DIODELA

Laser solutions for industry

LASER WELDING SYSTEMS

Efficiency | High precision | Low oxidation

About Diodela

History:

Diodela is a developer of laser solutions for industry. Diodela was founded as a spin-off of the Physical and Technological Sciences Centre (FTMC). Using technologies developed and licensed exclusively to FTMC, Diodela manufactures industrial laser systems for laser welding, cleaning and other types of material processing. In close cooperation with laser research centres and with our extensive experience in photonics, we develop innovative and precise laser systems that meet all the needs of industrial companies.

Diodela is based in Vilnius, one of the main laser technology parks, which brings together the most important Lithuanian laser and engineering technology companies.

Products:

Diodela laser systems are designed and manufactured by professional scientists and engineers. We work closely with industrial companies to understand their changing needs and offer solutions to improve their technological processes. We guarantee high quality, competitive prices, fast production times and professional customer service. Diodela's mission is to develop innovative photonics solutions that drive sustainable industrial breakthroughs.

Our partners:

CENTER FOR PHYSICAL SCIENCES AND TECHNOLOGY

SCIENCE AND TECHNOLOGY PARK

LITEK

Our path: from idea to innovation

Diodela is a high-tech company from Lithuania that has been developing advanced laser welding solutions for industry since 2018. We specialise in **manual and robotic welding systems** that meet the highest efficiency and safety standards.

Key milestones in our development

- **2018 m.** – First international technology partnership established
- **2019 m.** – Development of the first handheld industrial welding laser prototype (DIO500)
- **Q1 2020** – First industrial cleaning laser **(S-100)** developed in Q1 2020
- **Q3 2020** – **Diodela** officially established in Q3 2020
- **Q4 2020** – Commercialisation of the 1 kW CW hand-held laser welder launched in Q4 2020
- **Q1 2021** – Launch of **international distributor network**
- **Q2 2021** – introduction of higher power 1.5 kW and 2 kW CW welding lasers
- **Q1 2022** – first **robotic integration with robot head** implemented
- **Q3 2022** – **100th laser produced in Q3 2022**
- **2023** – **20 lasers per month** on average assembled in production
- **Q1 2024** – First **robotic welding cell** developed in Q1 2024
- **Q3 2024** – **New design** fully compliant with **IEC 60825-1 safety standard** introduced
- **Q2 2025** – Next generation **robotic welding solution** launched

Our values and objectives

- **Innovation** – we continuously improve our products in close collaboration with engineers, operators and manufacturing companies.
- **Quality** – we use only high-quality European components in our production, ensuring reliability and durability.
- **Partnerships** – we seek long-term relationships with distributors, integrators and manufacturers across Europe.
- **Sustainability** – we develop solutions that help reduce energy consumption and environmental impact.

Looking to the future

Diodela aims to become one of the leading developers of laser welding technology in Europe - offering solutions that are not only efficient, but also safe, intuitive and adaptable to the needs of different industries.

Why choose Diodela laser welding solutions?

Exceptional welding speed

Laser welding allows speeds of up to 12 m/min - more than 10 times faster than MIG or TIG methods. This significantly increases production efficiency and shortens lead times.

Minimal thermal distortion

Thanks to the precision and localised effect, materials are subjected to extremely low deformation, even thin or sensitive materials remain stable.

Aesthetic, clean seams

The seams produced are clean and precisely shaped, usually without the need for additional processing, saving time.

Highest level of safety

Diodela laser welding equipment complies with the highest European laser safety standards (EN 60825-1, EN 12254, EN 207). The systems are equipped with emergency stop functions, distance and door sensors, RESET control and operator training with EU accreditation.

Welding without filler metal

Thin materials often don't need wire - making the process simpler, faster and cheaper.

Deep welding and high power

Up to 6 kW of power allows welding of materials up to 16 mm thick - ensuring strong and reliable joints in a wide range of applications.

Adaptable to different needs

From manual to automated systems, materials from 2 mm to 5 mm thick are welded - a wide range of applications.

Scan the QR code and see the highest level of laser welding safety.

Flexibility even for complex solutions

Suitable even for non-standard welds, complex geometries or hard-to-reach areas - a flexible and precise solution.

Reliability and quality

High-quality European components, welds that pass destructive and X-ray tests - the ultimate in welding quality.

Energy efficiency

Up to 40% less electricity is consumed compared to MIG welding, reducing costs and contributing to sustainability.

Fast return on investment

Diodela laser welding systems typically pay for themselves within 3-6 months. It is an efficient and long-term investment in advanced technology.

Diodela laser welding systems

Diodela laser welding systems are manufactured using continuous laser diode and fibre laser technologies developed by the Physical and Technological Science Centre (FTMC) and exclusively licensed to our company.

The estimated lifetime of the laser welding systems is **> 90 000 hours (10 working years).**

All Diodela laser systems come with a **24-month warranty and mandatory safety and user training.**

How do I choose the right system?

The easiest way is to send us samples (preferably a few ~10x10cm size relevant components for welding). During testing we measure the exact welding speed and the effect on the material or component. After the tests we will propose the most efficient system for your application.

All systems are supplied with the necessary equipment for operation: standard (8 m) optical cable, power cable (2 m long - can be modified), accessory kit (2 pcs of goggles, 2 pcs of respirators, detector, lens kit, etc.)

Important notes:

- Power is not the only parameter that determines the efficiency or the intended use of the system. Contact the Diodela team to discuss which laser welding system will be most effective for you.
- All laser systems come with a 2-year warranty, with the possibility of extending the warranty to 3 years.
- All laser systems are class 4 laser systems, so safety operating training is required.
- The laser welding process can be used either manually or in large scale automated workshops, achieving welding speeds of 1-5m/min.

Laser safety

1. Laser operator training with EU accreditation
2. Distance Sensor
3. Full integration with any welding booth
4. Dual-channel door sensor
5. Door reset button
6. Dual-channel emergency stop
7. Magnetic grounding

#1


#2


#3


#4


#5


#6


#7

SPECIFICATIONS FOR LASER WELDING SYSTEMS

Model	FWS-1000-AS	FWS-1500-AS	FWS-2000-AS	FWS-2500-AS	FWS-3000-AS
Laser source	Fiber laser				
Output power	1000 W	1500 W	2000 W	2500 W	3000 W
Output power	10-100 %				
Laser wavelength	1080 nm				
Laser performance	Continuous / Modulated				
Modulation frequency	Up to 50 kHZ				
Output power stability	< 3 %				
Welding seam width	0.1-5 mm				
Focal length of the lens	Standard 120 mm (optional 150 mm)				
Cooling	Integrated, filled with distilled water				
System set-up	1 min				
Operating room humidity	< 70 % (at 40°C)				
Operating room temperature	0-40°C				
Weight of welding gun	< 1 kg				
Optical cable length	Standard 8 m (up to 15m available as an option)				
System dimensions	1200 x 600 x 1300 mm				
System weight	180 kg	185 kg	190 kg	195 kg	205 kg
Power	Single-phase 230 VAC	Single-phase 230 VAC	Single-phase 230 VAC	Three-phase 400 VAC	Three-phase 400 VAC
Medium Power consumption	< 3.7 kW	< 5.5 kW	< 7.4 kW	< 9.3 kW	< 11.1 kW
Stainless steel welding Weld thickness (one pass)	Up to 5 mm	Up to 6 mm	Up to 8 mm	Up to 9 mm	Up to 10 mm
Aluminium welds Thickness (single pass)	Up to 6 mm	Up to 5 mm	Up to 6 mm	Up to 7 mm	Up to 8 mm

Table of specifications for Diodela laser systems

Additionally we provide:

- Diode laser sources
- Smoke extraction equipment
- Robotic solutions
- Extended warranty
- Laser safety booths, curtains and windows
- Laser safety training

CE

Areas of application

Laser welding is used in many industries, most commonly:

In the automotive industry

Welding of a wide range of parts (aluminium, steel) - body frames, engine parts, electronics, airbag sensors, batteries or fuel injectors, and other applications that require strong and precise welds.

Aviation

In this industry, fast welding of different metal types is critical. It is laser welding that provides the necessary precision.

In the electronics industry

Welding is used in the manufacture of a wide range of electronic components such as LEDs, PCBs, mobile phones, televisions, controllers and others, welding precise and complex joints.

In medicine

Laser welding ensures a high level of integrity, hermetic sealing and strength in the manufacture of innovative medical equipment.

In semiconductors

Welding of highly sensitive and small joints of various types and properties (<100um).

In furniture manufacturing

The low material impact, robustness and ability to maintain optimised production parameters of laser welding allow for consistent results and significant time savings when welding precision aluminium and steel components.

Materials to be welded

Laser welding is suitable for many materials:

PLASTICS

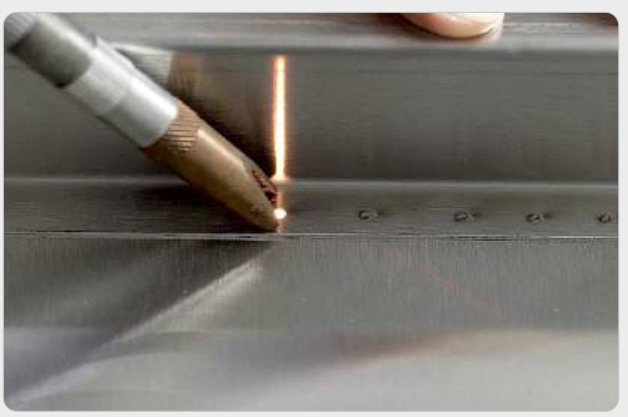
Various grades, including clear plastics

METAL

Steel, copper, gold, silver, aluminium

Welding of thin and large-area steel plates

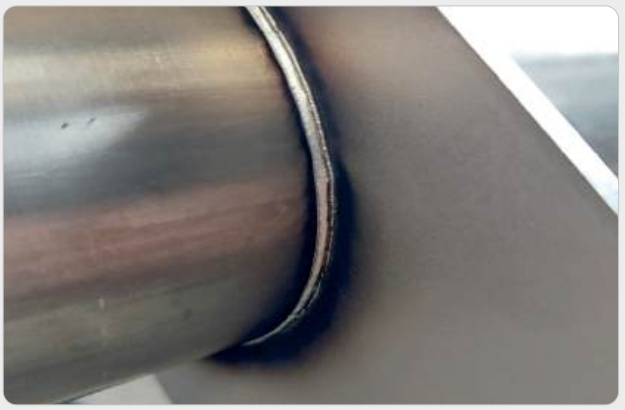
Complex welding is easy to carry out



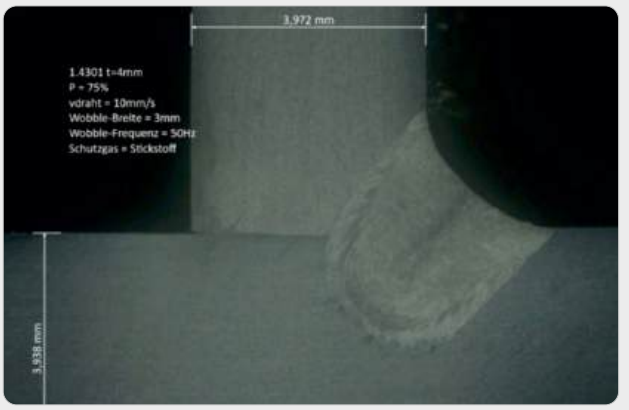
Precision spot welding

Welding of dissimilar metals

Diodela laser welding results

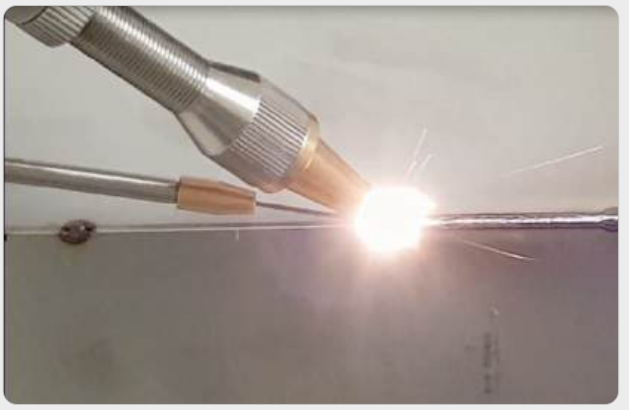


Extremely low physical deformation



High precision and strong welds

Oxidation cleaning before and after welding



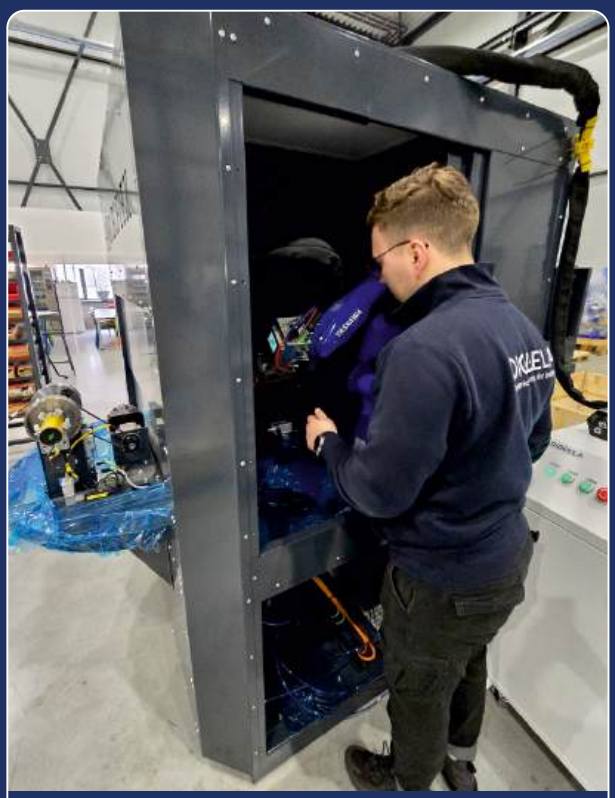
Welding with added wire

Aesthetic results without additional machining

Welding of thin materials without added wire

Robotic laser welding

Rapid retrofitting of existing robotic systems.



Easy integration into robotic cells, no programming required.

Complete robotic cell solution from a single source.

Maximum safety - the foundation of Diodela's laser welding technology

When working with high power lasers, **safety is not an option - it's a necessity**. Diodela laser welding solutions are not only based on advanced engineering, but also on a **responsible approach to people and the working environment**. Our systems ensure the **highest level of laser safety**, meeting the strictest international standards.

Certifications and compliance with European requirements

Diodela equipment is fully certified to the most important European laser safety standards:

Standard	Name	Significance
EN 60825-1	Safety of laser products	Specifies the classification of lasers, levels of protection and management requirements
EN 12254	Laser protection shielding	Regulates protective booths and shields use
EN 207	Laser safety goggles	Provides optical protection against direct or scattered radiation

All Diodela solutions comply with these standards - for both manual and automated applications.

Advanced active and passive safety measures

Every Diodela system is equipped with the **highest level of safety features**, allowing operators to work safely, confidently and uninterrupted.

Key features:

- **Dual-channel Emergency Stop button -** allows the system to stop immediately, even in the event of a technical failure.
- **Two-channel door sensor -** the laser is only activated when the hood is closed, eliminating the risk of human error.
- **Distance sensor -** ensures that the laser only operates at the correct tip position.
- **RESET button -** allows the system to be safely restarted after activation of the security system.
- **Magnetic grounding -** provides additional electrical stability and protection against voltage fluctuations.
- **Integration with guard booths and robotic cells -** allows the system to be easily adapted to different production environments.

Professional operator training - an investment in safe working

Diodela offers **EU accredited training** for equipment operators. They not only help to meet legal requirements, but also **ensure real safety.**

Training topics:

- Rules for the operation of laser equipment
- Laser classification and risk management
- Use of personal protective equipment
- Practical examples of hazard prevention
- Safe system start-up, operation and shutdown

TRAINED OPERATOR = SAFE WORKPLACE + EFFICIENT RESULT

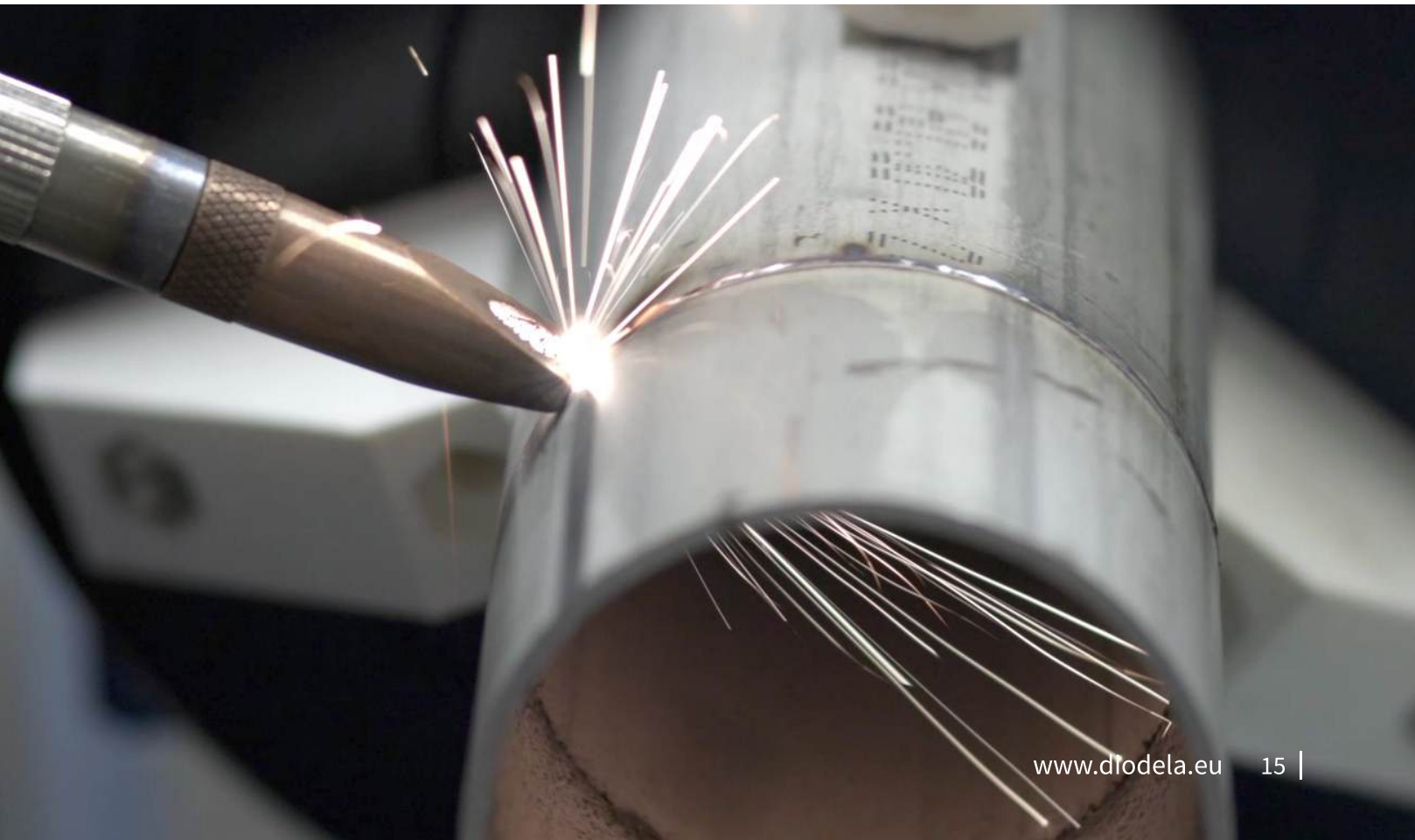
Why is safety so important?

- **Lasers operate with an invisible**, **high-power beam** that can be dangerous even without direct contact.
- **Safety ensures continuity of work** - no downtime due to accidents.
- **Workers feel safe** when they know the equipment is protecting them every step of the way.

The safety aspect	Description
Compliance with standards	EN 60825-1, EN 12254, EN 207 certificates
Active safety features	Proximity sensor, door sensors, emergency stop, RESET, earthing
Integration	Full compatibility with robotic stations and cabs
Training	EU accredited operator training
Benefits	Protection against injuries, accidents, radiation exposure

Efficiency starts with safety

Diodela doesn't just build lasers - we build safe workplaces.



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