

Submittend:

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Sector concerned in this document: Industrial Specialties: High power Laser appliances
(Laserwelding)

Executive Summary

Safety according EU-Maschine Directive*) in Laser-Applications is in danger. This also touches the **EV business** (Battery welding is done with Lasers) and thus the goal of the EU for zero emissions traffic.

We therefore **demand a ban with use-specific time-limited derogations (RO2) for all safety-relevant facilities *)** in accordance with RL_2006-42-EG_Maschinenrichtlinie.

*) Machine Directive: DIRECTIVE 2006/42/EC on machinery:

...laser equipment on machinery must be protected in such a way that effective radiation, radiation produced by reflection or diffusion and secondary radiation do not damage health

Structure of detailed content

1. Description of our product and its application
2. Description and quantities of PFAS used in our products
3. Product characteristics that require the use of PFAS
4. Analysis of alternatives:
5. Emission of PFAS during our production process
6. End-of-life treatment of our products
7. Consequences of a restriction/ban of PFAS for this application
 - a. Financial impact at
 - b. Resulting consequences for the site
 - c. Resulting consequences for our customers and end customers (EU citizens)

0 Introduction

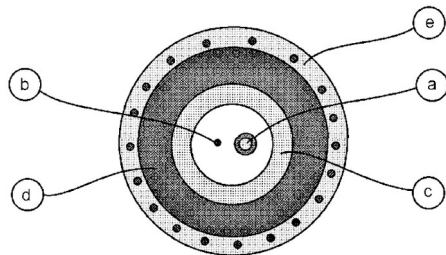
Our company manufactures laser light cables (LLK) for the transmission of high-energy laser beams. Patent specification DE 10 2019 129 194 B4 2021.05.27 describes a protective conduit for high-power laser applications in fiber optic cables. This patent also protects the construction from mechanical stresses and includes a layer of PFAS. **Without this layer, the safety function against laser radiation according to Safety according EU-Maschine Directive cannot be guaranteed.**

1) Description of our product and its application

Application	Type of cable	PFAS	Function of PFAS in the cable *)
Laser cutting machine, laser welding machine	Laser-Light cable protective tube sliding layer of PTFE	Tape FEP PTFE-Tube	The laser optical fiber is centrally located in the cable, concentrically surrounded by a laser protective layer (d) and covered by a mechanical Functional layer with strain relief and for Avoidance of abrasion (e). <i>The combination of PFAS and NON-PFAS materials in the cable leads to a product with higher laser class.</i> <i>The safety requirements in this class are only achieved with this new confidential technology based on a mix of PFAS materials.</i> Usage: Application with welding robots (used in EV-Battery production) leads to high bending strain on the cable. <i>The sliding layer protects the safety-circuit-wires from mechanical stress and thus from electrical breakdown.</i>

*) Reference: Comment (Referenznummer 79df91c0-9d10-4503-80cb-2e8ac37aa24f, BizLink elocab GmbH) / Laserwelding

We refer to the Patent DE 10 2019 129 194 B4 2021.05.27:

[0027] Fig. Figure 3 shows a cross-section through a possible modification of a protective conduit with the optical fibre (a), which is supplied by a Laser safety sensor cable (b) is monitored and is concentrically surrounded by an interior Tube (c), concentrically surrounded by a laser protective layer (d) and covered by a mechanical Functional layer with strain relief and for Avoidance of abrasion (e).	FIG. 3 
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e) The sliding layer protects the safety-circuit-wires from mechanical stress and thus from electrical breakdown.*)

*) Reference: Comment (Referenznummer 79df91c0-9d10-4503-80cb-2e8ac37aa24f, BizLink elocab GmbH) / Laserwelding

2) Description and quantities of PFAS used in our products

The sliding layer of PFAS protects the safety-circuit-wires from mechanical stress (like on applications with welding robots). It is less than 50 mg F/kg of the LLK.

3) Product characteristics that require the use of PFAS

Laser Class 4 required for welding/cutting high Laser-Power applications (typ. >12 kW of Laser Power). **For human protection** (Machine Directive: DIRECTIVE 2006/42/EC on machinery 1.5.12. Laser radiation) it is necessary to maintain the **safety function between laser source (laser machine) and laser welding head (laser cutting head)**.

This can only be done by The sliding layer (protects the safety-circuit-wires from mechanical stress).

4) Analysis of alternatives

Due to the mechanical stress generated by gantry systems as well as by welding robots (several hundred thousand bends of the protective tube) and the high safety requirements with regard to laser class 4 laser safety (at least 2 safety circuits), we are not aware of *any equivalent* alternative that leads to low frictional stress. A lower-value alternative is for laser class 4 laser safety *) is not known. Any changes to the combination of PFAS and NON-PFAS materials would essentially require the development of a completely new mechanical functional layer with strain relief to keep the Laser-safety function.

*) Machine Directive: DIRECTIVE 2006/42/EC on machinery:

...laser equipment on machinery must be protected in such a way that effective radiation, radiation produced by reflection or diffusion and secondary radiation do not damage health

5) Emission of PFAS during our production process

We use a finished product from BizLink elocab GmbH *), which is only cut to length in our production. In doing so, we avoid any waste so that no release of PFAS into the environment occurs.

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6) End-of-life treatment of our products

All our products are disposed according to the respective regulation, e. g., the WEEE (2002/96/EC) directive in the EU. All components including PFAS could be treated in any way that a possible future regulation would request.

In case of fluoropolymers in industrial use, PFAS are still part of the equipment at its end of life, and emissions can be controlled. In case of use of PFAS as chemicals or auxiliaries in Manufacture/Storage/Transport and Quality Control, substances can be used under controlled conditions to minimise exposure to the lowest level possible.

We offer our Customers to take back and dispose of the LLK. This also happens with returns that can no longer be repaired and must be disposed of.

7) Consequences of a restriction/ban of PFAS for this application

7a) Financial impact:

Loss of a whole business-section.

7b) Resulting consequences for the site

Loss of approx. 30 workers. Unnecessary space in our building.

7c) Resulting consequences for our customers and end customers (EU citizens)

1.) **Human safety** against EU-Maschine Directive in Laser-Applications is in doubt, as Laser safety Laser Light Cables (LLK) may not fully meet the previous high requirements of EU standards.

2.) **The Electro-Vehicle business** (Battery welding is done with Lasers) and thus the **goal of the EU for zero emissions traffic**.