

The logo consists of a red icon on the left, which is a stylized shape resembling a person or a signal tower, and the text '2J Antennas' in white to its right.

# 2J Antennas

Connecting the World

# OUR STORY

2J Antennas was founded in 2002 and manages operations from its headquarters in Slovakia.

In 2008, the R&D office opened in Portsmouth, UK to support and extend the Slovakian RF engineering department. In 2015, 2J expanded its reach to the American market with a new engineering and sales support office in Phoenix, Arizona.

We have since grown from a small size manufacturing business venture to a leading antenna developer and manufacturer with a global reach offering over 9 million products and services annually.



# OUR VISION

2J Antennas' vision is to be a global, world-class trusted leader in antenna solutions that aims to deliver advanced technologies for the connected world. We innovate and offer high-quality products and services for the automotive, navigation, IoT, marine, telematic, automation, M2M and other markets.

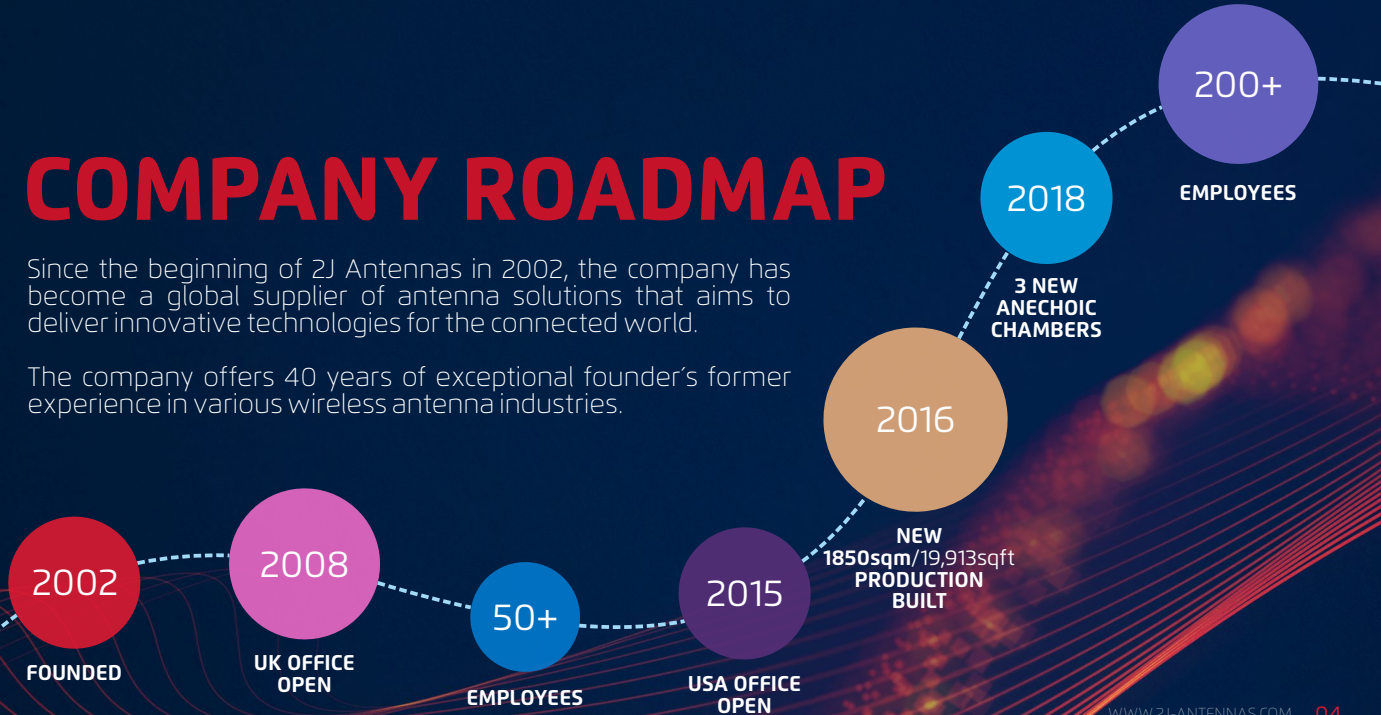
We stand for quality perfection and utilise a large selection of advanced engineering tools to deliver off-the-shelf and customised antenna solutions, suitable and ready for the rapidly growing wireless industry.

By investing in our team and infrastructures, we are continuously providing a great work environment while developing cutting-edge antenna products. Our experts are constantly inspired to unleash their expertise and creativity to create the most innovative antenna solutions.

# COMPANY ROADMAP

Since the beginning of 2J Antennas in 2002, the company has become a global supplier of antenna solutions that aims to deliver innovative technologies for the connected world.

The company offers 40 years of exceptional founder's former experience in various wireless antenna industries.





# OFFICES



## BARDEJOV, SLOVAKIA **HQ**

*2J Antennas, s.r.o., Stefanikova 61, 085 01 Bardejov, Slovakia*



## PHOENIX, USA

*2J Antennas USA, Corp, 2020 W Guadalupe Rd, Suite 8, Gilbert AZ, 85233, USA*



## WATERLOOVILLE, UK

*2J Antennas UK, Ltd, 7 The Briars, Waterberry Dr, Waterlooville, Hampshire, PO7 7YH, UK*



# COMPANY STRUCTURE



# PRODUCTION AREA

2J Antennas continuously expands our infrastructure and builds new production facilities allowing us to meet growing market demands and ensure production efficiencies using the latest technologies.

\* Illustration picture only  
Does not show a whole 2J Antennas facility.

5,260 sqm/56,618sqft ●  
Production Facility

● 726sqm/7,814sqft  
Administration

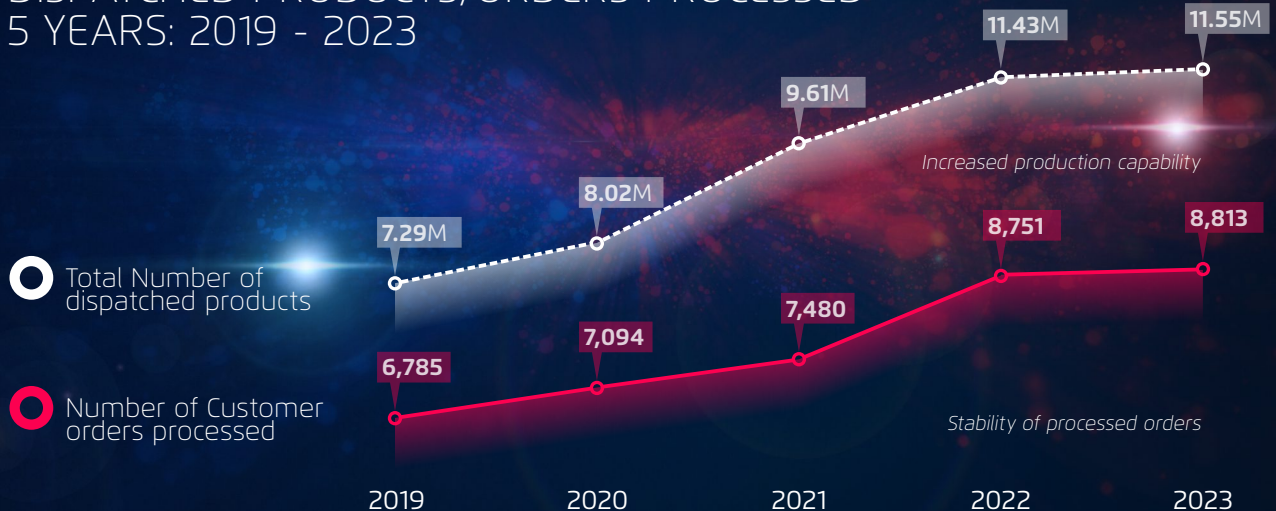
● 1,367 sqm/14,714sqft  
Warehouse

32,150 sqm/346,059sqft ●  
Land Area



# COMPANY GROWTH

DISPATCHED PRODUCTS/ORDERS PROCESSED  
5 YEARS: 2019 - 2023



○ Total Number of dispatched products

○ Number of Customer orders processed

*Increased production capability*

*Stability of processed orders*



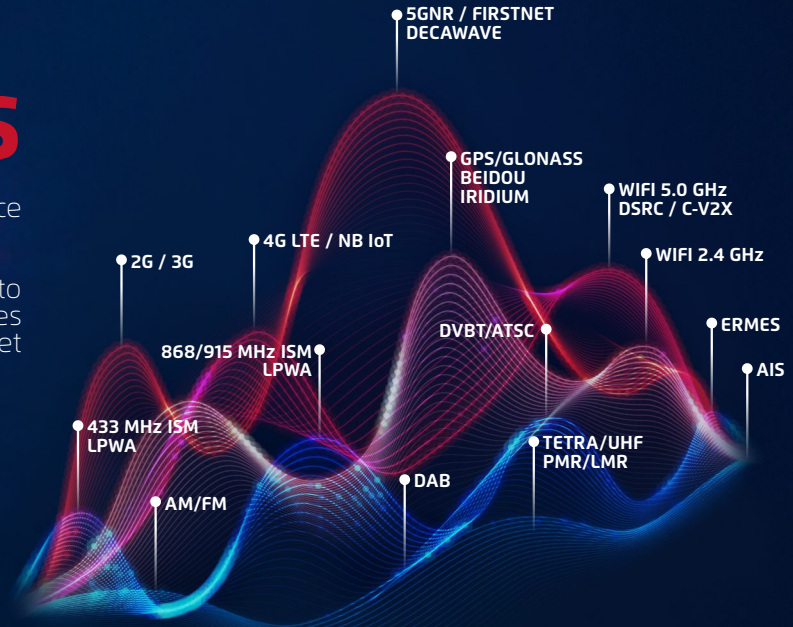
# TARGET MARKETS



# ANTENNA STANDARDS

The wireless band designated for a device to operate through is called frequency.

2J Antennas offers products designed to operate specific ranges of frequencies assigned for commercial use that meet global standards.



# OUR STRENGTHS... LET'S WORK TOGETHER



## IN-HOUSE PRODUCTION

*Privately owned company with full control over entire business operations*



## EXTENSIVE EXPERIENCE IN ANTENNA BUSINESS

*2J founders bring a 40 years of experience in various antenna industries*



## STRATEGICALLY POSITIONED PRODUCTION & BRANCHES

*HQ & Production in Central Europe, offices in USA and UK*



## GLOBAL SUPPLIER WITH LOCAL CUSTOMER SUPPORT

*Worldwide sales & support through our distribution network*



## COMPETITIVE PRICING

*Factory direct prices allow efficient sales strategy within the market*



## ANTENNA ONLY FOCUSED COMPANY STRATEGY

*Maximizing expertise solely on antenna products with 100% commitment*



## HIGH FLEXIBILITY AND EFFICIENCY

*Achieved with high-end equipment, production and first class engineering team*



## SHORT DELIVERY TIME

*Our 6-8 delivery time surpasses our competitors' deliveries of 12-18 weeks*



## OFF-THE-SHELF & CUSTOM DESIGN ANTENNAS

*Even Off-the-Shelf antennas with options to customise colors, logo printing*



## ALL RF ANTENNAS ACCESSORIES UNDER THE SAME ROOF

*• Internal/External Antennas • RF cables • Connectors • DevKits/Boards • Brackets*



## EXTENDED STANDARD SERVICE FOR ALL ANTENNAS

*Customisation on Cable Type, Length and Connectors as standard service*



## HEAVILY INVESTING IN LEADING-EDGE TECHNOLOGY

*10 patents pending in 5G NR, multi constellation GNSS, satellite communication*



## STATE OF ART 3D ANECHOIC CHAMBERS

*3D Anechoic Chambers for Active and Passive measurements on each Location*



## PRE-TESTING CAPABILITIES

*Certification and regulatory testing guidance at no additional cost*



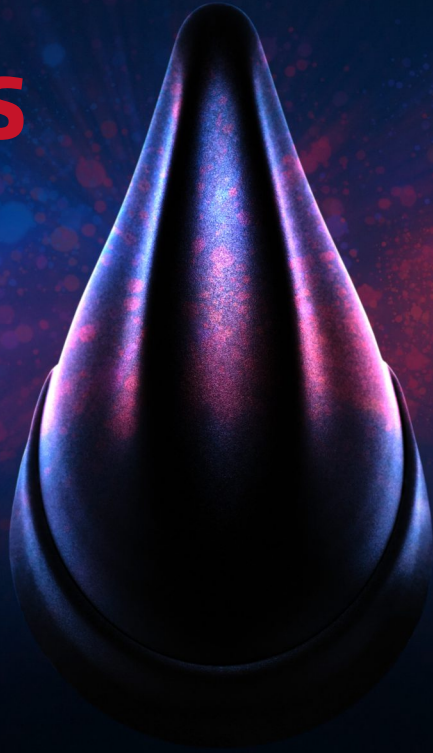
# PRODUCTS OFFERING

**1,500+**  
ACTIVE PRODUCTS

*Off-the-Shelf and Custom Antennas*

*2J Antennas took the off-the-shelf portfolio to the next level.*

*Our off-the-shelf products are fully customisable by offering a variety of cable types, cable lengths, connectors types, and manufactured per orders. This gives our customers freedom to adjust within a product development process and further negotiations with their prospective customers.*



**10+**  
Patent applications

**60+ Million**  
Products dispatched  
since founded

**12,000+**  
Registered Customers



# OFF-THE-SHELF ANTENNAS



SINGLE INTERNAL

COMBINATION INTERNAL

SINGLE EXTERNAL

COMBINATION EXTERNAL



# MOUNTING TYPES

## FOR EXTERNAL ANTENNAS



### CONNECTOR MOUNT

*For antennas that require direct PCB mounting solution on devices*



### ADHESIVE MOUNT

*The adhesive option is ideal for quick mounting applications*



### SCREW MOUNT

*Secure and permanent installation ideal for indoor and outdoor applications*



### MAGNETIC MOUNT

*For temporary installation, but strong enough for permanent installations*



### WALL MOUNT

*Can be used for indoor or outdoor installations*



### POLE MOUNT

*Ideal for marine and / or construction applications*



### COMBINED MOUNT OPTIONS

*MAGNETIC/ADHESIVE or WALL/ADHESIVE or VELCRO®/ADHESIVE*

## FOR INTERNAL ANTENNAS



### ADHESIVE MOUNT RIGID

*This mounting type is ideal for flat surface installations*



### ADHESIVE MOUNT FLEXIBLE

*Small form factor antennas with flexibility for curved installation in devices*



### SURFACE MOUNT CERAMIC

*Compatible with surface mount technique (SMT) allowing for easy PCB integration*



### SURFACE MOUNT FIBERGLASS

*Allows for small antenna sizes, cost-effective solutions, compatible with SMT*



### THRU-HOLE MOUNT CERAMIC

*Thru-hole mount offers extra installation security for in-device integration*



### SNAP-IN MOUNT MODULE

*Locks the antenna in place, prevents unwanted rotation, facilitates replacement*



### SCREW MOUNT MODULE

*Modular antennas that can be installed on PCB standoffs*

# PRODUCT CUSTOMISATION

## Antenna Branding with Logo printing

For off-the-shelf and custom antennas, we offer company rebranding with logo printing on the antenna housing. Typically there is no additional cost for this service if prepaid and meets the minimum order quantity.

Additionally, we are able create special moldings for unique engraved branding and can apply it to most of antenna housings.



# PRODUCT CUSTOMISATION

## Unique Color of Antenna Housing

Custom color of antenna housing available even for standard Off-the-Shelf Antennas.

With RAL pallet color number, we can match antenna housing color to installation surface color with a perfect and seamless match.





# PRODUCT CUSTOMISATION

## Mechanical Parts Customisation

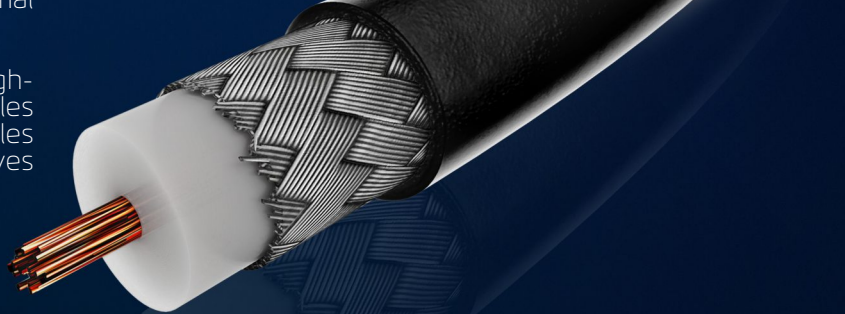
If a default off-the-shelf antenna part for example mounting base does not meet full customer requirements for specific application, our mechanical team of expert engineers will work with our customers by proposing part adjustments or suggest fully customised parts to ensure customer satisfaction for such specific installation requirement.



# RF CABLE ASSEMBLIES

The correct selection of RF cable and connector types are critical for proper antenna function. Selecting a high-quality cable and connector that is compatible with the antenna will ensure optimal antenna performance.

2J Antennas offers a wide range of high-quality cables from thin Microcoax cables to thick low loss and specialized RF Cables as standard and also offers alternatives for any customization needs.



# CONNECTORS

The connector serves as a mechanical connection between the antenna and RF system. When considering a product, it is important to determine the correct connector gender, polarity and geometry.

2J Antennas offers a wide range of standard high-quality connectors that include ultra-small UFL connectors, SMA connectors and any specialized requirements such as waterproof connectors.



# MOUNTING BRACKETS

Antenna mounting brackets extend mounting options of the antenna by allowing to turn the original antenna mounting type into various mounting type options.

We offer screw, magnetic, magnetic / adhesive combination, wall and pole mount bracket options. As an example, connector mount antennas can be used as a magnetic mount, or wall mount with the appropriate bracket.





# DEVELOPMENT BOARDS & KITS

2J Antennas Development Kits & Boards have been designed to increase efficiency of the customer device design stage in mind.

Our seemingly simple plug and play and compact concept brings fully professional engineering tool to the table. This will assist you in identifying correctly tuned ceramic patch antenna on provided development board in minutes or adjust device PCB layout to achieve antenna performance and frequency precision. It has never been easier.



# SERVICES OFFERING



Selecting the appropriate antenna solution is a critical step during the design and development phase of any connected device.

2J Antennas implements a wide range of services that help every customer bring a product to market with little to no effort by providing a true end-to-end process.

Our engineering tools include network analyzers, anechoic chambers, simulation software and 3D printers helping us to reduce the design phases and enable us to react promptly and efficiently to our customers' needs.

# CUSTOM ANTENNAS

From prototype to final product: 2J Antennas ensures your antenna requirements are met and optimized for the market by designing custom antenna solutions and providing integration support that meets the demand for high-quality network services.

- **PCB & RF CIRCUIT DESIGN**

*Our highly experienced engineering and design teams develop the right antennas for a wide range of applications that meet all RF requirements*

- **RAPID PROTOTYPING**

*With the use of industrial-grade Stratasys® 3D printers, we can develop cutting edge prototypes in record time*

- **PLASTIC INJECTION**

*Our five plastic injection molding machines run continuously using only top-grade materials, meeting high-quality standards and ensuring on-time delivery*

- **CABLE ASSEMBLY**

*We offer superior RF cable assemblies catering to any customization needs*



# OTHER CUSTOM SERVICES

- **ANTENNA POSITION STUDY**  
*Identifying the ideal location for the installation of an external or internal antenna inside customers' devices*
- **PCB LAYOUT RECOMMENDATIONS**  
*For custom or embedded antenna designs, 2J offers integration services for optimal component integration and general guidance*
- **ANTENNA MATCHING**  
*Testing ideal matching component values for embedded SMT antennas to achieve optimal impedance characteristics*
- **COMPARISON STUDY**  
*Reports comparing multiple antennas, from multiple vendors, or the same antenna in different conditions*
- **FIELD STUDY**  
*2J can field test customer devices, e.g. test a GPS tracker in a car and monitor antenna performance in town vs country*





# PRE-TESTING

Take advantage of 2J Antennas CTIA certified anechoic chambers available across each of our sites, where active and passive **OVER-THE-AIR (OTA)** measurements such as Gain, Peak Gain, Efficiency, TRP, TIS, EIRP, 2D and 3D radiation patterns are produced



- **ECC TESTING**

*Provide true measure of MIMO performance with passive Envelope Correlation Coefficient (ECC) measurements for 5G NR, 4G LTE, WIFI and other standards*

- **ACTIVE MATCHING**

*Low Total Radiated Power (TRP) is typically linked to antenna integration issues and so we can analyse and optimise matching during active testing in order to reduce risk upon carrier certifications*

- **TIS NOISE DEBUGGING**

*Poor Total Isotropic Sensitivity (TIS) is typically linked to circuit layout or other electronic issues; we have the means and expertise to provide noise debugging and meet carrier requirements*

- **EMISSIONS TESTING**

*We offer Radiated Spurious Emission (RSE) testing for wireless communication devices with both intentional and non-intentional radiators*

# CERTIFICATION GUIDANCE

At 2J Antennas, we offer **full pre-certification testing** of wireless devices utilising our antennas including OTA, TRP, TIS, RSE and conducted power/sensitivity of cellular devices, ensuring compliance with the requirements of the PTCRB certification program.

Obtaining **PTCRB certification** for a mobile device ensures compliance with cellular network standards; without certification, device manufacturers will not be able to operate with any North American cellular carriers.

In addition, Specific Absorption Rate (SAR) testing is offered to ensure that a device in close proximity to a human body, in normal working conditions, remains within the advised permissible exposure.

Our CTIA certified 3D antenna measurement systems provide measurements that ensure devices will meet the OTA requirements for network carriers and PTCRB certification.

*\* Each of the services described above are typically offered free of charge. Please contact us for further information.*



# RF EQUIPMENT

The background of the slide is a photograph of the interior of an anechoic chamber. The walls, floor, and ceiling are covered with numerous dark, pyramidal-shaped electromagnetic absorbers designed to eliminate reflections. The scene is illuminated with dramatic lighting, featuring bright red laser lines that crisscross the chamber and create a high-tech, futuristic atmosphere. A probe antenna is visible in the foreground, pointing towards the center of the chamber.

MVG Satimo StarGate &  
MVG Satimo StarLab

CTIA Certified 3D Anechoic  
Chambers for active and passive  
measurements available at each  
location

# REGULATORY CERTIFICATIONS

2J Antennas IATF 16949:2016 certified manufacturing plant in Central Europe ensures production of the highest quality of antennas.

All products are manufactured under the RoHS directive and are REACH compliant. In addition, a wide range of antennas have IP67, IP69, IK-09, UL94-V0, EN50155, CE and other required certifications.



**IP67**  
Water  
Resistance

**IP69K**  
Hot Water  
Pressure  
Resistance

**IK09**  
Heavy Duty -  
Impact  
Resistance

**UL94-V0**  
Fire  
Resistance

**EN50155**  
For Railway -  
ESD Protection - CE  
Vibration, Shock  
Cooling test...



# PRODUCTION CAPABILITIES

2J Antennas production plant employs 200+ skilled staff members producing high quality antennas that are delivered worldwide.

In order to rapidly respond to markets and customers' needs, 2J Antennas utilises plastic injection, SMD pick and place, ultrasonic welding, automated cable machines, and many more to carry out the antenna production process from start to finish.



**IATF 16949**  
Automotive standards



**EN ISO 14001**  
Environmental



**EN ISO 9001**  
Quality management system

# QUALITY TESTING & EQUIPMENT

100% Antenna Testing  
for Quality Assurance

R&S Communication Testers  
Keysight Vector Network Analyzers

We utilise engineering tools such as communication testers and network analyzers to process real-time measured data with no compromises in data quality.

EN ISO 9001-QMS  
Quality management system

IMDS  
International Material Data System



# SMT PICK & PLACE LINES



Three SMT Lines  
Under One Roof

We use component placement systems for high speed, high capacity and high precision placing of a wide range of electronic components (surface-mount devices - SMDs) on a printed circuit board (PCB). This allows flexibility in the production of printed circuit board assemblies

# CABLES PROCESSING



## Schleuniger Crimp Center

Innovative solutions for cable and wire processing - fully automatic wire processing machines for cutting, stripping, crimping, tinning, twisting and cable printing.



# PLASTIC INJECTION, OVERMOLDING & ULTRASONIC WELDING

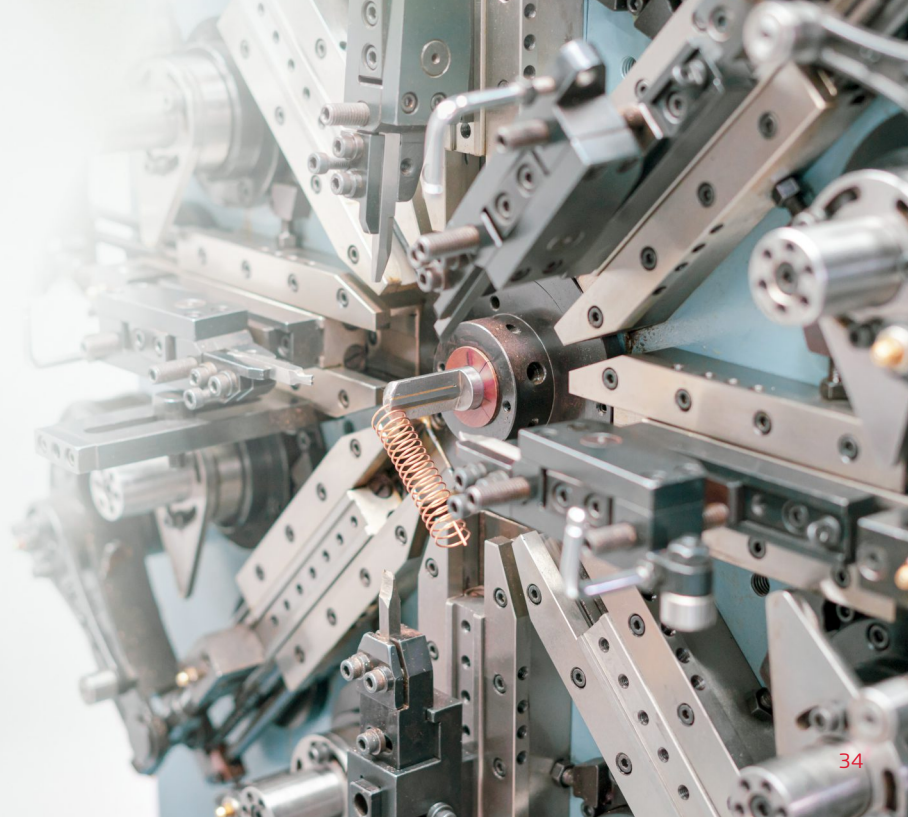
## Production Flexibility

Our five plastic injection molding machines run continuously using only top-grade materials, meeting high-quality standards, and ensuring on-time delivery. This gives us flexibility in making overmolded antennas or custom color antenna enclosures.

# COILS MACHINE

## Production of Coil Antennas

Efficient production of coils and springs with 4-axis CNC versatile spring forming machine capable to work with max wire diameter up to 2 mm



# METAL MACHINING



## Equipment for Metal Customisation

When it comes to customisation, sometimes local adjustments are needed to fulfil extraordinary requirements for metal part design or tweak the mounting base of the antenna.

We are prepared to extend existing options by machining metal parts during production.

# RAPID PROTOTYPING

Stratasys®  
3D Printers

With the use of industrial-grade Stratasys® 3D printers, we can develop cutting edge prototypes in record time.



stratasys



# OUR WORKFORCE



**200+**  
EMPLOYEES

Our workforce is 200+ employees strong, dedicating loyalty and skills to 2J Antennas and our customers. This results directly in our continuous company growth and meet market demands while thriving successfully towards our company goals and vision.

# PACKING & WAREHOUSE

**32,000+**  
STOCK ITEMS

Custom rebranded packaging such as customer Logo, barcode, special bag or box on demand.

Non-wood pallet optimisation for small volumes represent cost-saving solution.

We always have parts in stock allowing us to produce all antennas per every order. Our warehouse is efficiently organized to provide support for rapid production and flexibility for even off-the-shelf antennas customisation such as changing of cable types, cable lengths, connector types or alter antenna color with no delivery delays.

# IT INFRASTRUCTURE

## Reliability & Security Comes First

Our world class IT systems and infrastructures are a crucial part of our production ecosystem. It secures reliable access and data management, improves security and independency on third party services.

# SOCIAL RESPONSIBILITY

## Managing Critical Situations

2J Antennas have always managed to provide an uninterrupted service to their customers worldwide even in unforeseen circumstances.

Unpredictable global threats such as disasters and diseases can pose high risks to global economic prosperity, showing us the need of well-thought-out plan, to be responsible as much as we can in terms of health and safety and to keep business continuity. Our company have established a few effective measures to secure production in running mode as well as to protect the employees in terms of public responsibility by avoiding any risks related to spreading of any potential danger.



**WEAR PROTECTIVE  
FACE MASKS**



**ENHANCED CLEANING  
AND USE OF SANITISERS  
IN PLACE**



**TWO FULLY SEPARATED  
EMPLOYEE SHIFTS**



**TEMPERATURE  
MONITORING**

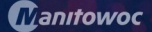


**AIR VIRUS CLEANERS  
IN ACTION DURING NIGHTS**



# 2J ANTENNAS REFERENCES

Variety of Business Partners that we are proud to be a member of their supply chain.



# THANK YOU

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created by | *Miloz Gendiar*



# 2J Antennas

Connecting the World



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