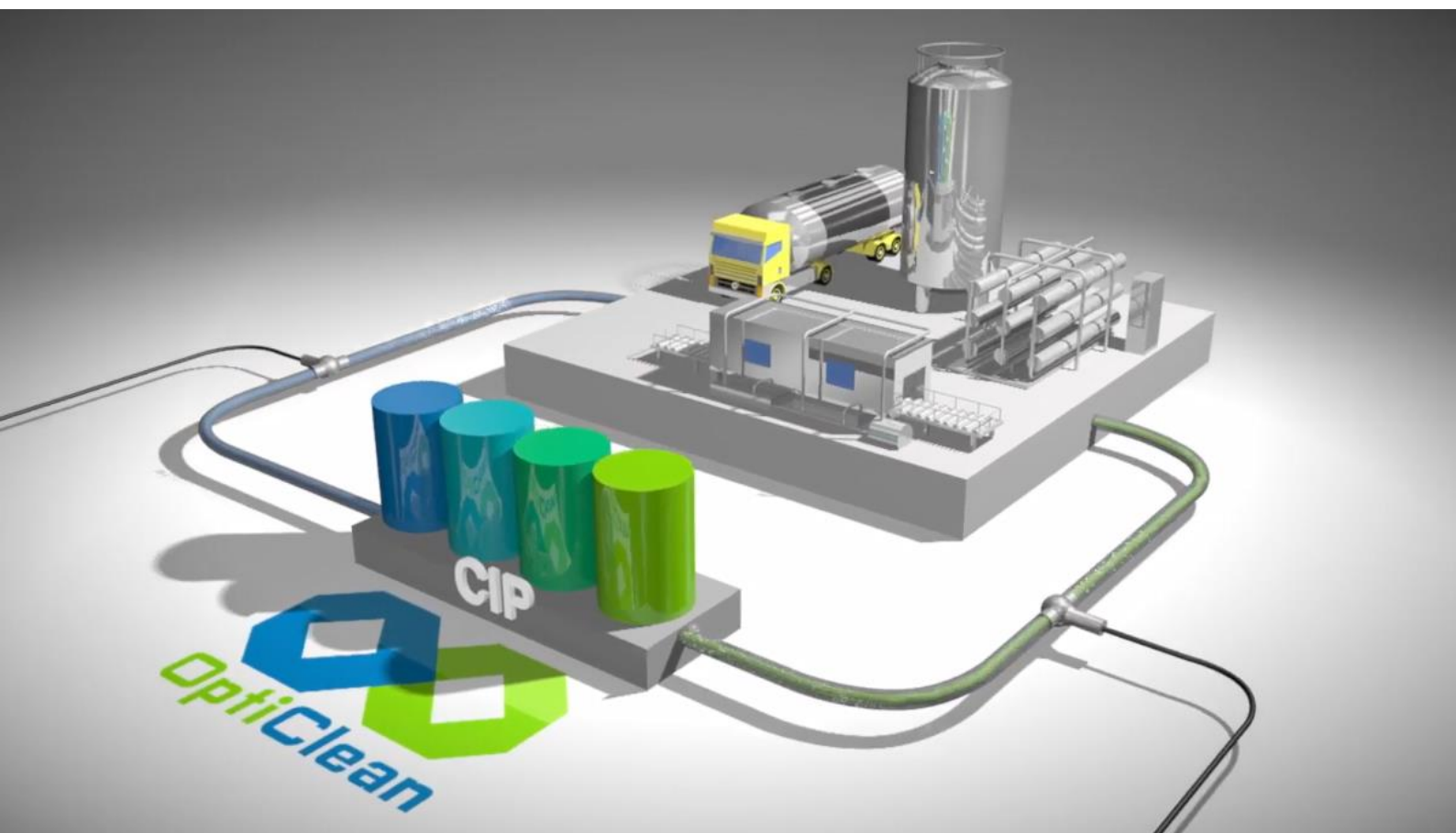




OptiClean Sensors



CERTIFICATION



SOLAR IMPULSE
LABEL



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1. PRESENTATION

1.1. Concept

CIP is an important source of effluent and pollution for a site like yours. The cleaning sequencing varies from one device to another and the rejection impacts are directly linked thereto. The longer a sequence, the more it generates effluents (water flux and pollution load).

CIP sequences and their durations are usually defined empirically. Usual industrial measurement tools allow to control the temperature, conductivity and flow of cleaning solutions.

These parameters are insufficient to control the quality of cleaning, provided by the combined effect of pH, temperature and mechanical energy. The cleaning time is a key parameter to the extent that it determines the material (detergent solution and water) and energy efficiency to reach the required level of cleanliness.

ELODYS INTERNATIONAL has developed a new optical sensor to optimize the sequencing of CIP operations.

Opticlean sensor uses a UV-IR LED technology to continuously monitor particulate and dissolved pollution load in solutions and thus to establish on-line the optimal cleaning time.

Opticlean is also able to determine the product loss sources such as raw milk, pasteurized milk and other products and thus trace losses of material.

The aim of Opticlean sensors implementation in cleaning loop is to reduce the economic and environmental costs of the CIP by optimizing the cleaning time.

OptiClean has several advantages :

- contact-free sensor,
- long lifetime (LED),
- high accuracy (1mg / l) and signal stability,
- no sampling,
- no reagents and chemical analysis,
- reduced maintenance costs.

1.2. Operating principle

The OptiClean sensor has been developed and designed to fit to all types of Cleaning in Place system, while respecting the health and quality constraints.

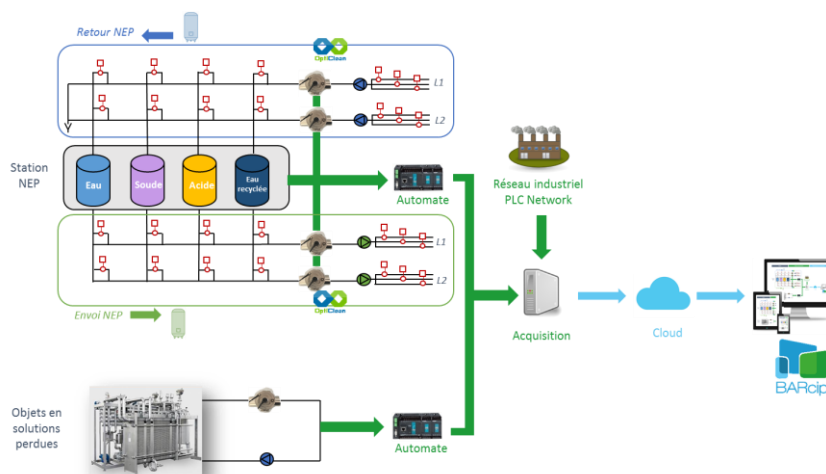
The sensor installation is facilitated by its design, thanks to the standard fast SMS couplings.



- OptiClean sensor -

The principle of optical measurement is to determine continuously the change of state of the cleaning solution in order to accurately determine the time required for a complete cleaning of an equipment. To achieve this goal, the measurement is performed on the in- and output line of the equipment to be cleaned up. It enables the system, thanks to a differential measurement, to trace real-time profile of the load removed by the cleaning solution.

The following schematic diagram shows how sensors are implemented in the case of a CIP with two lines. Two OptiClean sensors are installed on the departure line to measure the reference profile and two others are installed on the return line.

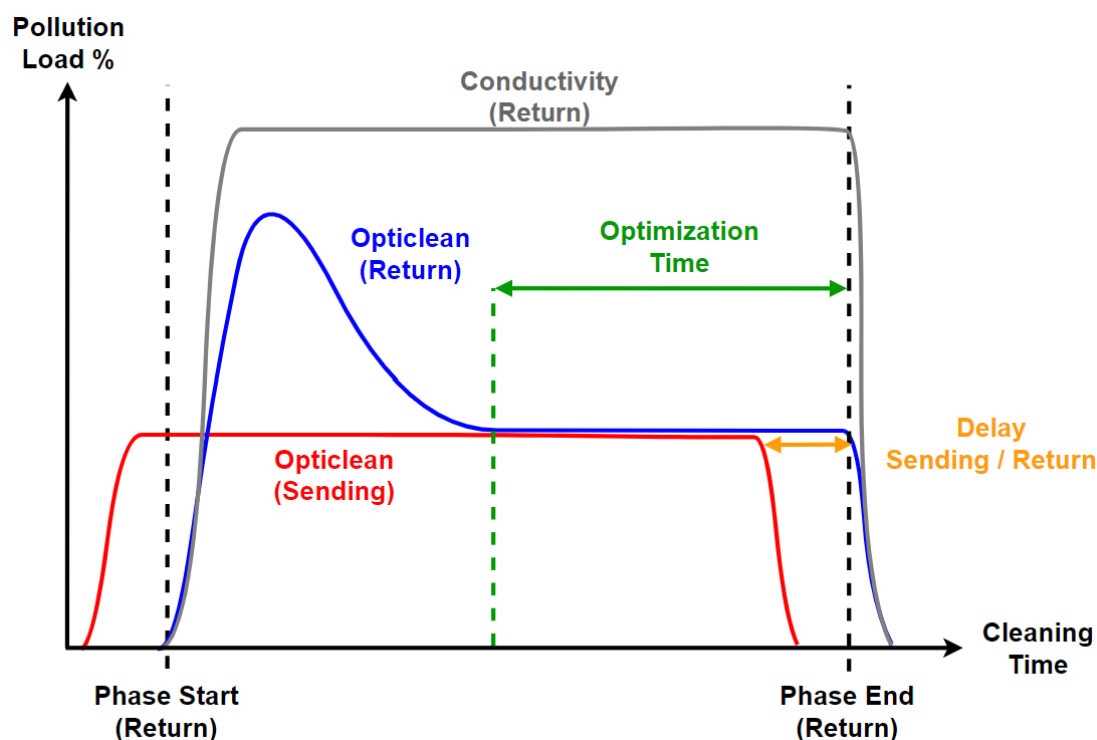


- Sensor integration into the CIP loop -

OptiClean sensors provide 4-20 mA output signals, which is compatible with a wide range of application (online control, automated management of CIP ...).

1.3. OptiClean data recovery and processing

Under the OptiClean system it is possible to trace the real-time cleaning profiles. The following explanatory chart shows the principle of generated signals interpretation



- Example of signal and interpretation -

The sensor installed at the CIP loop departure generates a reference state that tallies with the quality of the solution. The OptiClean signal coming from the other sensor renders the evolution of the pollution load in the solution after equipment cleaning.

Usually the curves converge before the end of the wash or the return signal is stabilized.

With the cleaning profile, it is possible to define with precision the time required to obtain a complete cleaning of the equipment.

For proper signal processing, the CIP line's supply and return sensors must be connected to the CIP PLC with 4-20 mA signals, so as to retrieve the following joint information for equipment :

- Supply UV signal (%)
- Supply IR signal (%)
- Return UV signal (%)
- Return IR signal (%)
- Return conductivity (S/m)
- Temperature (°C)
- Supply flow (m3/h)
- Return flow (m3/h)

Data must be collected every 5 seconds.



The monitoring of CIP can thus be customized for each device according to its profile considerably and cleaning time be considerably adjusted.

To achieve this goal it is important to have an efficient visualization of acquired data. That is why we plan to connect the sensors to the BARcip solution in our offer. It allows the user to work easily on data thanks to tools dedicated to graphic data analysis and machine learning.

1.4. Specifications

Process connection	Inlines	SMS from 2'' to 4'' (other diameters are available)
	Sensors	Clamp (max tightening torque 6 N.m)
Materials		Inox 316 L
Temperature ranges	Ambient temperature	-10 to +85 °C
	Process CIP	0 to 100 °C Up to 130 °C / 30 min maximum
Operating pressure		16 bars maximum
Output	Current outputs	4 to 20 mA (0 – 100 %)
Protection class	For use in humid environments up to 100% RH	Designed and tested for IP69K → 6 : hermetic → 9K : high pressure cleaning

2. DESCRIPTION

2.1. Material's list



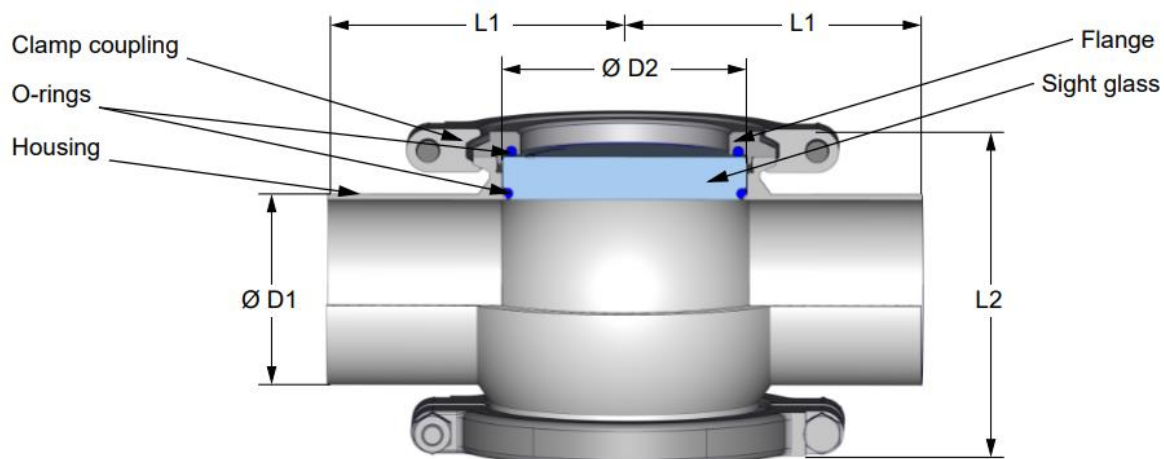
Components required to install an OptiClean sensor are :

1. Inline housing with stainless steel cap
2. Retaining clamp
3. OptiClean sensor
4. 60.00x3.00 EPDM o'ring for OptiClean sensor
5. Borosilicate glass
6. PEEK black cap
7. 60.00x3.00 EPDM o'ring for PEEK black cap and borosilicate glass

To connect sensor to PLC network, a 4-wire cable is also supplied.



2.2. Inline dimensions



	DN	40	50	65	80	100	125	150
	OD	1 ^{1/2}	2	2 ^{1/2}	3	4		
D1	DN	Ø41x1,5	Ø53x1,5	Ø70x2	Ø85x2	Ø104x2	Ø129x2	Ø154x2
	OD	Ø38,1x1,65	Ø50,8x1,65	Ø63,5x1,65	Ø76,2x1,65	Ø101,6x2	-	-
D2		Ø68						
L1		82,5	82,5	92,5	92,5	92,5	117,5	107,5
L2		76	88	104	119	138	163	188

2.3. Compliance

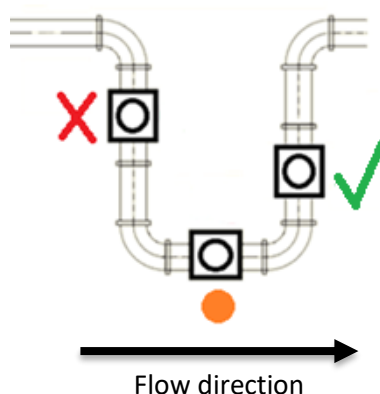
All materials and objects are intended to come into contact with foodstuffs.
All certificates can be found in Chapter 7.

3. CONNECTIONS

3.1. Mechanical connection

Inlines are used to position OptiClean sensors.

The position of the inlines is very important for the correct analysis. To achieve this, the inlines must be positioned according to the following diagram:



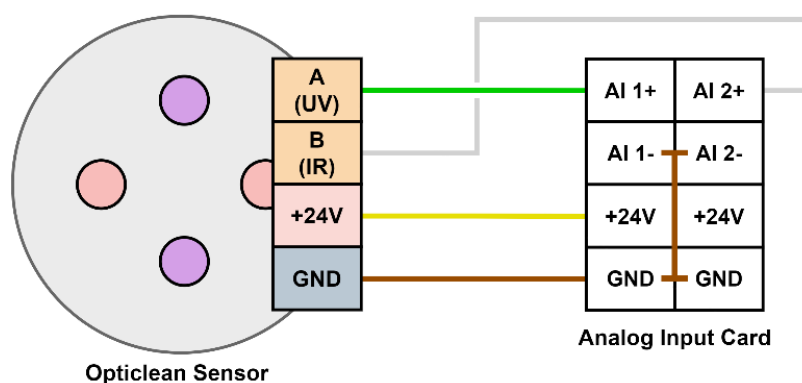
- The sensors must be loaded and therefore placed in an ascending pipe section.
- Avoid installing the sensor near a heater, dam valve or other equipment that can cause a water hammer.

Recommendation:

As suggested by the EHEDG (European Hygienic Engineering & Design Group), it is recommended to have a filter (1mm) on the supply and return CIP lines.

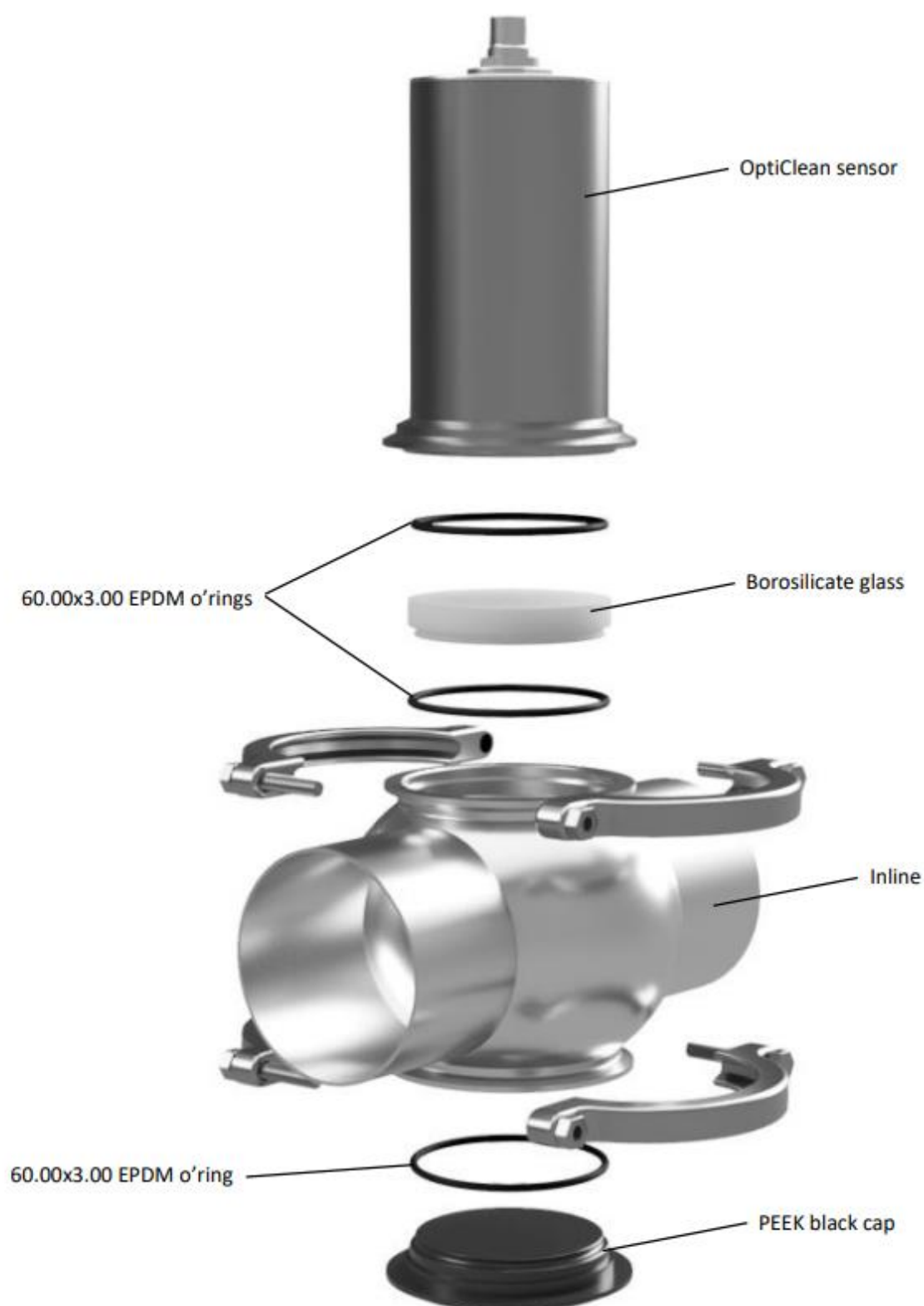
In that case, the sensors should be preferably installed before the filters.

3.2. Electrical connection



- Supply voltage : 24 V (18-36 V CC) - 250 mA
- UV output (A) : 4-20mA active isolated current loop
- IR output (B) : 4-20mA active isolated current loop

4. OPTICLEAN SENSOR INSTALLATION



Inlines housing are supplied with stainless steel cap and PEEK black cap.



To install OptiClean sensor, remove stainless steel cap.



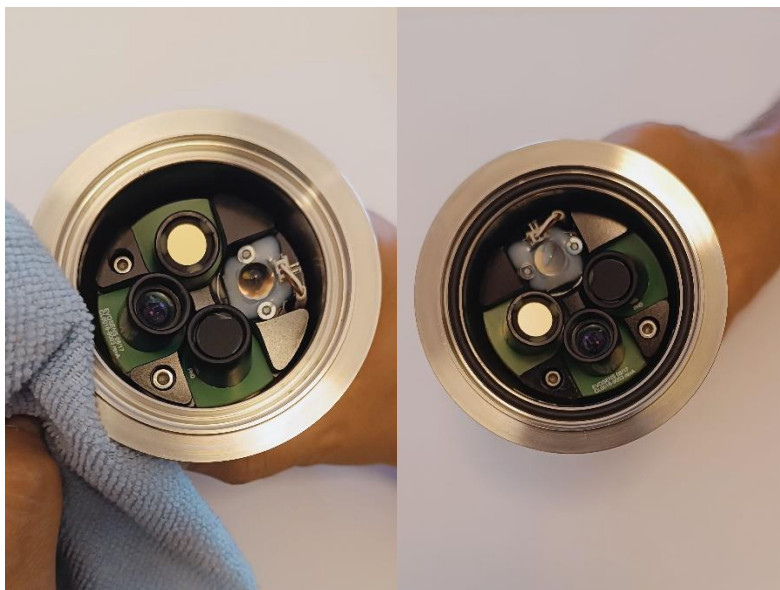
Take the borosilicate glass, put all around the slot the 60.00x3.00 o'ring and clean the glass.
Make sure the seal is not twisted.



On the inline housing, clean the location of the glass and place the borosilicate glass with o'ring fitted
(o'ring on the pipe side and writing on the sensor side).



Clean the sensor slot and put inside the 60.00x3.00 o'ring.



Install the sensor on the inline housing and make sure the o'ring is present between the sensor and the glass.



Fit the clamps and tighten them **symmetrically** with a torque of **6 N.m maximum** (*the gap between clamps should be around 4mm*).



Connect the cable to OptiClean sensor to establish a link with PLC network.



5. MAINTENANCE

OptiClean sensors are measuring materials. To ensure correct operation, they must be installed with precision and the appropriate tools by a competent person who is familiar with the principle of assembly and disassembly of the equipment.

Regular checks for leaks are recommended.

Preventive maintenance should be carried out every 24 months, replacing the borosilicate glass and the black cap and all 60.00x3.00 EPDM o'rings (o'ring for black cap, o'ring for borosilicate glass, o'ring for OptiClean sensor).

We may also recommend to check online the integrity of the borosilicate glass and sensor by checking the 4-20mA signal of the sensor. In fact, if this signal is lost for more than 10 seconds, you can trigger a preventive alarm which will lead to checking the sensor. Because in the event of a leak, the sensor will be flooded and therefore unusable.

In the event of a major intervention, we advise you to return your sensor to our workshops for an expert inspection and to bring it back into conformity.

In the event of return for examination, ensure that the equipment is free from impurities, particularly hazardous and toxic substances.

Use only suitable packaging for transport, to avoid damage to the sensor.

6. WARRANTY PERIOD

During the **one year warranty** period (starting from to the delivery of the sensors on site), ELODYS INTERNATIONAL is committed to take over defects, design flaws, implementation or operation error as soon as possible.

This guarantee shall only apply insofar as the equipment and the software have been normally used.

Any intervention under this warranty claim must first be subject to a written and argued request from the CLIENT.

7. CERTIFICATES

7.1. Inline certificate



Déclaration de conformité

Règlement (CE) N° 1935/2004 du 27 octobre 2004
pour les matériaux et objets destinés à entrer en contact avec les denrées alimentaires.

KIESELMANN GmbH
Paul-Kieselmann-Straße 4-10
D-75438 Knittlingen

Nous confirmons que les types d'acier que nous utilisons, qui peuvent entrer en contact avec des denrées alimentaires dans le cadre d'une utilisation conforme, satisfont les exigences générales du Règlement (CE) N° 1935/2004 du 27 octobre 2004.

1.4301 X5CrNi18-10	1.4404 X2CrNiMo17-12-2	1.4539 X1NiCrMoCu25-20-5
1.4307 X2CrNi 18-9	1.4435 X2CrNiMo 18-14-3	1.4542 X5CrNiCuNb16-4
1.4401 X5CrNiMo17-12-2	1.4462 X2CrNiMoN22-5-3	1.4571 X6CrNiMoTi17-12-2

De plus, les types d'acier que nous utilisons satisfont les exigences des réglementations légales, des normes et des principes directeurs reconnus suivants dans leurs versions respectivement en vigueur:

- **Règlement (EG) N° 2023/2006**
- **Council of Europe Resolution CM/Res (2013)9 on metals and alloys used in food contact materials and articles, Stand: 2013 -1st Edition**
- **EN 1672-1/2 "Machines pour les produits alimentaires"**
- **DIN 10528**
- **EHEDG Guidelines, Doc. 32**

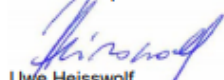
Les types d'acier mentionnés ci-dessus respectent les valeurs limites spécifiques de migration pour les composants en alliages contenus (Specific Release Limits-SRL), déterminées par la Directive du Conseil Européen pour les métaux et les alliages (« Council of Europe Resolution CM/Res (2013)9 on metals and alloys used in food contact materials and articles », version : 2013 - 1ère édition).

Il n'y a aucune restriction en ce qui concerne les types de denrées alimentaires qui sont autorisés à entrer en contact avec le matériau.

La traçabilité des types d'acier utilisés est garantie conformément à l'article 18 dans le cadre du système d'assurance qualité selon ISO 9001.

Knittlingen, 09.03.2021

Pour le compte de la société



Uwe Heisswolf
Responsable du développement

CZ.1.0100.FR

KIESELMANN GmbH
Paul-Kieselmann-Str. 4-10
75438 Knittlingen
www.kieselmann.de

Gestion des entreprises: Klaus Dohle & Caroline Pötzl
Registre du commerce: Tribunal administratif de Mannheim
TVA: DE 811 202 794
NIF: 48021/02249 Administration fiscale de Mülacker

7.2. O'ring certificate



Déclaration de conformité

Règlement (CE) N° 1935/2004 du 27 octobre 2004
pour les matériaux et objets destinés à entrer en contact avec les denrées alimentaires.

KIESELMANN GmbH
Paul-Kieselmann-Straße 4-10
D-75438 Knittlingen

Nous confirmons pour nos joints et composants constitués du matériau suivant,

70 EPDM 291	Ethylène-Propylène-Diène-Caoutchouc (réticulée par peroxydes)
--------------------	--

qui peuvent entrer en contact avec des denrées alimentaires dans le cadre d'une utilisation conforme, la conformité aux prescriptions légales suivantes en vigueur:

- Arrêté du 5 août 2020 relatif aux matériaux et objets en caoutchouc destinés à entrer en contact avec des denrées alimentaires
- Règlement (CE) N° 2023/2006
- Code of Federal Regulations, Food and Drugs (FDA) 21 CFR § 177.2600
- 3A® Sanitary Standard, Number 18-03, Class II
- USP Class VI Ch. 88 – 121 °C
- USP Chapter 87 (In vitro)

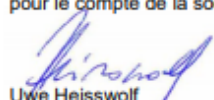
Le matériau mentionné peut être utilisé comme matériau de joint sans danger et est autorisé à entrer en contact direct avec des denrées alimentaires sèches, humides, aqueuses et grasses ainsi qu'avec des produits laitiers dans le cadre d'une utilisation conforme.

Les joints et composant dans le matériau mentionné sont produits en tenant compte du Règlement (CE) N° 2023/2006 en bonne pratique de fabrication de sorte que dans le cadre d'une utilisation conforme à la destination, aucune altération du produit alimentaire dangereuse pour la santé ni de tout autre type ne peut survenir. La traçabilité conformément au Règlement (CE) N° 1935/2004 est assurée.

Ces indications se fondent sur les informations du fabricant.

Sous réserve d'erreurs et de modifications. La présente Déclaration de conformité est valide jusqu'à révocation.

Knittlingen, 30.09.2021
pour le compte de la société



Uwe Heisswolf
Responsable du développement

CZ.1.0111.FR

KIESELMANN GmbH
Paul-Kieselmann-Str. 4-10
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www.kieselmann.de

Gestion des entreprises: Klaus Dohle & Caroline Pötzl
Registre du commerce: Tribunal administratif de Mannheim
TVA: DE 811 202 794
NIF: 48021/02249 Administration fiscale de Mühlacker

7.3. Borosilicate glass certificate



Déclaration de conformité

Règlement (CE) N° 1935/2004 du 27 octobre 2004
pour les matériaux et objets destinés à entrer en contact avec les denrées alimentaires.

KIESELMANN GmbH
Paul-Kieselmann-Straße 4-10
D-75438 Knittlingen

Nous confirmons que les verres utilisés, qui peuvent entrer en contact avec des denrées alimentaires dans le cadre d'une utilisation conforme, satisfont les exigences générales du Règlement (CE) N° 1935/2004 du 27 octobre 2004.

Verre borosilicate
Verre sodium-calcium

En outre, les verres que nous utilisons sont conformes aux exigences des réglementations légales, normes et directives reconnues suivantes, telles que modifiées de temps à autre:

- Règlement (CE) N° 2023/2006
- Règlement (CE) N° 1907/2006
- DIN 10528

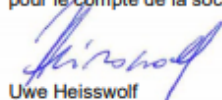
Les verres utilisés répondent aux critères de la norme DIN 10528 et peuvent être utilisés universellement en contact avec les aliments.

et sur la base des informations fournies par nos fournisseurs, nous confirmons que les verres susmentionnés ne contiennent pas de substances dangereuses au sens du règlement (CE) n° 1907/2006.

La traçabilité du verre utilisé, conformément à l'article 18, est garantie dans le cadre de notre système de gestion de la qualité ISO 9001.

Sous réserve d'erreurs et de modifications. La présente Déclaration de conformité est valide jusqu'à révocation.

Knittlingen, 30.06.2021
pour le compte de la société



Uwe Heisswolf
Responsable du développement

C Z.1.0101.FR

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Paul-Kieselmann-Str. 4-10
75438 Knittlingen
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Geschäftsführung: Klaus Dohle & Caroline Potzl
Handelsregister: Amtsgericht Mannheim
USt-ID: DE 811 202 794
St-Nr.: 48021/02249 Finanzamt Mülacker

7.4. PEEK black cap certificate

00591 TECAPEEK black

Stock Shapes

Base Polymer: PEEK

Referenz Nr./Reference No.: SH00591FD0100_V01

Seite/Page 1 von/of 8

Ensinger GmbH · Rudolf-Diesel-Str. 8 · 71154 Nufringen

Ensinger France
ZAC DES CHARTINIERES
01120 DAGNEUX
FRANKREICH

Bitte bei Zahlung und Rückfragen angeben/Please provide in payment and correspondence

Warenempf./Ship-to	Lieferschein/Delivery note	Datum/Date
5200000470	80465402	02.11.2022

Ihr Ansprechpartner/

Contact person: Nicole Weber

Tel.: 07032819 229

E-Mail: nicole.weber@ensingerplastics.com

Erklärung/Declaration

Pos	Material	Bezeichnung/ Description	Prod.-Charge/ Prod. lot
770	1009867	Plate 20 x 620mm, trademark: TECAPEEK	0000639210
Stoffgruppe/Material Group: TECAPEEK black			
Auftrag/Order + Pos: 10341212 / 80 Kund.auftr./Cust.Ord.: CASH2200351			

Nicole Weber

Vertrieb Innendienst / Internal Sales

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Registered Office: Nufringen
Reg. Court: Stuttgart HRB 241486
Managing Directors: Dr. Oliver Frey,
Ralph Pernitzsak, Dr. Roland Reber
Tax Office Böblingen 56455/00772
VAT No.: DE145 163 194

7.5. 3A certificate

ISSUE DATE: March 06, 2018

CERTIFICATE AUTHORIZATION NUMBER: 3648



THIS IS TO CERTIFY THAT

Kieselmann GmbH

Paul-Kieselmann-Str. 4-10, Knittlingen, Baden-Württemberg 75438 , Germany

is hereby authorized to continue to apply the
3-A Symbol to the models of equipment, conforming to 3-A Sanitary Standards for:

Number 74-07
74-07 (Sensors and Sensor Fittings and Connections)

set forth below

CIP Models: 7100-xxx xxx-3xxx in sizes 1", 1.5", 2", 2.5", 3", and 4", DN25, DN32, DN40, DN50, DN65, DN80, and DN100.

VALID THROUGH: **December 31, 2024**

The issuance of this authorization for the use of the 3-A Symbol is based upon the voluntary certification, by the applicant for it, that the equipment listed above complies fully with the 3-A Sanitary Standard(s) designated. Legal responsibility for compliance is solely that of the holder of this Certificate of Authorization, and 3-A Sanitary Standards, Inc. does not warrant that the holder of an authorization at all times complies with the provisions of the said 3-A Sanitary Standards. This in no way affects the responsibility of 3-A Sanitary Standards, Inc. to take appropriate action in such cases in which evidence of nonconformance has been established.

NEXT TPV INSPECTION/REPORT DUE: **February 2028**