NOVARA
TECHNOLOGIES

Connecting with intelligence



www.novaratechnologies.com



We are a trusted global company with extensive experience at the forefront of advanced interconnect solutions.

Our talented team have a wealth of knowledge and professional expertise extending to: Cable Assemblies, Intelligent Assemblies, Connectors, Medical Device Assemblies and Brushless DC Motors.

Our key focus is to understand the customers' requirements in detail and then provide our extensive range of Manufacturing Solutions and Design for Manufacture experience to realise the finished product.

We also offer a comprehensive range of services to meet your exact needs including customised designs, competitively-priced innovative solutions and a full project management service from component design to finished product.

Our manufacturing is completed to the highest quality international standards including ISO9000, ISO13485, IATF16949 ensuring reliability and consistency throughout.

We are interested in new business opportunities from start-up organisations to global companies.

We care about the Environment

At Novara, we are continually looking for ways in which we can influence and drive change to the way we work and we are committed to reducing our environmental impact as an integral part of our business strategy. Our outlook is to continuously rethink, reduce and recycle, ensuring that everything we do has a minimal impact on the environment.

In addition to our efforts, we also strive to maintain high environmental and corporate responsibility standards throughout our supply chain. Wherever possible, we encourage our suppliers to have an effective environmental management system and implement the international standard ISO14001 which provides a framework for every employee to follow.

+44 (0) 333 200 1629 info@novaratechnologies.com www.novaratechnologies.com

Cable Assemblies

Novara have extensive experience of supplying custom overmoulded cable assemblies, wiring looms and discrete cable assemblies.

We manufacture all types of cable assembly from prototype through to full production and offer additional services such as cable design, drawing creation, new product introduction and project management.

Moulded / Overmoulded cable assemblies

Overmoulding provides improved reliability, enhanced environmental protection and a heightened professional appearance. Overmoulding your cable assembly offers further protection and increased durability by reducing the potential for fluid ingress, increasing resistance to shock and vibration and protecting valuable components from environmental factors such as extreme temperatures, abrasion and corrosion which can cause premature ageing and eventual component failure. By overmoulding your cable assembly your finished product could benefit from improved strain relief, water and dust ingress protection, tamper proofing, improved flame retardant properties and resistance to UV degradation.

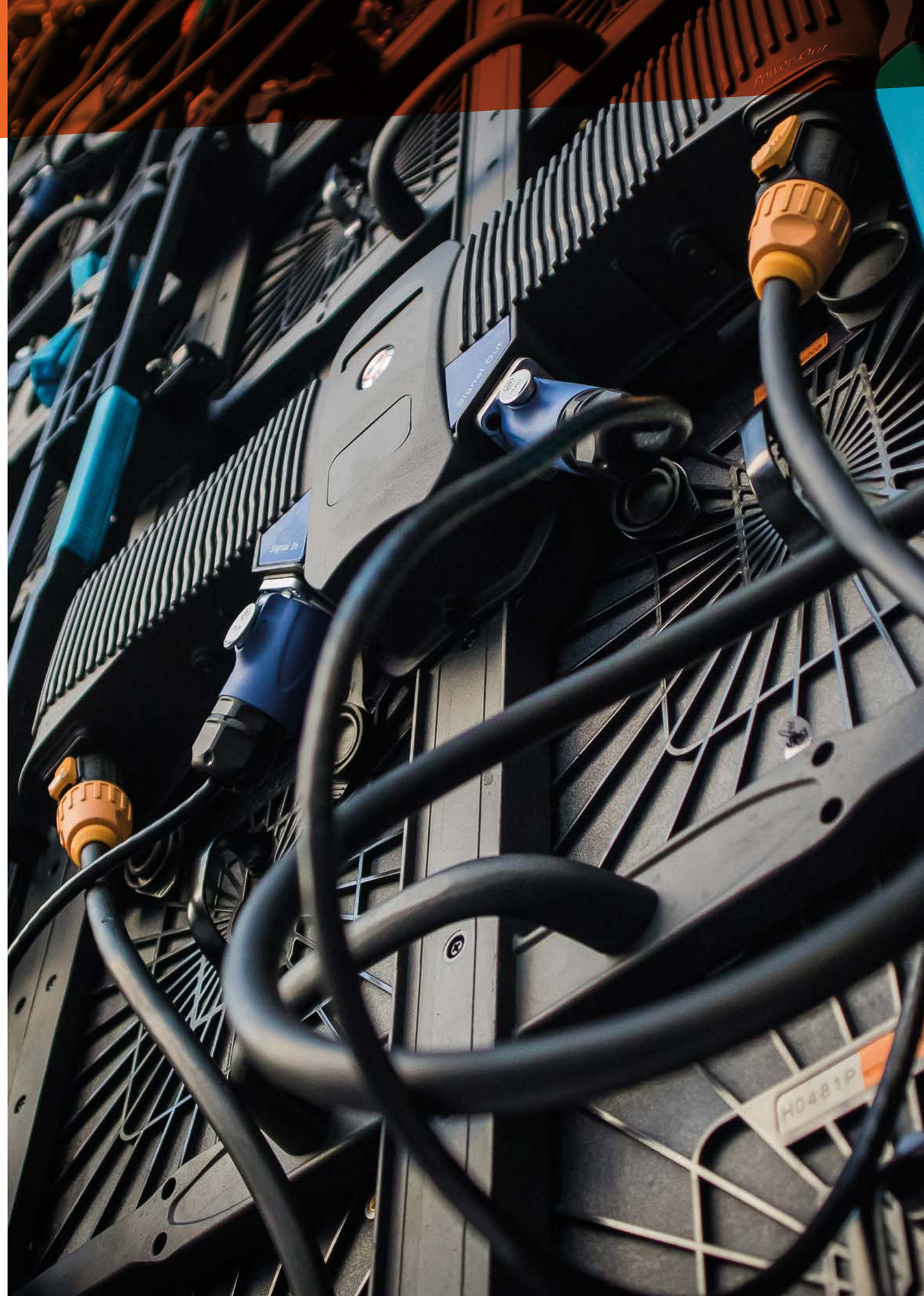
Further design customisation benefits include component encapsulation including PCBa, design of ergonomics, latching features, strain reliefs, company logo integration, colour matched schemes and a wide choice of typical moulding materials such as PVC, PP, PE, PU and TPE or more specific materials to suit any application or industry.

Discrete Wire Assemblies / Wiring Looms / Wiring Harness

We supply all kinds of discrete cable assemblies, wiring looms and wiring harnesses for industries such as consumer, industrial, automotive, healthcare and communication.

We manufacture all of our cable assemblies utilising a full range of professional cable assembly production equipment. Our full range of capabilities include the wire preparation process including wire cutting, wire marking and inkjet printing, wire stripping, crimp termination, solder termination, crimp sealing, insulation displacement crimp (IDC) and cable sheathing. We can form the wiring assemblies using jig tooling into your bespoke design and secure using any combination of nylon braiding, convoluted nylon tubing or conduit, PVC tubing, tie wraps, insulation tape, foam tape and heat shrink products. Electrical connectors can be pre-fitted or fitted at the final stages of assembly prior to 100% electrical continuity testing.

We use automation wherever possible utilising state-of-the-art equipment and technologies. Our operators are trained to the industry standard IPC-A-620 to ensure that best practice manufacturing is always maintained.



+44 (0) 333 200 1629 info@novaratechnologies.com www.novaratechnologies.com

Cable Assemblies

Medical Cable Assemblies

Cleanliness and conformity are critical to medical cable assemblies and the considerations go much further such as ensuring that suitable materials are chosen which are acceptable for interaction with humans whilst also being able to withstand harsh sterilisation methods.

Novara specialise in the production of world class medical cable assemblies, all reliably manufactured in our bespoke cleanroom and following ISO13485 quality management systems. Our injection moulding machines are designed for overmoulding medical connectors and we produce custom made cables to suit any application.

The opportunities to customise your design are endless, offering you with a truly bespoke service to meet your design requirements. With our expertise, you can be assured that your next medical cable project will be a success.





Motorsport and Automotive

Vehicle wiring looms need dedicated connector systems and wiring harness componentry to protect the electrical functions from the dynamic, high performance and harsh environments. These specialised electrical distribution systems (EDS) typically operate with automotive sensors, instrument panels, power distribution units and engine management systems.

We provide valuable design assistance to support customers with our extensive product knowledge. Moving into manufacture, we offer prototype build support, tooling manufacture and a team of certified IPC-A-620 wiring harness technicians all capable of manufacturing wiring harnesses of superior quality. All of our products are dimensionally checked and electrically tested to ensure design intent is 100% guaranteed. Our expert team of project managers oversee development from start to finish, ensuring that your requirements are fulfilled on time and within budget.

Our manufacturing capabilities include all variations of wiring harnesses and battery cables from traditional combustion engine vehicles to high voltage automotive wiring for full electric and hybrid vehicles. All of our products are manufactured under ISO9001 and IATF16949 quality management systems ensuring that quality is considered throughout.

Custom Cable Solutions

Whatever cable structure you require, we can design and manufacture for a wide range of applications with various constructions and materials.

We adapt the design of every cable to the requirements of the cable's intended application, this allows us to include specialist strengthening materials within the cable such as Kevlar and EMC shielding materials such as copper foil, aluminium foil, mylar film, tinned copper braiding.

We can produce any combination of multi-core cable utilising micro-coaxial, signal and power core cables and also include pneumatic and hydraulic combination lines. We typically extrude using materials such as PP, PE, PVC, PU, TPU, TPE, TPV and we can also work with specialist materials such as Silicone and Fluoropolymers FEP, PTFE, ETFE.

Our medical cable extrusion line is specifically designed to reduce the potential of bio-burden introduction by utilising technologies to eliminate bacteria from the cable extrusion process. We can extrude with polymers which are specific for medical device use and USP Class VI and/or ISO10993 certified.



+44 (0) 333 200 1629 info@novaratechnologies.com www.novaratechnologies.com

Intelligent Assemblies

Today's engineers are developing the world of tomorrow and Novara Technologies is at the forefront of the revolution known as the 'The Internet of Things'. The future will be a place of connected devices all interacting, controlling and providing input to each other and this vision will require new intelligent electronic assemblies to be developed. Incorporating network capabilities, product identification tags and smart sensors into your next product could be your key to success.

At Novara, we have the right experience and product know-how that could help you to integrate your innovation and launch to market in the most time efficient way.

Flexible Printed Circuits

Flexible Printed Circuits (FPC) are similar in concept to PCB providing electronic component surface mount technology (SMT) options but differ in the ability to be flexed around other objects due to the conductive circuit being sandwiched between a flexible plastic substrate, such as polyimide. FPC can be offered in many forms from fully flexible single sided, single layer to complex double sided multi-layer with rigid PCB (Flex-Rigid) to provide extra mechanical strength and plated through hole (PTH) component mounting options.

Flex circuits can also be screen printed silver circuits on polyester film for use with membrane displays and keypads. In many applications, FPC replace wires and interconnects which provides cost reduction opportunities. FPC are widely used where there are space constraints such as handheld electronics, sensing and display devices.

Novara provide a bespoke UL approved FPC manufacturing service offering low quantity prototyping to full volume production with or without SMT components.

Product Identification

In the global connected world, security of devices is becoming more important to original equipment manufacturers (OEM) looking to uniquely identify their products to ensure exclusive features are activated and prevent counterfeits from being used.

Product identification using programmable components such as EEPROM and RFID tags is becoming more commonplace and Novara have the expertise to combine these technologies into cable assemblies, sensors and single-use medical devices.



Our manufacturing experience and knowledge of cost effective product identification components will allow you to add unique identifiers to your products without compromising quality or cost.



Sensors and Switch Products

The connected world requires devices that can sense and measure specific aspects of the physical world and process these into digital signals which can be processed and acted upon.

With the expertise of Novara, you can integrate electronic sensors into cable assemblies and box built devices offering an ever expanding potential to measure temperature, humidity, position, proximity, pressure and magnetic fields amongst other sensing activities.

There are numerous switches available to suit a wide variety of applications and Novara can supply a vast range to meet your specific requirements. Our manufacturing solutions provide you with the capability to combine electronics, sensors and switches into a finished product which is fit for purpose and application.

Cable Assemblies with Electronics

We have been combining electronics into cable assemblies for many years and we see increasing demand for new technologies with further integrated capabilities.

The possibility for integrating electronics into your cable assembly can open the potential to new designs which have been previously overlooked and working with Novara will help you to realise your design potential.

Preserving the vital electronics from potentially harsh environments is a priority; we can provide cable assemblies which provide ingress protection from fluids and dust with our injection moulding, overmoulding and encapsulation technology.

+44 (0) 333 200 1629 info@novaratechnologies.com www.novaratechnologies.com

Connectors

Novara is at the forefront of connector technology with a comprehensive range of electrical connectors to suit any application and budget. We have a full appreciation of the readily available industry standard wire to wire, wire to board and board to board connectors to the more specialised circular and push-pull connector systems.

Our speciality is offering customised solutions to meet specific requirements. Our extensive experience of contact technologies and manufacturing know-how allows us to develop and manufacture customised connectors designed to meet specific applications.

Industry Standard Connectors

We have a wealth of experience sourcing a wide range of industry standard connectors including everything from a fine-pitch board level interconnect through to rack and panel arinc avionics connectors. If you are looking to specify industry standard connectors or if your design is already specified, we can support your connector requirements.

Custom Connectors

Our extensive knowledge of contact technology enables us to design a connector which will solve each and every design challenge. Our approach to custom connector design is to understand carefully your specific requirements and interpret these into a solution.

This allows us to package a custom interconnect solution to meet your specific requirements which may include mechanical, electrical, environmental and commercial constraints. The contact technologies that we commonly work with includes; Twist Pin, Fuzz Button, Pogo Pin, Stamped and Formed, Machined, Hyperboloid.

Novara offer a comprehensive range of military specification Micro D and Nano D connectors. These connectors are ideal solutions for applications which require extreme miniaturization, space and weight saving such as high performance industries including aerospace, military, medical and off-shore energy.

MIL-DTL-83513 Micro D Connectors

Our Micro D subminiature mil grade connectors feature high-density micro Twist Pin contacts set on 1.27mm centers in arrangements from 9 to 130 contacts. They are available with insulated and uninsulated wire, PCB, solder cup and flex terminations and are supplied as MIL-DTL-83513 style or commercial variations.

MIL-DTL-32139 Nano D Connectors

Our Nano-D connectors feature high density nano twist pin contacts set on 0.635 mm (.025") centers in arrangements of 9, 15, 21, 25, 31, 37 and 51 double row contacts, these connectors are double the density of a Micro-D. They are available with insulated and uninsulated wire and PCB terminations and are supplied as MIL-DTL-32139 style, EMI shielded or commercial variations.



+44 (0) 333 200 1629 info@novaratechnologies.com www.novaratechnologies.com

Medical Device Assemblies

We are the contract manufacture specialists for electro-medical device assembly. We understand the challenges presented by the regulatory and technical demands of the medical device industry and we aim to make life easier by providing our experience and expertise in this field of knowledge.

We work closely with our customers providing engineering expertise during development, documentation support during qualification and best practice clean manufacturing once production commences.

Single Use Disposables

Medical device companies are actively developing an increasing interest in electronics for disposable devices. Disposable devices are designed to be sterilised and used only one time and as a result unit cost can often be reduced by using a wider choice of engineering materials.

Our expertise with material selection for disposable devices has helped several customers to convert their existing reusable devices and make them suitable for the disposable market.

Quality Standards

Novara manufacture to the internationally recognised quality management system ISO13485, ensuring that all medical devices which we produce have complete manufacturing traceability. If you are entering the global medical device marketplace, we also have the know-how to assist with your FDA device establishment registration.

Clean Manufacturing

We understand that cleanliness is important and we have a ISO 7 classification cleanroom where all of our medical device assembly is undertaken. All of our personnel are required to follow strict procedures and maintain a high level of cleanliness throughout. This gives our customers confidence that bio-burden is kept to a minimum prior to onward processing such as final assembly, packaging or sterilisation.

Bio-Compatible Materials

We have specific experience of which materials are cost effective, bio-compatible and suitable for sterilisation. It's important to consider material selection early in the design and development phase to prevent more costly changes further into the development cycle.

The use of biocompatible materials is required for patient contacting parts of medical devices, this helps to prevent the use of materials which can cause irritation and sensitisation to humans. Using materials which are tested to the internationally recognised standard ISO10993, helps to minimise the testing required to prove biocompatibility.



+44 (0) 333 200 1629 info@novaratechnologies.com www.novaratechnologies.com

Manufacturing Solutions



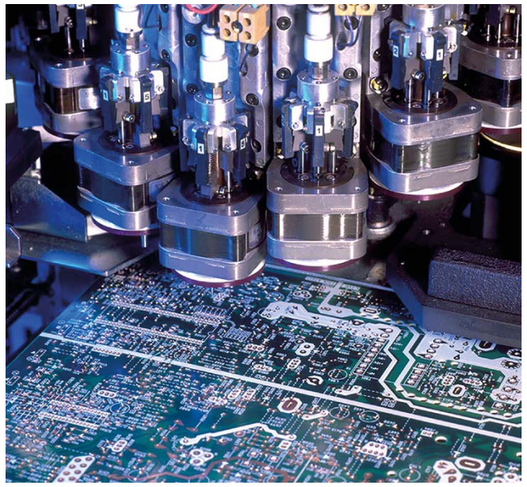
We have extensive experience in offering a complete turnkey manufacturing solution including plastic mouldings, metal fabrication, PCB assembly, electro-mechanical assembly and packaging.

PCBA Electronics Manufacturing

We can offer a variety of PCB assembly technologies including Surface Mount (SMT), Plated Through Hole (PTH), Auto and Manual Insertion, Chip on Board (COB), Ball Grid Array (BGA), Flip Chip Bonding, Wire Bonding and Lead-Free Soldering. We also operate a Class 1K Clean Room for high precision assembly and testing

We strictly adhere to IPC-A-610, the industry recognised standard for PCB assembly and manufacture. We employ a strict Quality Management System (QMS) to control the whole production process, so that quality is assured at every level of assembly.

All finished products are fully tested using Automatic Optical Inspection (AOI), In-circuit Test (ICT) and Functional test (FCT) and we also offer additional testing for reliability, vibration, burn in, salt spray and thermal cycling.



Plastic Injection Mouldings

We understand the critical nature of plastic part design and the processes involved to ensure that parts are easy to manufacture. At the heart of this process is our ability to provide Design for Manufacture feedback (DFM), which enables the design to be improved prior to making the mould.

We evaluate all the key aspects of mould design and provide you with detailed documentation which can be used to further optimise the part design.

Following the DFM stage, we then provide detailed timelines for the mould tool manufacture and initial part production. All initial parts are provided with detailed inspection reports providing you with confidence that your parts meet the specification.

Custom Packaging

Packaging is an important part of a finished assembled product. Graphical imagery and the right materials can provide a striking first and lasting impression together with providing protection for the valuable content.

Novara can organize bespoke packaging requirements for your finished product including custom boxes made from kraft cardboard to bright white and shiny and all printed with your custom design.

For our medical customers, we can also provide blister and pouch packaged products for sealing single use disposable devices.

Metal part fabrication

The nature of innovation leads to most projects requiring bespoke parts designed to meet a specific function. Engineering metals such as steel, aluminium, brass, bronze and copper are commonly used materials for electro-mechanical assemblies due to their excellent conductive, thermal and mechanical properties combined with the ability to be permanently formed into intricate designs.

At Novara, we provide our customers with high quality, precision engineered metal parts which can be manufactured using a variety of processes such as stamping, machining, extrusion, casting, powder metallurgy and fabrication using the latest CNC semi-automated machines.

Finished products can be electro-plated using common plating metals such as Nickel, Tin and Gold amongst others. We also provide parts with other finishing processes such as anodising, painting and powder coating, each one offering their specific benefits.

Box Build Assembly

Box build assembly can be described as bringing all of the manufacturing processes together to build a finished assembled product; this can include anything from a simple PCB in an enclosure to a more complex assembly with a bill of materials which includes thousands of different parts.

Box build assembly can be a very complex business, involving procurement from multiple sources, manufacturing using dedicated machinery, labour intensive processes and quality controlled inspection.

Novara simplify the process by providing our customers with a full box build service aimed at streamlining the procurement process and outsourcing the box build assembly to ourselves.

We oversee the whole box build process from start to finish, providing our customers with reduced capital expenditure and production costs whilst delivering a quality product manufactured by a skilled workforce.

Brushless DC Motors

Novara offer an extensive range of high quality, cost-effective brushless DC motors designed to suit any motion control application.

Stepper Motors

Where position is fundamental to your motor requirement, Novara offer 2-phase, 3-phase and 5-phase Hybrid Stepper motors covering a wide range of applications with a frame size from NEMA 8 (20mm) to NEMA 42 (102mm) and also a range of Permanent Magnet Stepper motors with a frame size from Ø15mm to Ø57mm.

Stepper motors can be easily combined with a gear box to fulfil your particular application requirements. We offer a range of planetary gearbox and spur gearbox solutions which have been strictly tested to ensure long life and maximum efficiency.

If your motor is operating in a harsh or wet environment you should consider using our IP54/65/68 rated Hybrid Stepper motors. These models are dust proof and resistant to low pressure water jets making them an ideal solution for food processing, pharmaceutical, chemical and other industries.

Brushless DC Motors

For applications requiring stable velocity control over a wide speed range, Novara offer high performance, long life and low maintenance Brushless DC Motors with frame sizes ranging from NEMA 17 (42mm) to NEMA 42 (110mm). Our motors are 3-phase design in 4 and 8-pole configurations with commutation and velocity loop feedback provided by hall sensor signals.

Three efficiency designs are available to optimize your application's performance requirements to the most cost-effective solution.

Hybrid Servo Stepper Motors

For applications requiring high performance and high reliability, a servo system can often be the only choice. Novara offer cost-effective Hybrid Servo Stepper Motor solutions which combine the best of servo and stepper motor technologies and deliver unique capabilities and enhancements over both at a fraction of the cost of a servo system.

Our range of Hybrid Servo Stepper Motors are all integrated with 2-channel and 1,000-line optical incremental encoders and currently available with frame sizes ranging from NEMA 8 (20mm) to NEMA 34 (86mm) with torque holding capability from 0.4 Nm to 12 Nm.

Custom Motor Solutions

We also offer custom solutions to all of our motors including modifications to housings, windings, shaft modification, encoder resolution, spur and planetary gearbox solutions, custom cabling and brake add-on solutions to optimize the motor's performance to suit your specific requirements.

All of our motors are manufactured using high quality materials and feature anti-high temperature permanent magnets, providing high reliability and accuracy whilst maintaining low noise, low vibration, low motor heating and smooth running.



+44 (0) 333 200 1629 info@novaratechnologies.com www.novaratechnologies.com

Design for Manufacture

Novara is well positioned to support design and development activity utilising our wide-ranging knowledge of manufacturing technologies.

If you are outsourcing manufacturing, it's vitally important to include your contract manufacturer early in the design process to consider design for manufacture (DFM) and help you to avoid costly design changes with manufacturing requirements fully considered prior to design freeze.

Improve Reliability

If competition is strong in your industry, it's important to consider quality and reliability and develop a competitive advantage. Achieving this is a challenge and designers are constantly stretching the boundaries of design by using new materials and design methods, this is great for innovation, but it can compromise reliability.

Using a DFM approach in collaboration with Novara, will ensure that appropriate materials and assembly methods are considered and guarantee a more comprehensive design which meets the customer requirements first time.

Manufacturing Best Practice

At the heart of Novara's DFM philosophy is the drive to achieve manufacturing best practice by embracing continuous improvement methodologies. With our six sigma trained personnel and lean manufacturing background, we consider each design and manufacturing process with a consistent approach, aiming to minimise waste and striving for the best possible quality, cost and delivery.

Working with Novara from the early stages of your next project will provide you with the opportunity to tap into our skills and optimise your product before it reaches full production.

Streamline Manufacturing

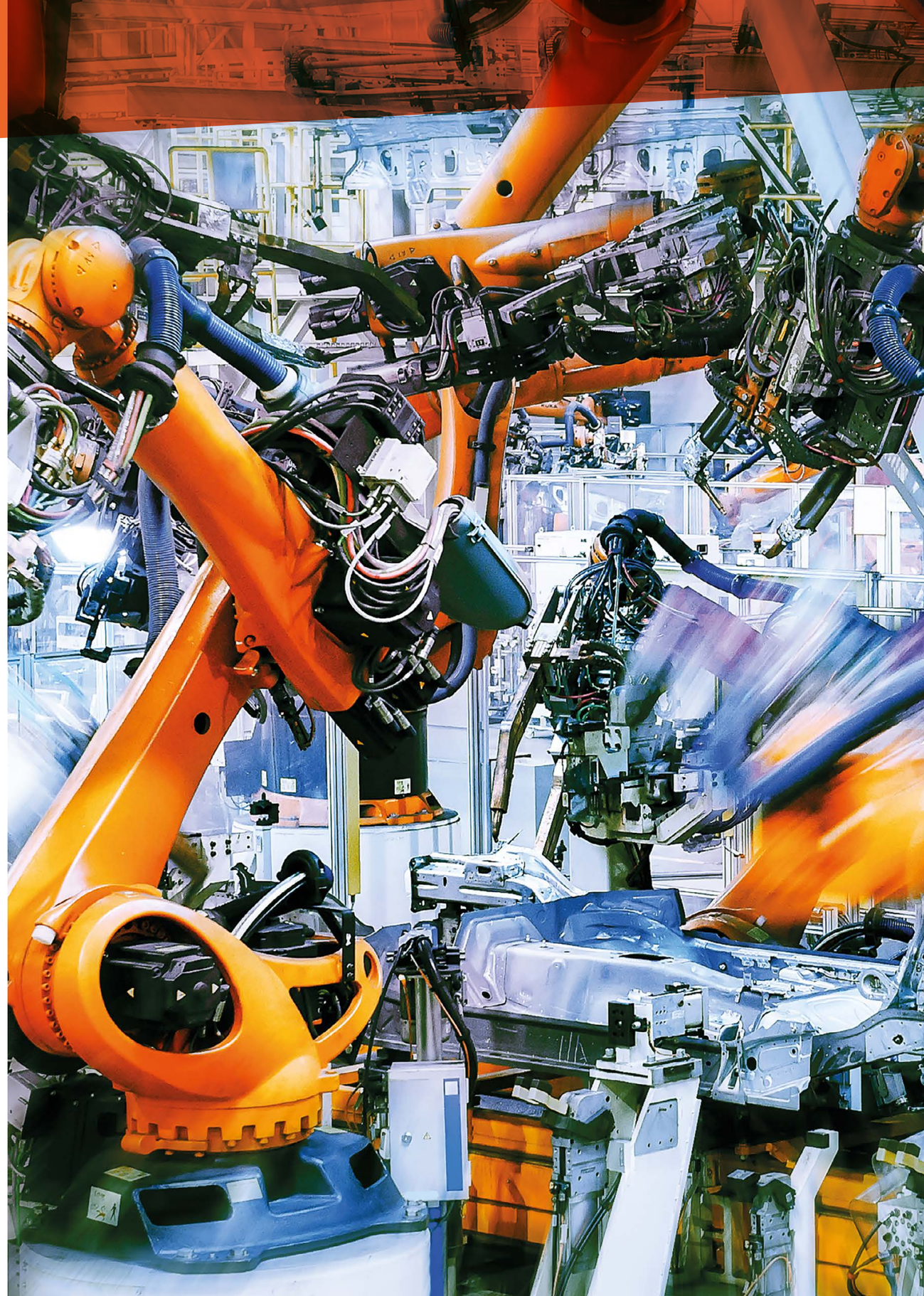
Every new design should consider opportunities to streamline complexity with the aim of simplifying assembly which will result in manufacturing time savings and cost reductions. Manufacturing efficiency boosts can be realised by simplifying design and assembly steps, leading to production yield improvements and reduced overall cost.

At Novara, we take this seriously and actively encourage customers to consider alternative designs which promote the DFM philosophy and streamline manufacturing.

Cost Effective and Robust

The DFM approach helps to reduce multiple design changes that can cause new product introduction programs to be delayed with increased costs. Considering the DFM approach in the early phase of the product development cycle will result in a shorter time to market, a more robust design and an overall reduced program delivery cost.

By working with Novara, we will assist you to shorten assembly time, lower assembly cost and eliminate process waste. The positives of DFM are realised once your product moves into mass production, achieving reduced product cost and increased profitability.



+44 (0) 333 200 1629 info@novaratechnologies.com www.novaratechnologies.com

Our Solutions



CABLE ASSEMBLIES
Overmoulded cables
Discrete cable assemblies
Wiring looms
Custom cable design
Medical cable assembly
Motorsport and Automotive



INTELLIGENT ASSEMBLIES
Flexible Printed Circuits
Cable Assemblies with Electronics
Sensors and Switch Assemblies
Product identification
Security Devices



CONNECTORS
Industry Standard Connectors

Custom Solutions including contact technologies such as:
Stamped & Formed, Machined,
Pogo Pin, Twist Pin, Hyperboloid



MEDICAL DEVICE ASSEMBLIES
Single-Use Disposables
ISO 7 Cleanroom
ISO13485
Component Qualification IQ, OQ, PQ
Bio-Compatible Materials



MANUFACTURING SOLUTIONS
PCBA Electronics Manufacturing
Plastic Injection Mouldings
Metal part fabrication
Electro-Mechanical Assemblies
Custom Packaging



BRUSHLESS DC MOTORS
Stepper Motors
Hybrid Servo Stepper Motors
Brushless DC Motors



DESIGN FOR MANUFACTURE
Improve reliability
Manufacturing Best Practice
Streamline manufacturing
Cost effective and Robust

Do you have a project that we can help with? Contact us now to arrange a meeting...

Novara Technologies Ltd
Office 12, Manor house, Court Lane Estates, Iver, Buckinghamshire, SL0 9HL

+44 (0) 333 200 1629 info@novaratechnologies.com www.novaratechnologies.com