

## OekoTube Installation Instructions



OekoSolve AG  
Schmelziweg 2  
CH-8889 Plons  
Tel. 0041 (0)81 511 63 00  
info@oekosolve.ch

[www.oekosolve.ch](http://www.oekosolve.ch)

## Table of contents

OekoTube Installation Instructions .....	1
1 General information.....	4
1.1 Safety notes.....	4
1.2 General description of OekoTube.....	4
1.3 Advantages of OekoTube .....	4
1.4 Notes on cleaning .....	4
1.5 Notes on maintenance .....	5
1.6 Switch-on the OekoTube .....	5
1.7 OekoTube switched-on.....	5
1.8 Switch-off the OekoTube .....	5
1.9 Significance of the LED-Signal.....	6
2 Description of the OekoTube .....	7
2.1 Scope of delivery .....	7
2.2 Overall view .....	8
2.3 Detailed view .....	9
3 Installation instructions.....	10
3.1 Fireplace structure.....	10
3.2 Toolkit.....	11
3.3 Installation type A + B (steel or brick-lined chimney with removal hat) .....	11
Step 1: Fitting the T-piece .....	11
Step 2: Securing the console type A + B (removal chimney hat) .....	12
Step 2: Fitting the console type C (brick-lined or forged chimney hat).....	14
Step 6 – Prior to mounting the cover, make sure that:.....	18
Step 7: Fitting the cover.....	18
Step 8: Affix the appropriate warning signs.....	19
4 LED-Signal: Test mode and normal mode .....	20
5 Electrical connection .....	21
5.1 General information.....	21
5.2 Cleaning from below.....	21
5.3 Cleaning from above.....	21
5.4 Connection of the appliance plugs.....	22
6 Maintenance and cleaning of the OekoTube .....	23
6.1 Safety indication:.....	23
6.2 Brush for cleaning .....	<b>Fehler! Textmarke nicht definiert.</b>

6.3	Cleaning from below.....	24
6.4	Cleaning from above.....	24
6.5	Circular cleaning of the box, the isolator and the connecting pipe (every 2 - 4 years) .....	25
7	Fault indication / Fault reason .....	26
7.1	frequent cause of error .....	28
7.1.1	Hexagon is not shortly cutted of .....	28
7.1.2	Missing magnet, or it is too far away from the contactor .....	29
7.1.3	Verschmutzung vom Verlängerungsrohr und/oder vom Isolator .....	29
7.1.4	The electrode is not centered .....	29
7.1.5	The electrode is too long .....	29
8	Dip-Switches approaches.....	30
8.1	Readjusting of the Dip-Switches.....	31
8.2	Recommendation according to chimney diameter and combustible.....	31

## 1 General information

### 1.1 Safety notes



**Please read these instructions carefully before installing the OekoTube.**

- The installation may only be performed by authorized and skilled personnel.
- The separating module should be installed at least 40 cm from combustible materials.
- The statics of the exhaust system should be analyzed prior to installation.
- Check the exhaust system for deposits and fire safety prior to installation.
- When the temperature in the exhaust system increases, the high voltage automatically switches on. Touching the electrode or the electrode holder may be fatal!
- Make sure you observe the relevant policies and regulations when carrying out any work on the roof.
- Disconnect (power plug) from the mains before starting work.
- The OekoTube must be accessible for maintenance.

No liability is assumed for accidents or damage caused by failure to follow these instructions.

### 1.2 General description of OekoTube

The OekoTube is an electrostatic micro-dust precipitator that significantly reduces particulate emissions from small wood burners (pellets, wood chips, wood pieces). The precipitator is suitable for wood combustion with a capacity of less than 40 kW and is mounted on top of the chimney. The OekoTube has a tested efficiency up to 95% and meets the requirements specified in the Air Quality Control Regulation (LRV).

In a masonry chimney without an inbuilt stainless steel flue pipe the precipitating efficiency can be 5-7% lower.

### 1.3 Advantages of OekoTube

Electrostatic precipitators offer opposite to other dust removal filters like wet scrubbers and traditional filters several advantages:

- High efficiency also if you have little particles
- No back end loss or rather drop in pressure
- Low Maintenance- and operating costs
- No expendable parts

### 1.4 Notes on cleaning

The owner or chimney sweep should perform a relevant check within the first month of the OekoTube operation and set a cleaning interval.

The OekoTube can be cleaned from below (inspection door).

## 1.5 Notes on maintenance

Depending on the capacity and the frequency of using the wood heating, maintenance may need to be carried out on the OekoTube from the roof every 2 - 5 years. The OekoTube should therefore be easily accessible.

## 1.6 Switch-on the OekoTube

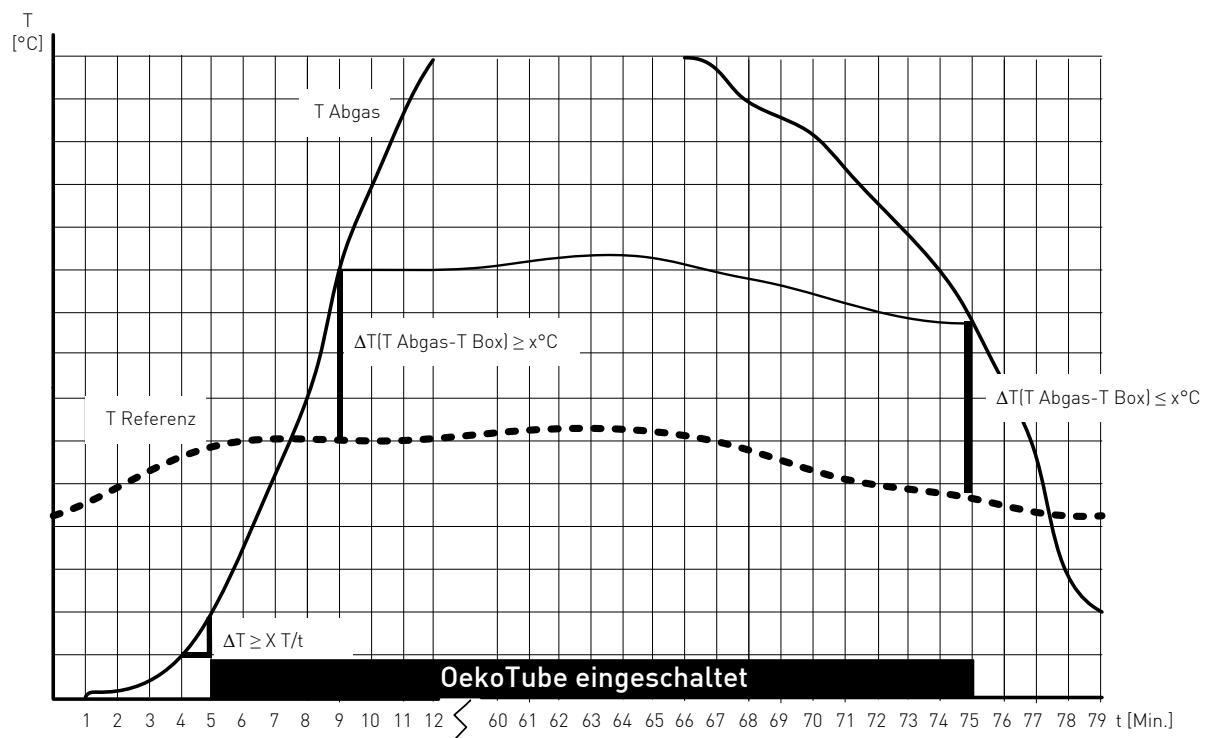
When the exhaust gas temperature within short time decreases or when the temperature difference between reference temperature and the exhaust passes a certain point, the OekoTube switches on.

## 1.7 OekoTube switched-on

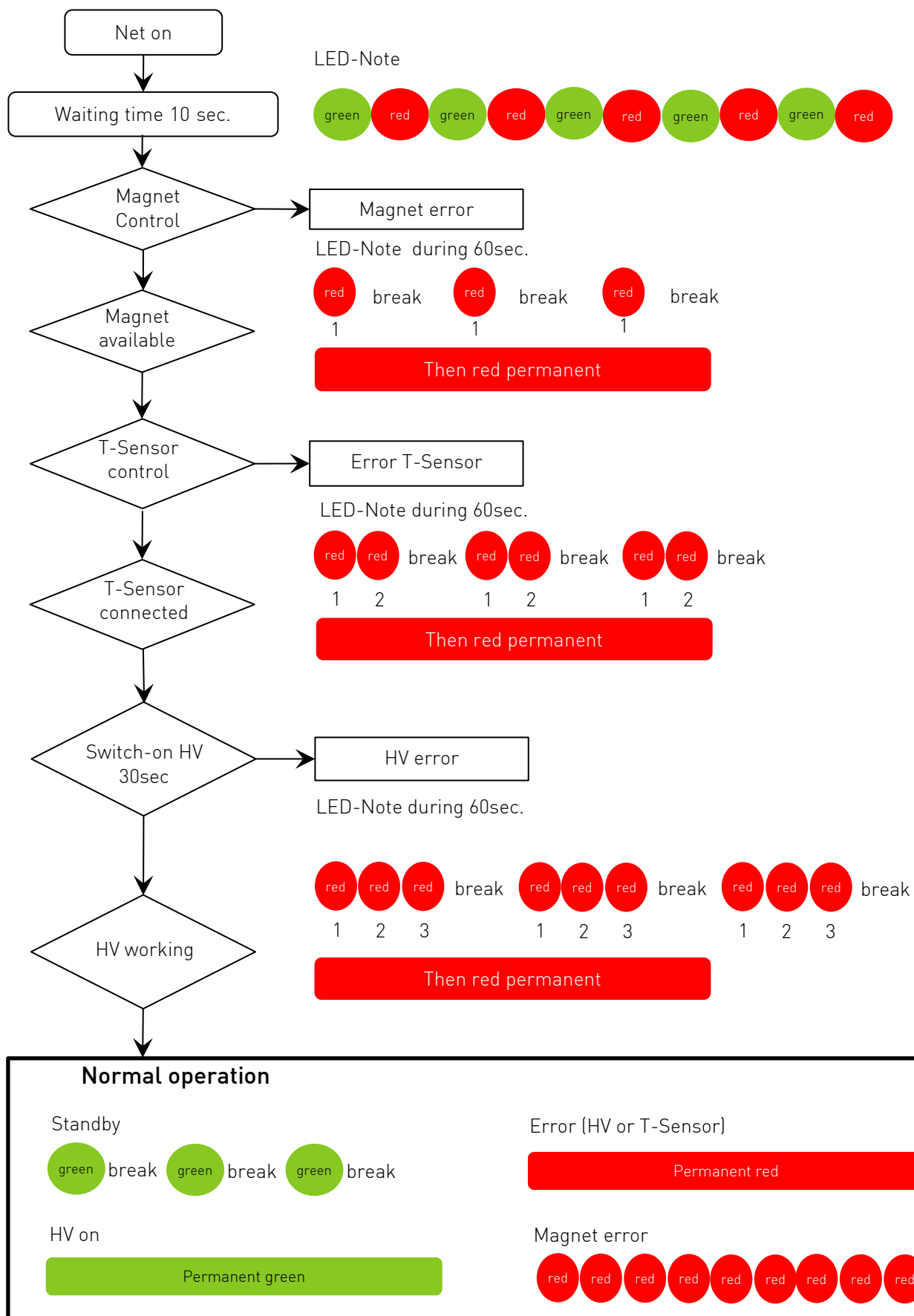
The OekoTube rests switched-on as long as the temperature difference between the reference temperature and the exhaust rests above a certain point.

## 1.8 Switch-off the OekoTube

The OekoTube switches himself off when the temperature difference between the reference difference and the exhaust fall below a certain point.



## 1.9 Significance of the LED-Signal



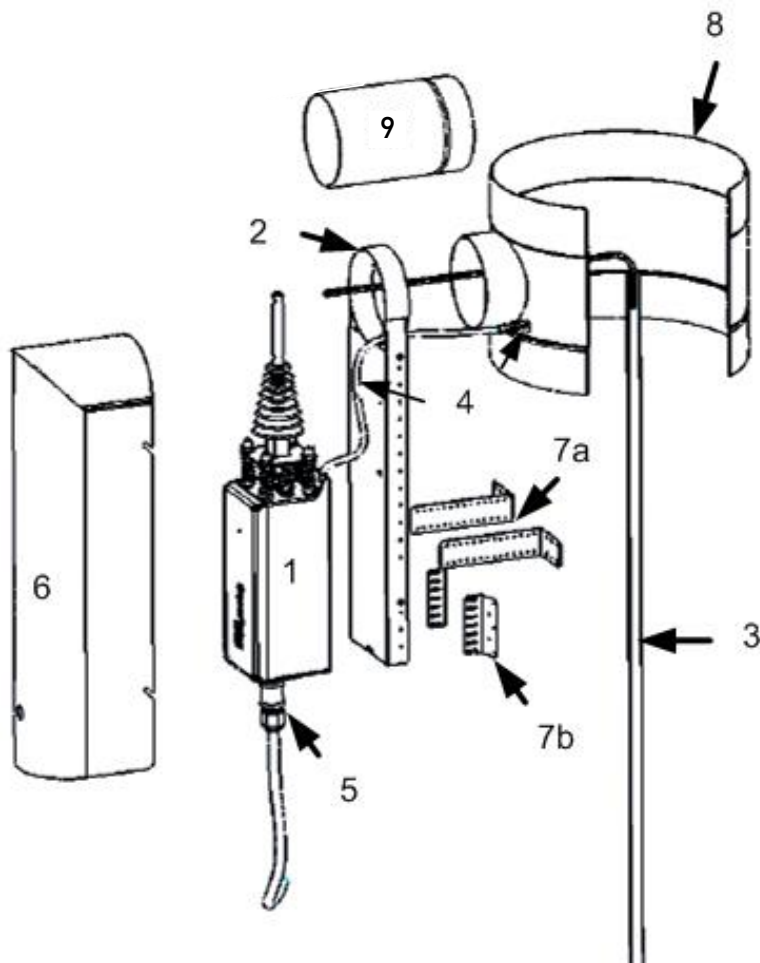
## 2 Description of the OekoTube

### 2.1 Scope of delivery

1. Electronic box with springs, nuts and insulator
2. Console
3. Flexible electrode with 6-edged electrode holder
4. Temperature sensor (cable and holder)
5. Mains plug (230 V AC)
6. Cover
7. a) Mounting bracket for brick chimney  
b) Mounting bracket for steel chimney

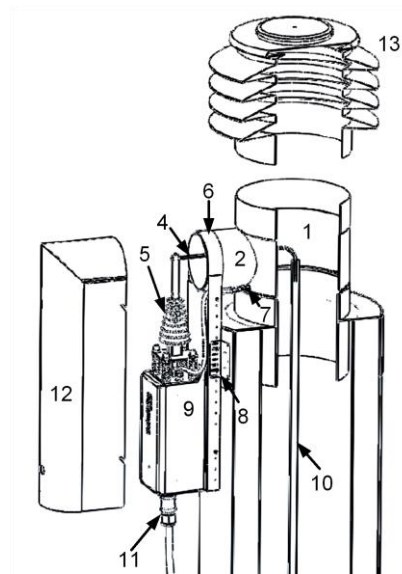
Optional

8. T-piece
9. Extension pipe 500 mm



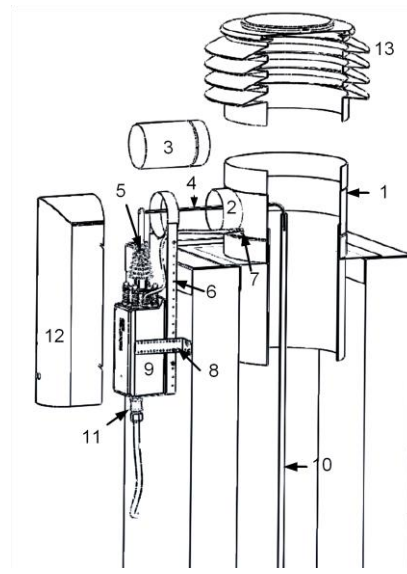
## 2.2 Overall view

### Seel chimney (type A)



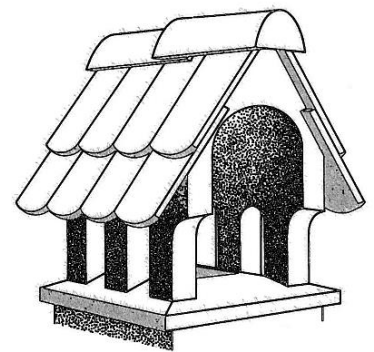
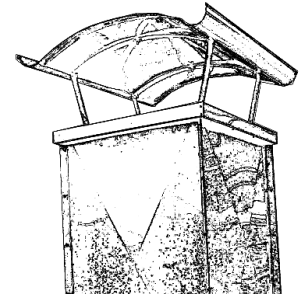
1. T-piece
2. T-piece connector (panel connection)
3. Extension pipe (brick chimney)
4. 6-edged electrode holder (steel rod)
5. Insulator
6. Panel
7. Temperature sensor with holder

### Brick-lined chimney (type B)



8. Assembly bracket
9. Electronic box
10. Electrode
11. The mains plug 230V AC
12. Cover
13. Removable round chimney hat (is not an OekoTube component)

### Brick-lined or forged chimney (type C)

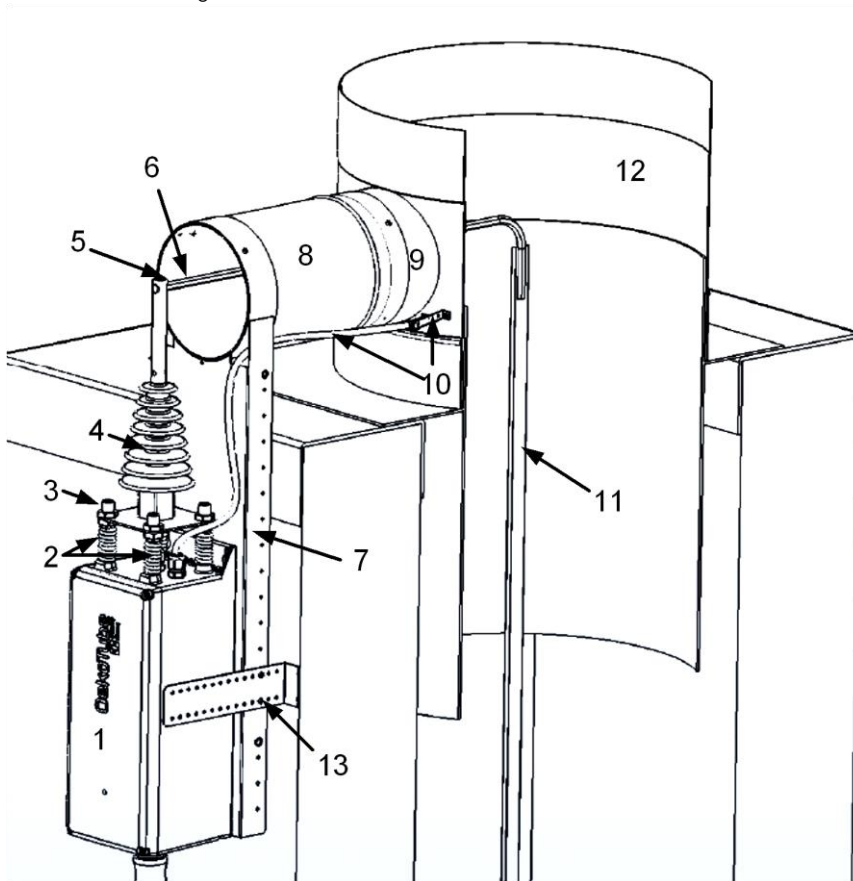


Special case



## 2.3 Detailed view

1. Electronic box
2. Springs
3. Adjusting nuts
4. Insulator
5. Grub screw to fix the hexagonal electrode holder (6)
6. Hexagonal electrode holder (steel rod)
7. The electronic box mounting bracket
8. Extension pipe
9. T-piece connecting piece
10. Temperature sensor and cable holder
11. Flexible electrode
12. T-piece
13. Mounting bracket



## 3 Installation instructions

### 3.1 Fireplace structure

Depending on the type of the chimney the OekoTube has to be installed with professional expertise. Please follow the installation instructions for different types of chimneys:

#### Type A:

##### Steel chimney with insulation

- Steel chimney (round) with heat insulation 30-80 mm
- Flue pipe with protective cover
- Optionally with a chimney hat



#### Type B:

##### Brick fireplace with removable chimney hat

- Guided into a brickwork or in a shaft
- Protective cover (connection piece max. 100 mm) available



#### Type C:

##### Brick chimney hat

- Bricked or forged chimney hat
- Lateral opening: min. 130mm diameter



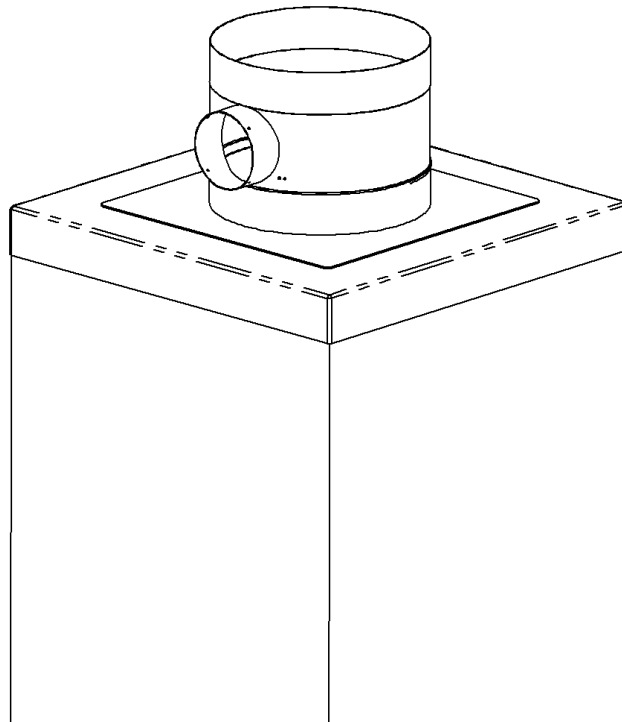
## 3.2 Toolkit

- Rivet gun
- Cordless screwdriver / hammer drill for brick chimneys
- 3mm Allen key (all screws can be tightened with the same Allen key)
- Metal drill 3.3 mm
- Concrete drill (brick chimney)
- Open-end spanner size 17
- Screws and anchors (brick chimney)
- Hand torch
- Water level

## 3.3 Installation type A + B (steel or brick-lined chimney with removal hat)

### Step 1: Fitting the T-piece

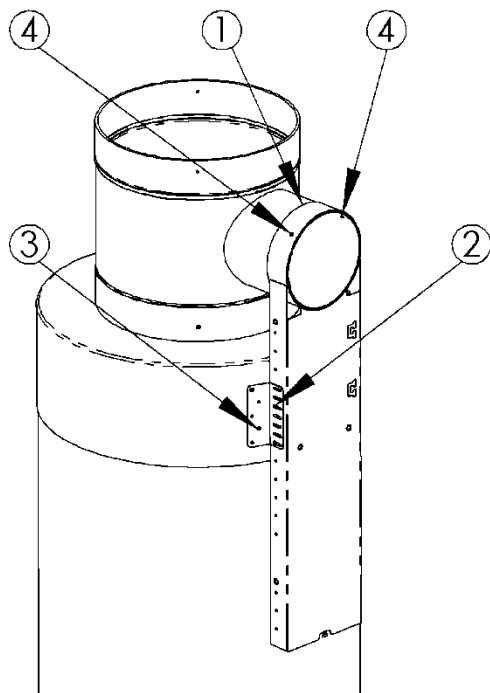
1. Remove the chimney hat.
2. Put the T-piece onto the protective cap.
3. Determine the position of the panel. Ensure the visibility, aesthetics and the numerous mounting possibilities of the console.
4. Drill holes in the protective cap connecting the T-piece (predetermined holes for the rivets,  $D = 3.3 \text{ mm}$  are available on the T-piece).
5. Rivet the T-piece.



## Step 2: Securing the console type A + B (removal chimney hat)

### Steel chimney with an insulation thickness between 30 and 50 mm

- (1) Push the opening of the console directly over the connecting piece of the T-piece.
- (2) Rivet the 120° brackets on both sides of the console at the height of the protective cover.
- (3) Rivet the bracket onto the protective cover.  
Recommendation: Drill a hole (3.3 mm in diameter) in the protective cover through one of the specified holes of the bracket. Firstly, do rivet the first hole before you drill the next one.
- (4) Rivet the console onto the connecting piece of the T-piece (at least 2 rivets)



## Steel and brick chimneys with an insulation thickness more than 50 mm

- (1) Slide the supplied extension pipe over the connecting piece of the T-piece.
- (2) Slide the opening of the console over the extension pipe. Adjust the extension pipe in such a way that the console is vertically aligned with the edge of the extension pipe. Cut the overhang of the extension pipe flush with the opening of the console.




If the connecting pipe protrudes through the opening of the console, it has to be cutted.

<p><b>Steel chimney (Type A)</b></p> <p>(3a) Rivet the 120° brackets on both sides of the console at the height of the protective cover.</p> <p>(3b) Rivet the bracket on the protective cover. Recommendation: Drill a hole (3.3 mm in diameter) in the protective cover through one of the specified holes of the bracket. Firstly, do rivet the first hole before you drill the next one.</p> <p>(3c) Drill holes and rivet the extension pipe on the connecting piece of the T-piece. Drill holes and rivet the extension pipe on the console's opening.</p> <p>(3d) Drill holes and rivet the extension pipe on the console's opening.</p>	
<p><b>Brick-lined chimney (Type B)</b></p> <p>(4a) Rivet the 90° bracket on both sides of the console.</p> <p>(4b) Fasten the bracket with the provided screws (use anchors if necessary) on each side of the console onto the brick chimney.</p> <p>(4c) Drill holes and rivet the extension pipe onto the connecting piece of the T-piece.</p> <p>(4d) Drill holes and rivet the extension pipe onto the console opening.</p>	

## Step 2: Fitting the console type C (brick-lined or forged chimney hat)

 The lateral opening of the chimney hat has to be at least 130 mm.

 For the installation of a brick-lined or forged chimney hat you don't need a T-piece.

- (1) If necessary, fix the extension pipe onto the console.
- (2) ATTENTION: the extension pipe has to be cutted 1 cm bevor the flue duct.
- (2) Fix the console with 4 asseby brackets.
- (3) annieten the holder of the temperature sensor onto the console.

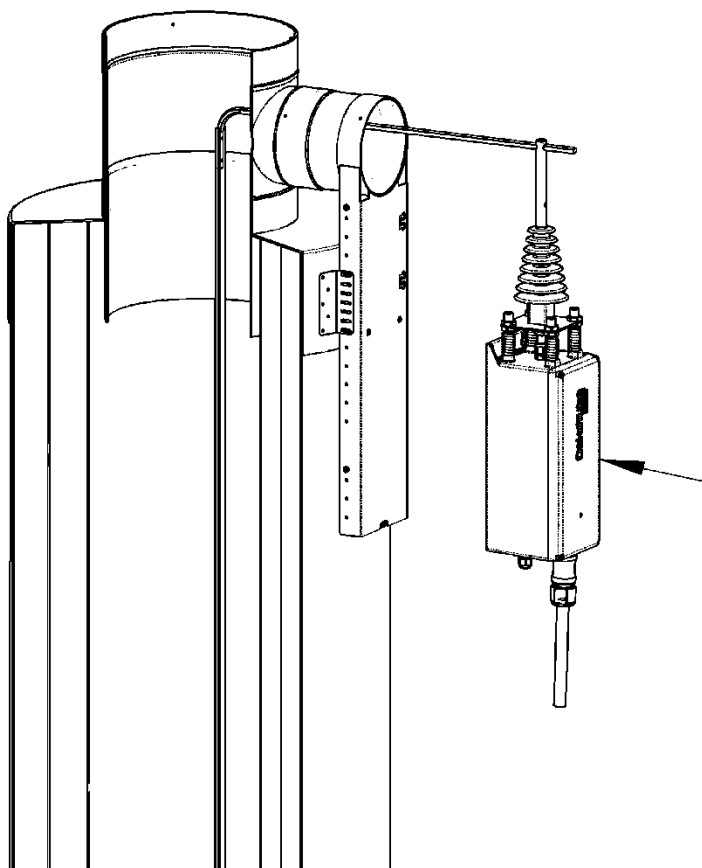


## Step 3: Installation of the electrode and the electronic box

1. The flexible electrode is inserted through the T-piece into the flue pipe.
2. Unscrew the grub screw on top of steel rod above the insulator. Push the hexagonal steel rod from the electrode through the hole. Do not cut the hexagonal rod yet.
3. Push the electronic box with the two holes on top forward over the two screws in the console. Slide the electronic box along the console downwards over the bottom hook, so the electronic box sits secure and cannot slip. Tighten the two screws with a 3 mm Allen key.



Do not use cordless screwdriver. Danger of corrosion of the stainless screws





## Step 4: Aligning the electrode

Make sure that the flexible electrode is positioned absolutely centered of its entire length in the flue pipe. Therefore a trouble-free functioning of the OekoTube can be ensured.

1. Check if the „upper end“ of the electrode is positioned centrally in the chimney flue. Keep the insulator rod vertically to prevent the hexagon leverage effect. Tighten the grub screw temporarily.

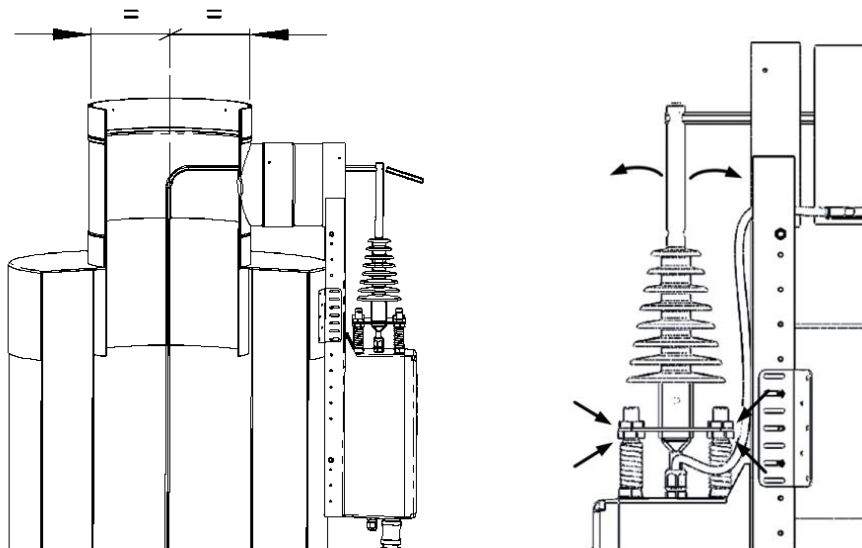
**NOTE:** Use the grinder's cut-off disc or a hacksaw to cut off the rest of the hexagon rod a few centimetres behind the grub screw. Then the leverage effect is eliminated by the weight of the hexagon.

2. Check if the „upper end“ of the electrode is still positioned absolutely centred in the flue pipe. If necessary, adjust the position of the hexagon rod using the grub screw.
3. Check if the grub screw is tight.
4. Fine adjustment: Align the electrode exactly in the middle of the flue pipe along its entire length using the eight nuts above the springs.

### Minimum distance between the electrode and chimney wall: 50 mm

Note: The insulator rod may be slanted.

5. When the electrode on the whole length is vertical, tighten all nuts with the open-end spanner (size 17).
6. With a circular or metal saw the 6-edged rod shortly crop.





## Step 5: Fitting of the temperature sensor

1. Type A + B (with T-piece): Insert the temperature sensor into the holder (fig. 1).
2. Type C (without T-piece): Insert the temperature sensor into the groove of the holder in den Einschnitt des Halters einfügen (fig. 2).
3. Insert the top of the temperature sensor through the hole on the T-piece. The top has to extend into the chimney pipe (T-piece) 3 mm. Control into the chimney pipe (fig. 3).
4. Compress slightly the two tops of the temperature holder with a pringers (image 1).
5. Secure the cable of the temperature sensor into the two notches on the console. Make sure the cable is not over-stretched (fig. 4).
6. Roll up the remaining cable of the temperature sensor and secure it onto the springs (fig. 4). Make sure that the cable does not contact the insulator.

figure 1

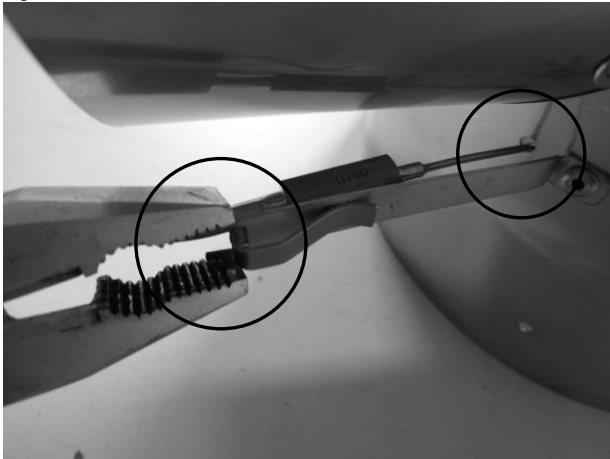


figure 2

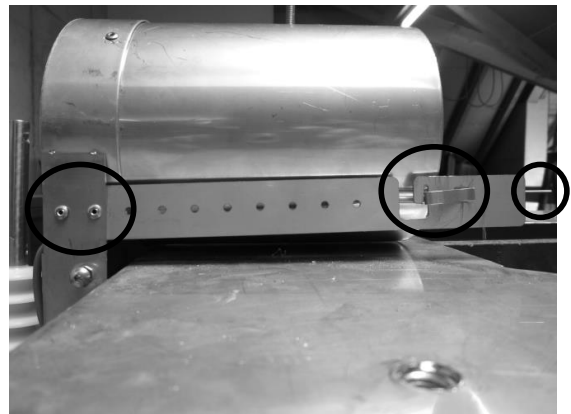


figure 3

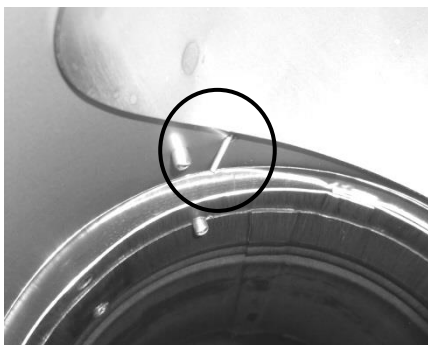
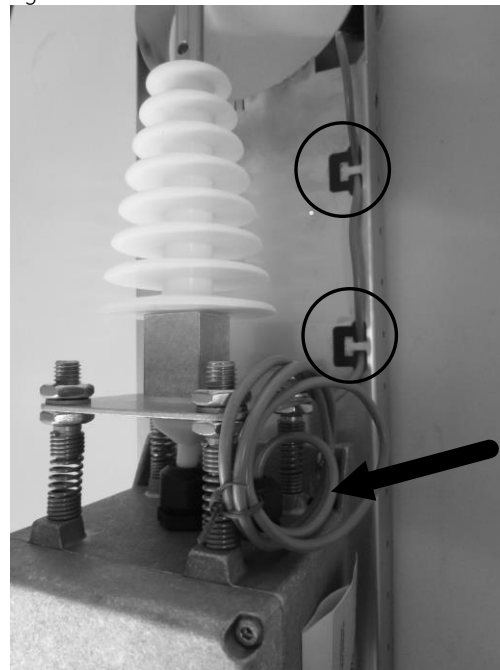
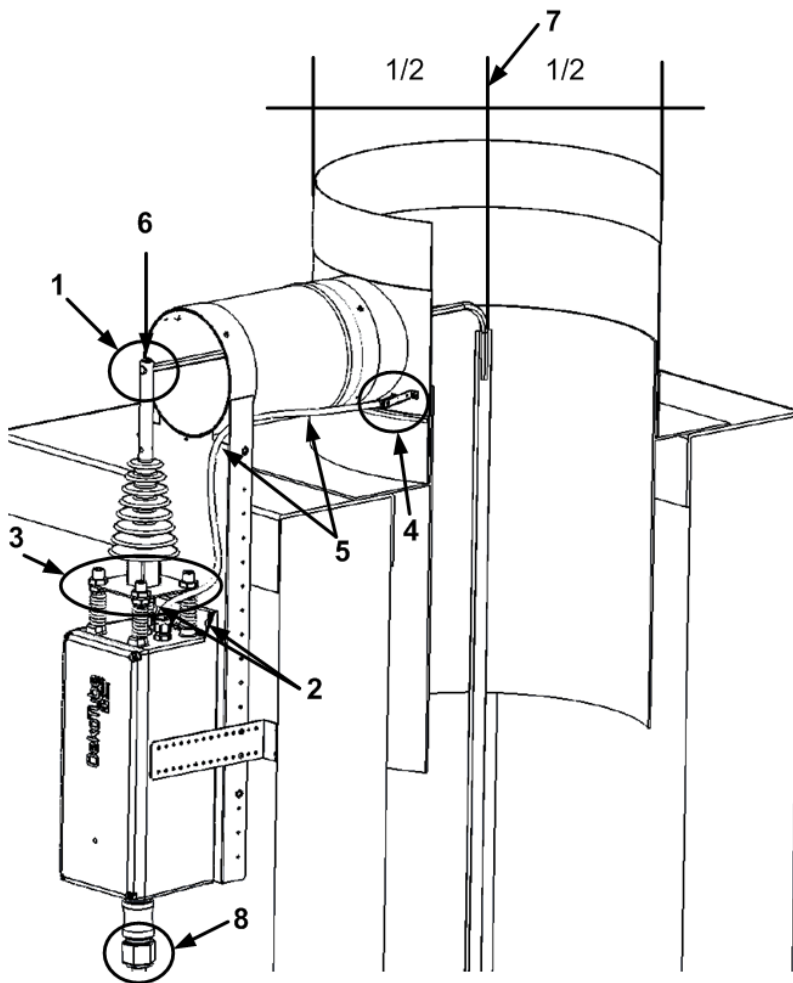


figure 4



## Step 6 – Prior to mounting the cover, make sure that:

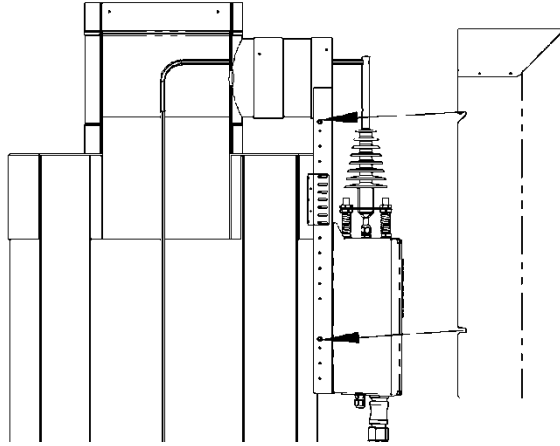
1. Hexagonal rod is cut off flush and the sharp edges grinded or sanded back to a smooth surface
2. The 2 screws on the electronic box are tightened
3. The nuts above the springs are tightened
4. The temperature sensor is riveted and fixed at the right place and sticks out into the flue pipe
5. The cable of the temperature sensor is installed
6. The grub screw used to secure the hexagonal holder (steel rod) is tightened
7. Inspection view: The electrode is positioned



## Step 7: Fitting the cover



1. Fasten the cover with the 4 available screws.

Do not use cordless screwdriver. Danger of corrosion of the stainless screws.



## Step 8: Affix the appropriate warning signs

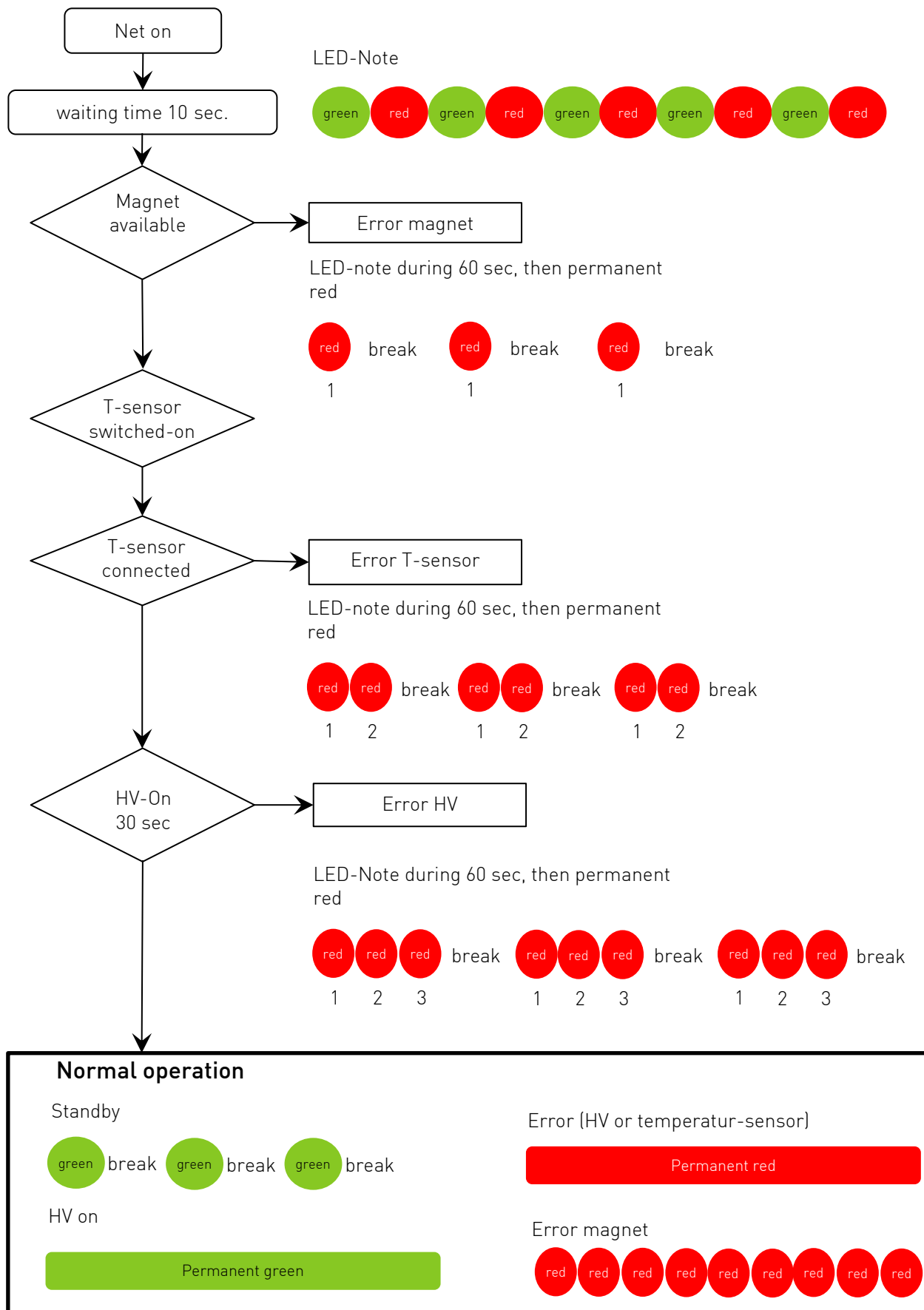
The chimney sweep has to be aware of that the chimney is equipped with an OekoTube. Affix a "Warning Sign" on all access doors. Exhaust system with the OekoTube micro-dust precipitator.

OekoTube	 	OekoSolve
<p><b>Achtung!</b> Abgasanlage mit Feinstaubabscheider OekoTube</p>	<p><b>Attenzione!</b> Sistema di scarico con estrattore di polveri sottili OekoTube</p>	<p><b>Attention!</b> Conduit équipé d'un filtre électrostatique</p>
<p><b>Hochspannung!</b> Vor allen Arbeiten an der Abgasanlage Merkblatt beachten!</p>	<p><b>Alta Tensione!</b> Consulti la scheda d'istruzione prima di lavorare alla sistema!</p>	<p><b>Haute tension!</b> Consulter la notice avant toute intervention sur le conduit!</p>
<p>Herrsteller: OekoSolve AG, Schmelziweg 2, CH-8889 Plons +41(0)81 511 63 00</p>		

## Step 9: Connect the power socket

Connect the plug to the electronic box. The LED blinks orange and then flashes green every 10 seconds if the OekoTube is on stand-by mode. When the OekoTube is in operation, the LED light is continuously green. Electrical installations must be performed by a qualified electrician.


## 4 LED-Signal: Test mode and normal mode



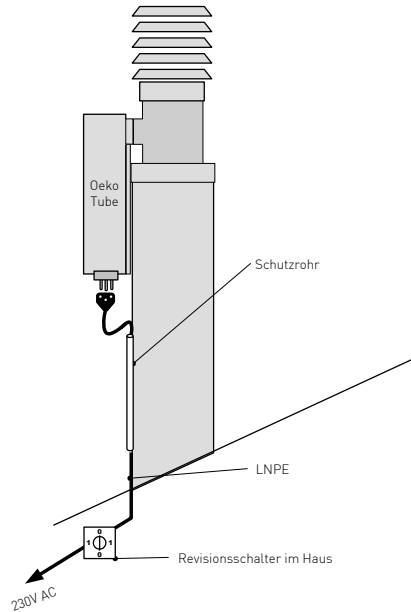
## 5 Electrical connection

### 5.1 General information

The electrical installation must be performed by a qualified electrician. Pull out the plug from the OekoTube so it is disconnected from the mains.

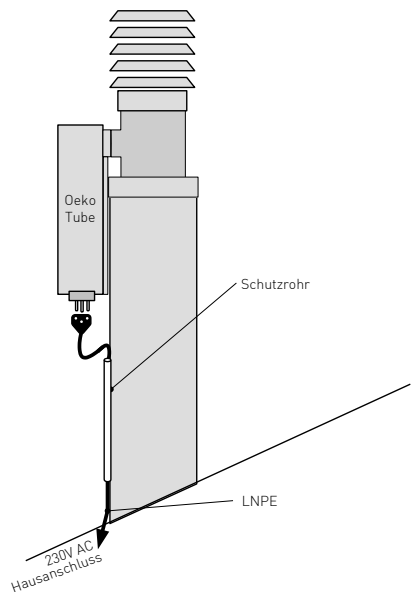
Connector: 230 V AC / 0.2 A / 30W, 50 Hz 

### 5.2 Cleaning from below



The isolation switch must be accessible to the chimney sweep.

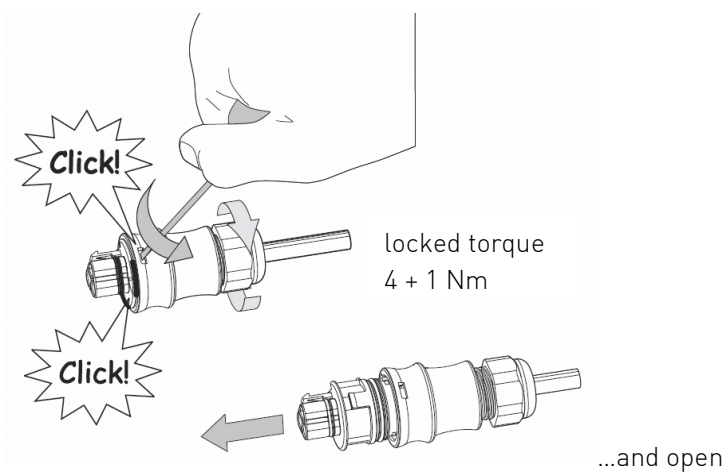
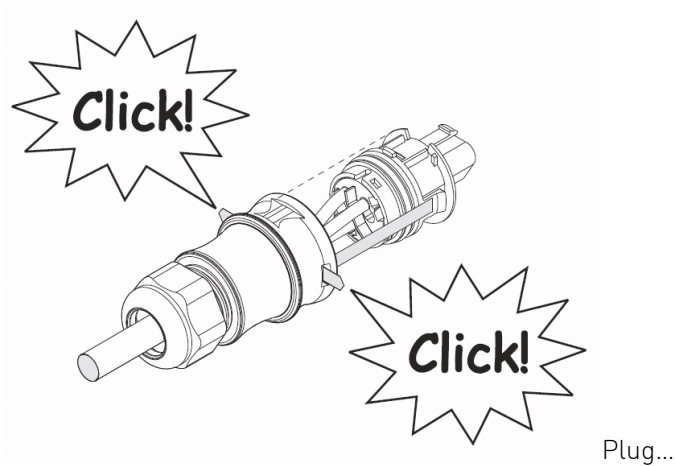
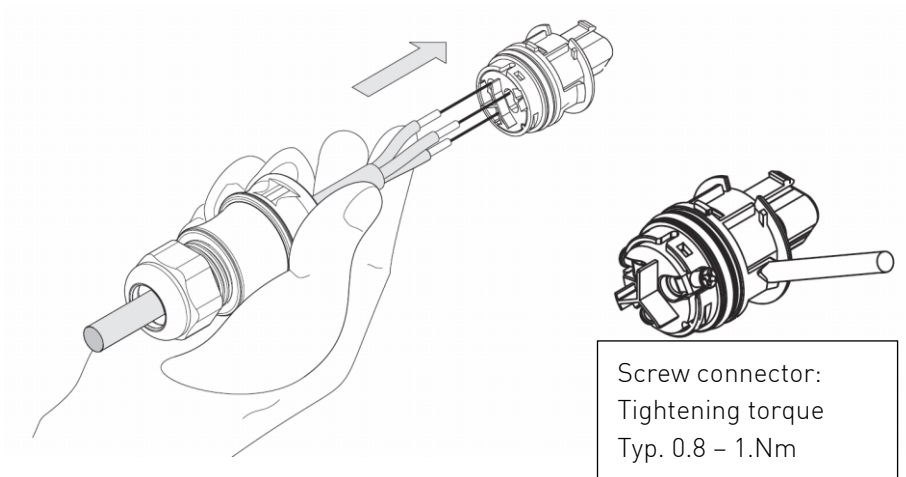
### 5.3 Cleaning from above



Affix the "Caution! Particle precipitator!" on the inspection door. The chimney sweep can unplug the OekoTube when cleaning the roof.

## 5.4 Connection of the appliance plugs

Check designation on the connector (L = conductor, N = neutral,  $\oplus$  earth conductor).



## 6 Maintenance and cleaning of the OekoTube

(The intervall between two cleanings will be appreciate by the chimney sweeper)

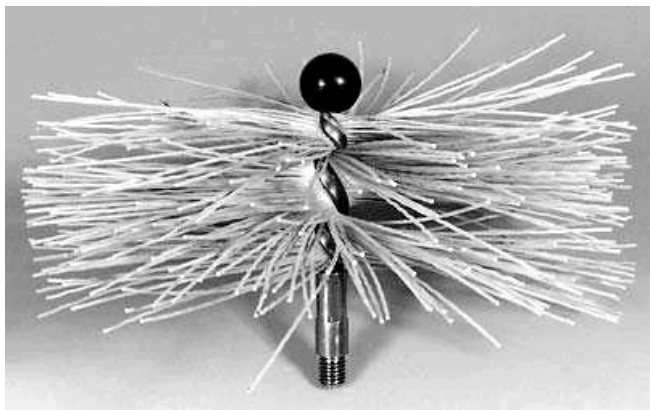
### 6.1 Safety indication:

- Before you do any kind of work on the OekoTube, switch it off (mains plug, eventually switch in the house).
- The cleaning has to be operated only by skilled and certified expert staff.
- By a temperature increase into the exhaust installation the high voltage switches on automatically. During operation, the touching of the electrode or the electrode holder is dangerous to life!
- The precipitator consists of acid-proof and rust-free steel. Do not use a metalbrush for the cleaning.
- For all works on the roof you have to follow the appropriate guidelines and provisions.

We do not take liabilities for accidents or damages caused by inobservance of this instruction.

### 6.2 Cleaning brush

We recommend the use of a twisted nylon brush. As the 6-edged holder stands vertical in the chimney pipe, it is utile (in particular for the cleaning from below) to use a brush with a little bowl on the top.

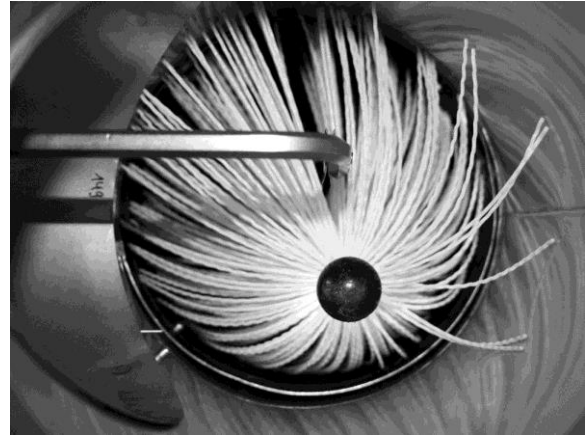




For the standard cleaning do not remove or open any piece of the OekoTube!

## 6.3 Cleaning from below

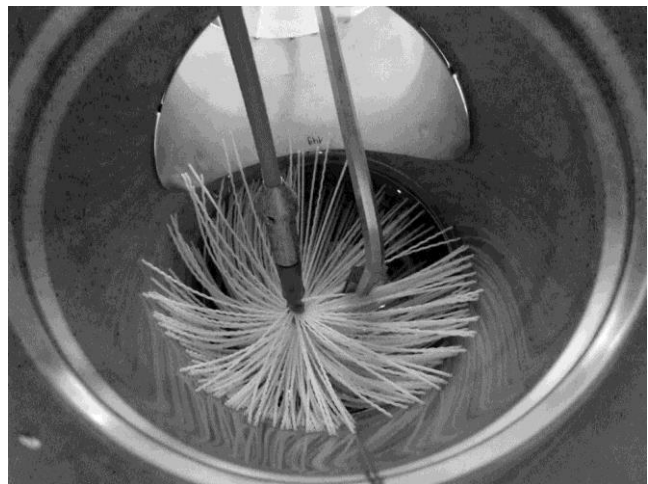
1. Switch-off the OekoTube (mains plug, eventually switch in the house).
2. Operate the cleaning with a synthetic brush. Twisted nylon brushes with a little bowl on the top are ideal. This one ensures, that the brush passes the electrode without any problem.
3. For cleaning right on top of the hexagon the brush has to be at the best repeatedly pushed again.



Depending on the degree of contamination the extension pipe and the isolator should be cleaned every 2 - 4 years. (Point 4 „circular cleaning“)

## 6.4 Cleaning from above

1. Switch-off the OekoTube (remove the connector).
2. DO NOT remove the electrode.
3. Operate the cleaning with a synthetic brush. Twisted nylon brushes with a little bowl on the top are ideal. This one ensures, that the brush passes the electrode without any problem.
4. The hexagon can be pushed away with the hand and the chimney cleaning can be operated in the common way.

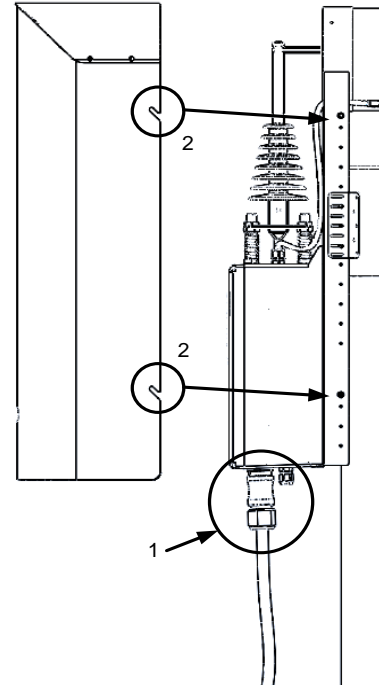
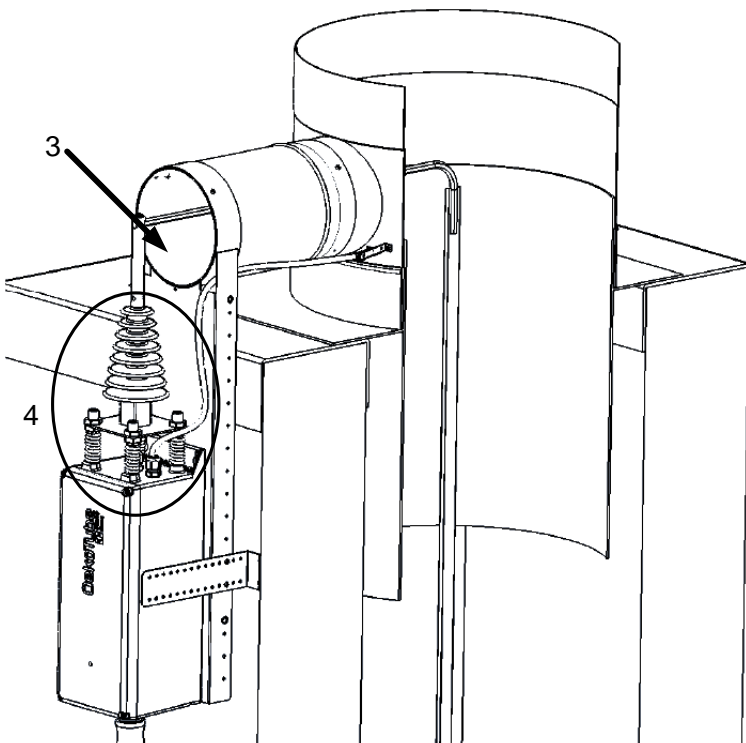


Depending on the degree of contamination the extension pipe and the isolator should be cleaned every 2 - 4 years. (Point 4 „circular cleaning“)



## 6.5 Circular cleaning of the box, the isolator and the connecting pipe (every 2 - 4 years)

1. Switch-off the OekoTube (remove the connector).
2. Remove the cover (3er Imbus).
3. Cleaning of the horizontal pipe (130mm diameter)
4. Cleaning of the isolator, the tongues and the electronic box.
5. Refix the cover (look at point 2)
6. Produce current entry. Make sure that the LED changes blinking (interval every 10 sec.).



## 7 Fault indication / Fault reason

Symptom	Fault	action (disconnect always the electricity supply)
<b>Standby despite of temperature rising into the exhaust duct</b>	Temperature sensor is not inserted into the exhaust duct	Fix the temperature sensor the right way
<b>To late or never in operating state after the firing of the fire</b>	The high voltage is not switched-on or too late	Open cover of the controlbox, choose the operating temperature
	Pellet furnace: the exhaust temperature is rising too slow	Regulate the starting temperature through Dipswitch on 35°C (look on the label on the inner side of the controlbox-cover)
<b>Damaged cable of temperature sensor</b>	Sight check / hurt temperature sensor - cable	Replace temperature sensor, if so replace the controlbox
<b>short / LED permanent on red</b>	Electrode not (anymore) centered	Center the electrode through the 4 nuts
	6-edged holder not cutted shortly	Cut the hexagon shortly
	Dirt extension pipe (130 mm entry)	clean
	Dirt exhaust canal	clean
	Chimney hat backing to near at the hexagon	Place the chimney hat backing right and fix it
	High voltage cable damaged below the isolator (sight control)	Replace the electronicbox
	High voltage cable inside the electronicbox damaged (beat inside of the box hearable)	Replace the electronicbox
	Dirt isolator	Clean the isolator
	Problem with the temperature sensor: hurt cable	Replace the cable
<b>LED permanent on red after cleaning</b>	Manipulated electrode	Center the electrode and fitt the nuts
	Ash accumulation into the 130 mm opening	clean
	Temperature sensor is not connected	Control the connection of the temperature sensor / damaged cable (replace)

Symptom	Error	Action (disconnect always the electricity supply)
<b>LED on red blinking</b>	Cover is not fixed right	Fix it the right way
	Missing magnet	Replace magnet
	Bent cover	Straighten the cover to reduce the distance tot he controlbox (contacter inside the box)
<b>LED no colour</b>	Plug is not connected	Post the plug
	No power on the plug	Control the electrical connection / assurance in the house
	Wire inside the controlbox is not connected correct	Connect the wire right
	No power on the ACDC / ACDC defect	Replace the controlbox

## 7.1 Frequent cause of error

### 7.1.1 Hexagon is not shortly cutted of

wrong



right



## **7.1.2 Missing magnet, or it is too far away from the contactor**

On the inside of the cover is fixed a magnet. If the cover is not fixed right or the magnet is missing, the OekoTube can not switch-on (LED note: red blinking).

## **7.1.3 Contamination of the extension tube and / or the isolator**

If the isolator is overuse dirty, it will become directive. The system refuse to functionate (LED note: permanent red).

If there is ash and smut in the extension pipe, it leads to short with the hexagon (LED note: permanent red).

## **7.1.4 The electrode is not centered**

If the nuts are not tightened enough, the electrode can adjust herself during the first cleaning. That leads to a short between the electrode and the chimney. The system refuse to functionate (LED note: permanent red).

## **7.1.5 The electrode is too long**

If the last vertical chapter of the exhaust canal is under 1.6 m. , it leads to a short between the electrode and the chimney. The system refuse to functionate (LED note: permanent red).

## 8 Dip-Switches approaches

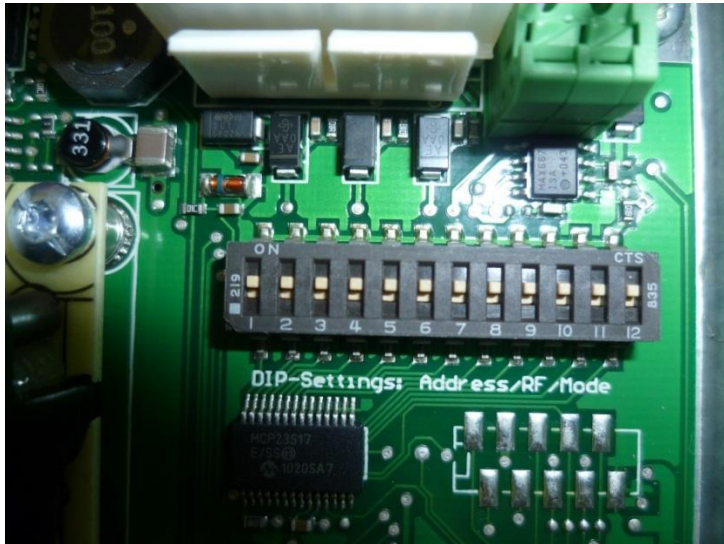
Through the dip-switches, parameters like the high voltage or the starting temperature can be adjusted.

1. Disconnect the OekoTube
2. Remove the cover
3. Open the controlbox-cover



## 8.1 Readjusting of the Dip-Switches

1. Look at the label on the inside of the cover
2. Readjust the Dip-Switch (1=ON / 0=OFF)



1 = on  
0 = off

## OekoTube Settings

1	2	3	4	5	6	7	8	9	10	11	12
<b>address</b>				<b>RS485 Abschluss</b>	<b>u.limit</b>			<b>temp.</b>			
"1111 = 31"					111 = 30			111 = + $\Delta T$ °C			
0111 = 14					011 = 26			011 = 50 °C			
..					101 = 25			101 = 70 °C			
..					001 = 24			001 = 60 °C			
..					110 = 22			110 = 45 °C			
0100 = 2					010 = 20			010 = 40 °C			
1000 = 1					100 = 18			100 = 35 °C			
0000 = 0				000 = Soft			000 = (ON)				
											1 = enable 0 = disable

On this picture all dip-switches are on 1=ON

## 8.2 Recommendation according to chimney diameter and combustible

### Chimney diameter

- 130 mm diameter: u.limit : 010 = 20 kV
- 150 mm diameter: u.limit : 001 = 24 kV

### Combustible

- Pellets:  
starting temperatur. : 100 = 35 °C

Construction and demonstration changes are reserved on behalf of the technical development.

# OekoSolve

OekoSolve AG, Schmelziweg 2, CH-8889 Plons