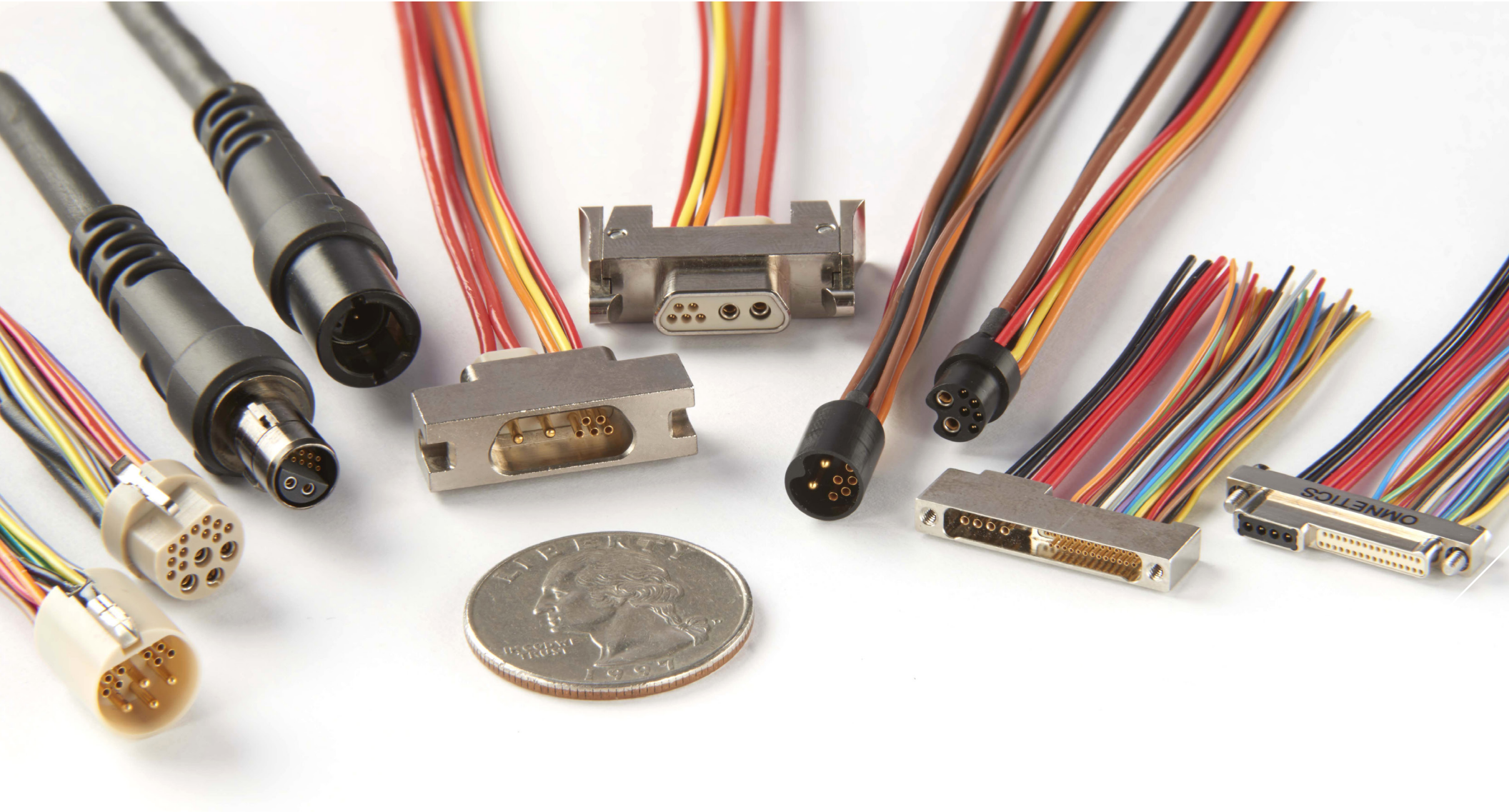


OMNETICS' HYBRID STANDARDS 99 FAMILY IS DESIGNED TO REDUCE SIZE, WEIGHT AND CARRY MULTIPLE ELECTRICAL SIGNALS IN ONE CABLE, REDUCING BULK AND THE NECESSITY FOR A VARIETY OF CONNECTORS GOING TO EQUIPMENT SOLDIERS USE IN THE FIELD. CAN ALSO BE APPLIED TO ROBOTICS AND DRONE TECHNOLOGY.

OMNETICS
CONNECTOR CORPORATION

Rapid Prototyping New Connector Designs **Saves Time and Money**

BY SALEEM KHAWAJA

Cutting-edge electronic devices need to be brought to market as quickly as possible and for that, their constituent parts must be developed fast.

This is a time of rapid technological advancement as design and applications engineers make components for electronic devices with ultra-fast circuits that function more quickly, last longer, and perform innovative tasks in the workplace and the home.

As a result, there is an exponential increase in the need for new connector and cable types as well as updated versions of existing connecting systems. New designs and performance standards are being imposed on portable electronic devices due to the expansion of their use in novel, tough applications (often in rugged settings).

To tackle the challenge, connector and cable designs are advancing significantly. Commercial standard connections are still a fantastic source for rapid prototyping and reference designs. Many of the applications' needs of today are met by them, however, as technology advances, the older standard connectors may not always fulfill the design specifications.

Searching for a Speciality Connector

Information from connector suppliers' websites and conversations with their salespeople can provide the system designer with a wealth of alternatives; websites for available commercial off-the-shelf (COTS) designs, while the engineer searches the market for the right connector prototype specialist to help create the physical 3D models.

Communicating with a design facility early provides information on the various features and alternatives for connector materials, cable formats, and design shapes that are available immediately. During the same period, further conversations with connection prototyping and design engineers can assure a positive outcome by careful pre-planning for a custom design as needed.

The application is the primary factor that influences the design of a cable and connector. Depending on the context, different connector designs may incorporate coax, digital signal wiring, and mixed signal with power.

New sizes and forms are easily accessible. A lot of attention is paid to the new system and how to fully support it using just one or a few connections and cable sets.

When designing new electrical products and applications coming into the market, it has been demonstrated that working with an expert connection prototype designer from the beginning will solve many problems early.

Consequently, a high-quality prototype department requires creative engineering teams that are ready to present a list of prospective solutions that include a variety of processes as well as up-to-date material expertise. It is advised that system designers locate and collaborate with fabrication teams that have a broad range of abilities.

Beyond Standard Connectors

First of all, if a standard cable/connector design fits the requirements for an application, and meets the required military or civil standards, it should be used. There may also be instances where a standard item can be adjusted in a minor way to fit the needs of the application to save both time and money.

Previously, custom designing micro and nano miniature connectors was expensive and time-consuming. Now, Omnetics has 3D solid modelling, printing, and fabrication equipment, with direct-linked CNC machinery that speeds things up significantly.

Once the pin-to-socket elements needed by the application have been selected, an online dialogue between the system designer and the connector fabrication team can very quickly decide on a solid model of the size, shape, and pin format for mixed-signal with power, coax, and digital signal wiring as needed. Adjustments needed can be made quickly, before cutting metal shells or developing insulator moulds.



NANO BILOBE 6 AT 2.0 GIGABIT/SEC.

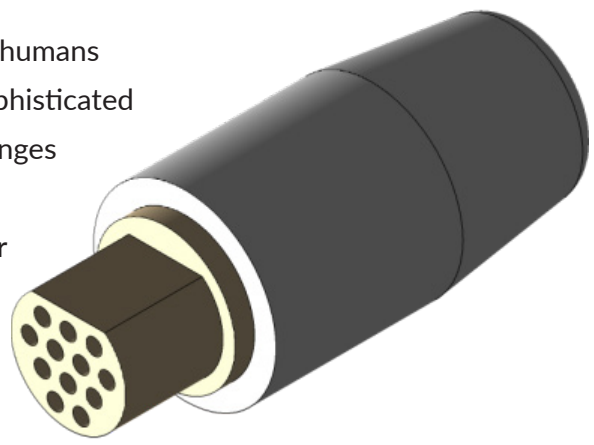
With the use of this technique, new designs and assembly may be completed much more quickly and inexpensively. In order to take advantage of these new capabilities and address these new connection difficulties, connector makers are employing rapid-turn prototype research and development laboratories with technical experts.

Which Cables and Connectors?

It can be challenging for design engineers to choose cables and connectors. A deep understanding of the device's delivery requirements which take into account factors such as time to market, cost, and functionality of the product, is also essential.

With this information, engineers can create a basic list of performance requirements and the environments in which the device might operate. Secondly, certain components can be preset using a list of each segment of the electronic signals, their voltage, and current levels.

For example, designs for remote-controlled robotics, small satellite electronics, and soldier-worn electronics interfaces to the Internet of Military Things (IoMT) systems each have an electronic spreadsheet for every wire. Signal speed and transmission distance underpin wire and cable design.



3D MODEL OF 8 POSITION MICRO PLASTIC CIRCULAR CONNECTOR.

Electrical systems worn by humans are a relatively new and sophisticated application area that challenges designers to create unique connector designs, whether for military or medical purposes. These little devices call for connectors that take up less room and weight while enhancing the functionality, mobility, and toughness of the instrument.

Rapid prototyping is necessary for the creation of products in the future. Omnetics uses a number of methods to quickly create a scale model of a real part. As stated before, Omnetics' design engineers use computer-aided design processes for 3D modelling, 3D printing, and fabrication that can be applied to any device design without needing costly tooling.

The resulting prototypes are finely detailed and mimic the final design's performance faithfully. To complement nearly any visual design elements that the finished part will have, they can even be painted, polished, or electroplated.

Rapid prototyping's main appeal is its ability to verify mechanical property hypotheses early in the design process before resources are committed to large-scale manufacturing.

Product development from ideation to market can be accomplished without the friction typical of conventional procedures by testing, identifying defects, and iterating design elements, including size, form, and assembly features. There is also more freedom to explore concepts, develop ideas and different designs for manufacturing.