

Unicat®

User manual



Table of contents

1.	Background Knowledge	3
2.	Installation	4
2.1	Standard Application.....	4
2.2	Fundamental Safety Regulations.....	4
3.	Mounting, Start-up and Supervision.....	6
3.1	Contents of Delivery Unicat Type U1-30 (U1-60) Cold water / Hot water.....	6
3.2	Dimensioned sketch Unicat Type U1-U2 & U.....	7
3.3	Installation.....	8
3.4	Standard Installation	9
3.5	Electric Installation and start-up.....	10
3.5.1	Electric Installation	10
3.5.2	Circuit Diagram Unicat.....	10
3.6	Mounting Examples	11
4.	Start-up and Service	12
4.1	Start-up	12
4.2	CTS Monitoring.....	12
4.3	KatoCard Service.....	12
4.4	Supervising the plant	13
4.5	Reading	14
5.	Technical Data	15
5.1	Treatment unit.....	15
5.2	Control unit for 1 (2) Unit(s).	15
Appendix A.	General Information.....	16
Appendix B.	Fundamental Safety Regulations.....	18

1. Background Knowledge

Katolysis®

The new corrosion protection

Katolysis is a process developed on the basis of the well-known principles for electrolytic corrosion protection. With electrolysis, the anode is dissolved, while with Katolysis, it is the cathode, which is dissolved. The whole process takes place inside the Unicat unit.

Guldager Unicat protects the pipe system of the installation against rust. The Unicat plant consists of a treatment part, an electronic unit, and a pump.

Unicat is for systems with heat-exchangers or small tanks. It is an independent unit consisting of a treatment component and an advanced electronic component. The treatment component is a small enamel coated tank with two electrodes – a rod-shaped aluminium cathode and an anode consisting of titanium thread coated with mixed metal oxide and wound spirally round the cathode. The electronic unit supplies current (low tension, D.C.) to the anode. As a result, the aluminium cathode is slowly dissolved as aluminate ions, which are lead into the pipe system. Along with the metal oxides from the surface of the pipes, the aluminate ions form a protective layer in the entire pipe system. The protection layer prevents rust and corrosion in the pipes. The pump ensures a constant flow through the treatment unit and into the pipe system.

2. Installation

2.1 Standard Application

A water meter measures the water consumption. The electronic unit supplies the system with power (low voltage/direct current) at a rate adjusted to water consumption.

The electronic unit supplies current (low tension, D.C.) to the anode. As a result, the aluminium cathode is slowly dissolved as aluminate ions, which are led into the pipe system. Along with the metal oxides from the surface of the pipes, the aluminate ions form a protective layer in the entire pipe system. The protection layer prevents rust and corrosion in the pipes.

The circulation ensures that the cathodic dissolved aluminate will be led into the pipes and a protection layer is formed.

Any other application is considered non-standard. The company, Guldager A/S, is not responsible for damages caused by such application. See appendix A.

2.2 Fundamental Safety Regulations

According to the directive for machinery, Guldager A/S must inform, that before work is begun everybody is under the obligation to read the fundamental safety instructions, see Appendix B in this user manual.

An electrician and plumber should carry out the installation according to local regulations. In order to enable service of the plant, certain min. distances around the plant are required.

Minimum clearance

- Min. 300 mm above the cabinet, min. 100 mm to the sides, and min. 500 mm free space below the cabinet.
- For the drainage, a pipe must be led directly to outlet.
- An authorized electrician should carry out the electrical installation of the Unicat according to local regulations. The Unicat plant should be connected to its own 230 V fuse.

User manual

Please note:

Our delivery and Guldager service do not include measurement of circulation or testing of control valves in the installation. We assume that the present installation functions as specified. And Guldager is not responsible for necessary adjustments and changes of the installation according to our instructions.

If necessary, rinsing of the pipes should be carried out before installation of the system.

1. Piping systems with circulation

- The circulation must ensure a durable transportation of the treated water and be adjusted according to the existing hot water system. Furthermore, a consistent circulation and a well-functioning non-return valve are required. Under certain circumstances, an interruption of the circulation could prolong the treatment time of the piping system.

Furthermore, the connected draining points of the pipes must be opened regularly, in order to ensure transportation of the formed protection layer.

2. Pipe systems without circulation

- Typically cold water pipes and
- Hot water systems without circulation

In both cases the treated water will only be transported around in the system when water is being consumed. Therefore, a consistent consumption of water is required in order to ensure formation of a protection layer.

At draining points, where there is no or minimum consumption, should be considered whether these draining points should be shut down, or equipped with solenoid valves controlled by a timer.

If the plant should operate with temperatures above 60°, this must be notified in advance, since an increased treatment intensity of the corrosion protection plant could be necessary.

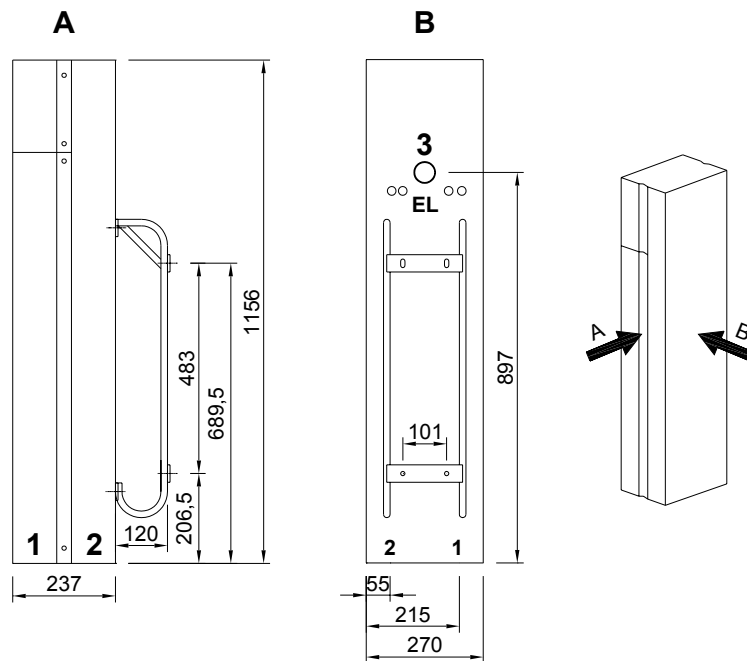
3. Mounting, Start-up and Supervision

3.1 Contents of Delivery Unicat Type U1-30 (U1-60) Cold water / Hot water

1. Electronic unit
 - for continuous calculation of the necessary protective current and for connection of a proportional current to the aluminium cathode, integrated in an anodized cabinet. LCD display showing current, voltage, water consumption and alarm.
 - Reading with KatoCard (data and service card)
 - Electrical connection 230 V/10 A
2. Cabinet of anodized aluminium with fittings containing:
 - 1 Katolysis treatment unit of steel 37.2
 - Styropor insulation
 - Aluminium cathode and titanium anode with mixed metal oxide coating. Automatic drainage with motor-operated valve, operating on a timer or according to consumption controlled by the impulse water meter.
3. Mounting equipment (included in delivery)
 - 4 pcs. coach screws 8 x 50 mm – Z
 - 4 pcs. dowels 10 x 50
4. Mounting instruction with diagram for electrician and plumber.
5. Start-up and instruction of the Unicat plant by the Guldager service technician
6. Accessories (not included in the delivery)
 - Impulse water meter, external
(The impulse water meter controls the current to the anode according to consumption).
 - Circulation pump for bypass

The contents of delivery may vary according to the offer.

3.2 Dimensioned sketch Unicat Type U1-U2 & U



All dimensions are indicated in mm.

Please Note:

Min. clearance must be observed:

- min. 300 mm above the cabinet
- min. 100 mm to the sides
- min. 500 mm below the cabinet

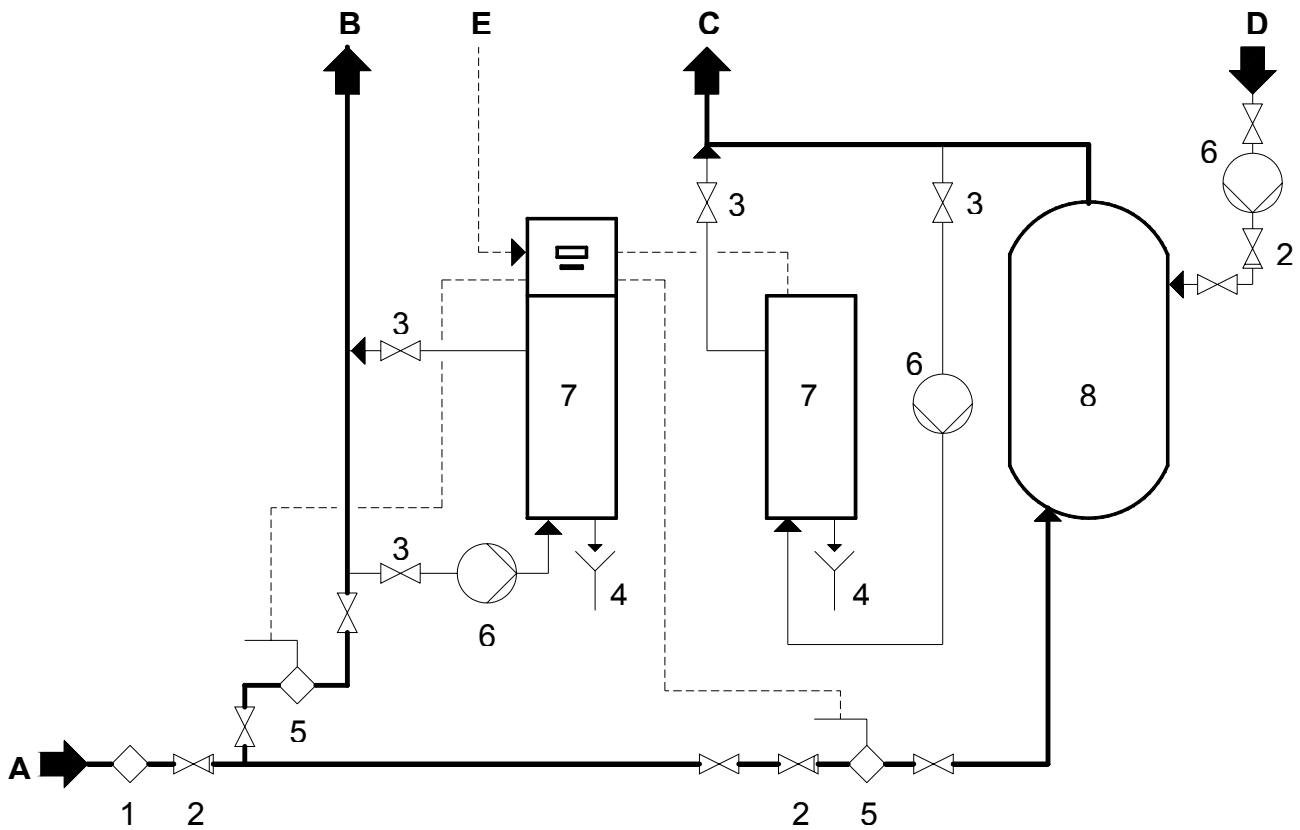
Pipe connections:

- Water inlet (1) : ½" Pipe
- Water outlet (3) : ½" Pipe
- Drain (2) : ¾" Pipe

Electrical connection:

- Connecting cable Cu 3x1.5 mm², length 1 m.
- Connection to own group with 230 V with earth (10 A).
- Impulse water meter to be connected to connecting cable Cu 2x0.75 mm².
- Circulation pump separately connected to 230 V.

3.3 Installation



1.	Main water meter	A	Cold water connection
2.	Non return valve	B	Cold water supply
3.	Check valve	C	Hot water supply
4.	Drain 3/4"	D	Hot water circulation
5.	Impulse water meter	E	230 V/50 Hz
6.	Circulation pump		
7.	Unicat		
8.	Hot water tank		

- The dotted lines are electrical connections.

3.4 Standard Installation

1. The Unicat is mounted vertically on the wall according to the dimensioned sketch and under observation of the min. clearance distances. By both cold and hot water systems please observe the hot or cold water marking on the unit.
2. If several cabinets are connected to the same unit, min. 100 mm for installation purpose must be observed.
3. Remove both screws on each side and the four screws in the bottom.
4. Now, the installation can be carried out. (It is not necessary to dismount the inner tank).
5. In a bypass on the water inlet and outlet of the Unicat, a ball valve must be mounted as close to the inlet to the discharge pipe as possible.
6. If the plant consists of more units, the inlet and outlet must have the same length (see mounting examples).
7. For the automatic drainage of the Unicat, $\frac{3}{4}$ " pipes must be led directly to the drain in the room according to local regulations.
8. On the cold water inlet to the hot water installation, an impulse water meter (1 Impulse/litre) is installed.
9. Finally, the electric installation must be performed by an electrician according to enclosed wiring diagram.
10. If the plant consists of more units, the additional connection between the units will be made by the Guldager service technician.
11. The Guldager service technician will start up the plant.
12. Do not switch on the current supply; this will be done by the Guldager service technician by start-up.

3.5 Electric Installation and start-up

3.5.1 Electric Installation

An electrician should carry out the electric installation of the Unicat according to local regulations.

Please note:

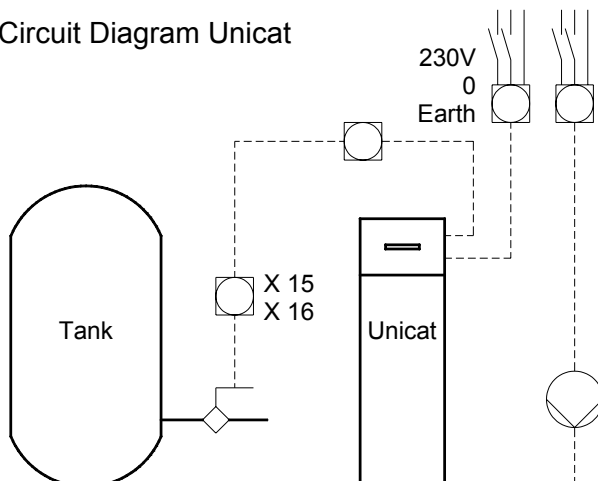
For the electronic installation, the Unicat plant is supplied with connecting cables Cu 3x1.5 mm² and Cu 2x0.75 mm² with approx. 1 m length. The connecting cable Cu 3x1.5 mm² should be used for the 230 V/50 Hz connection and the other connecting cable Cu 2x0.75 mm² should be used for connecting the impulse water meter.

- Connecting the Unicat to 230 V/50 Hz
Connecting the connecting cable Cu 3x1.5 mm² over its own switch button and own fuse to 230 V/50 Hz
- Connecting the circulation pump separately over own fuse to 230 V/50 Hz (24 hours)
- Connecting impulse water meter with connecting cable Cu 2x0.75 mm²

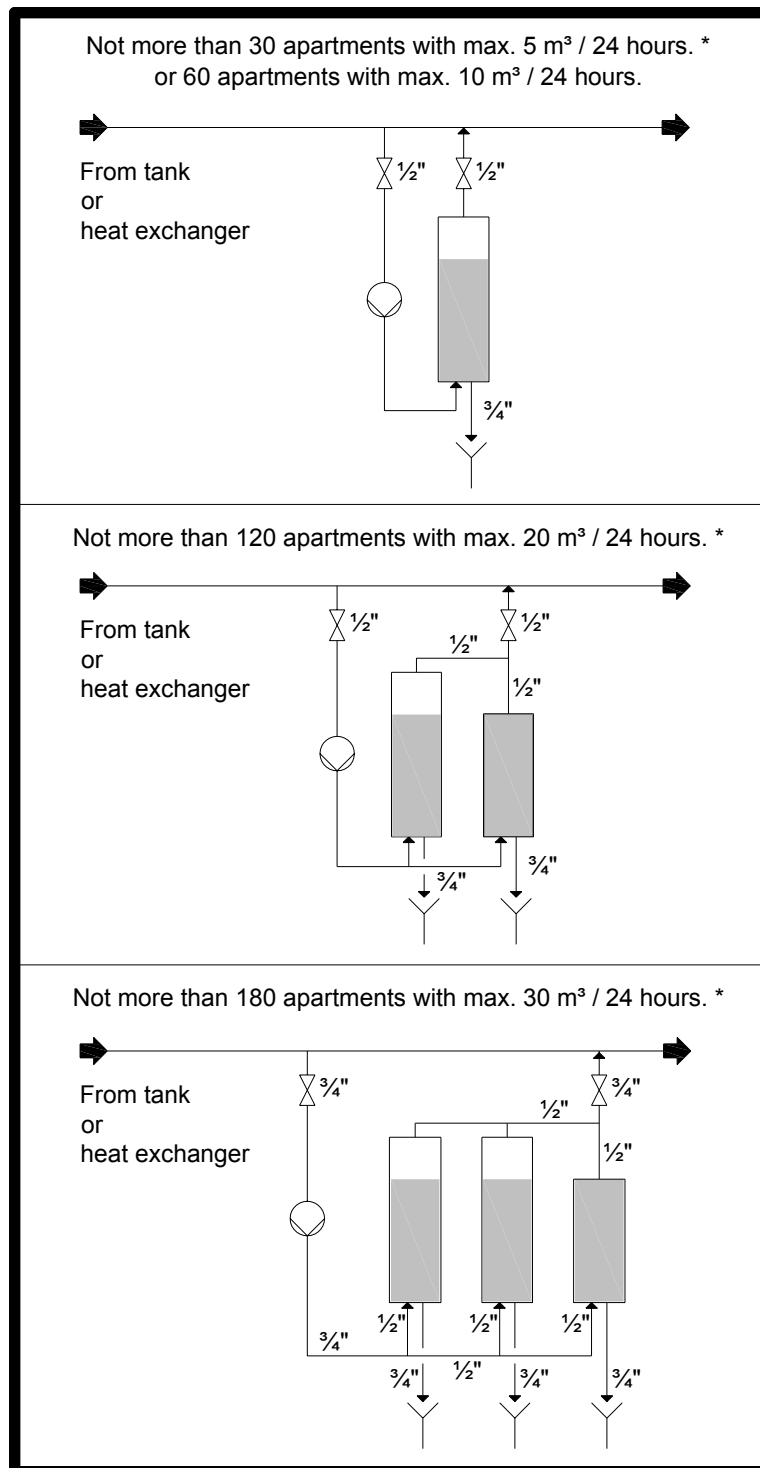
The Unicat control panel must not be changed. Necessary electrical alterations will be made by the Guldager service technician.

Only the Guldager service technician must turn on the power.

3.5.2 Circuit Diagram Unicat



3.6 Mounting Examples



* An installation for cold water doubles the amount of apartments and the value of flow per 24 hours.

4. Start-up and Service

4.1 Start-up

The Guldager service technician starts up the plant, and programs the control unit according to the actual operating conditions. Further, plant No., date of start-up and the identifying No. of the technician will be entered. Finally, a thorough instruction of the personnel will follow.

4.2 CTS Monitoring

The Unicat control unit is prepared for CTS-monitoring (max. load 30 mA, 30 V). With CTS-recording it is possible to centrally monitor and record a possible alarm or water consumption. For this purpose it is necessary to draw a cable from the CTS-system to the control board of the Unicat plant. At least 0,5 m free cable length is needed for the connection to the control board. Guldager's service technician does the cabling.

4.3 KatoCard Service

Every second month, Guldager forwards a KatoCard to the plant. As soon as possible upon receipt, the KatoCard is inserted in the slot on the front of the unit. The display will read "Updating External", and a transfer of all data from the board to the card will take place. When the text in the display has disappeared, the transfer has been completed. This process only takes a few seconds. See more in section 4.5. It is possible to repeat the operation by placing the card in the slot again.

The KatoCard is returned to Guldager. On the return envelope, the supervisor writes the date of the reading along with remarks, if any, regarding the plant.

Please note:

In order to receive useful results, the transfer should only be carried out while water is being consumed, i.e. FLOW must indicate min. 0,1 m³.

4.4 Supervising the plant

The Unicat plant ensures optimum operation and simple maintenance. The plant must always be in operation and only disconnected according to agreement with Guldager.

- An automatic draining will take place according to consumption or controlled by a timer.
- On the front of the unit all data can be read in a slowly running sequence. (Point 2.8.1).
- The regularly forwarded KatoCard (point 2.7) ensures the Guldager service system that all data is transferred to Guldager's computer system. Possible, necessary adjustments of the Unicat can now be carried out, and a continuous protection of the pipe system is ensured.
- If the pre-programmed limit values are exceeded or if an error in the current supply takes place an alarm will be activated.
- This alarm will appear in the display of the Unicat as well as in the connected CTS plant, if installed. If such an error should appear please try to disconnect the main alarm by switching off the 230 V switch before the board, and turn it on again after 15-20 seconds. If the alarm does not re-appear within 24 hours, the operational failure has been rectified. However, if the alarm re-appears, Guldager must be informed as soon as possible. It is not necessary to disconnect the plant.

4.5 Reading

In the display the plant data are showed in a slowly running sequence.

Programme version No.	Unicat	0.00 UK
Board No.	Plant No.:	000000

Active group	Gr.0	FLOW 00,0 m³
Voltage on the anode	00.0 V	0.000 A

Current on the anode

Gr.0	ALARM
	[TEXT]

If the plant is out of order,
an alarm is shown.

A text stating the reason is shown.

When the KatoCard is placed
in the slot, this text is shown

UPDATING
EXTERNAL

The above is subject to technical alteration!

5. Technical Data

5.1 Treatment unit

Content, approx.	5 l
Height	500 mm
Operating temperature, max.	95° C
Operating pressure, max.	8 bar
Test pressure	12 bar
Connections inlet/outlet	1/2"
Connections rinsing	3/4"
Tank material	St.37.2
Inner coating	Enamel
Isolation	Styropor
Number x length raw aluminium	U1-60 1 x 400 (U1-30 1 x 200)

The above is subject to technical alteration!

5.2 Control unit for 1 (2) Unit(s).

Display	LCD
Electrical connection	230 V/50 Hz
Observation	KatoCard
Output per Unit	max. 80 W
Density class	IP 50
Operation voltage anode	3-12 V
External water meter über Impulswasserzähler	1 or 10 l/Impuls

The above is subject to technical alteration!

Appendix A. General Information

Copyright

This user manual is intended solely for buyers of Unicat plants. All copyrights belong to the company Guldager A/S. Replication is allowed for internal use only. This permission applies for the safety directions exclusively. Copying of drawings, diagrams and spare parts lists is NOT allowed.

Guarantee and Responsibility

Guldager A/S guarantees all the mechanical and electrical parts of the plant as well as its mechanical construction for a period of 12 months. This guarantee is valid from the date of transfer. Within this period all parts that can not be used because of faulty construction, defective material, or defective accomplishment are repaired or replaced.

Guldager A/S cannot be held responsible for damages caused by the delivery after the transfer:

- a. on real property or movables that occur while the delivery is in the buyer's possession.
- b. on products, which have been produced by the buyer, or on products, of which these are a part, or for damages on real property or movables, caused by these products as a consequence of the delivery.

Under no circumstances, the supplier can be held responsible for loss of profits, or other financial consequential losses.

Staff Obligations

Before work is started, anyone working with this plant, is under the obligation to

- observe the basic instructions for working security and prevention of accidents.
- read Appendix B.
- read the safety instructions and warnings from other supplies connected to the plant.

User manual

Fulfilment of CE-labelling

If Guldager A/S is to have status as producer, this plant is only to be installed by trained and authorized staff in accordance with the "purposive application" of the plant and in order to meet the demands in the European Parliament and Council directive No. 98/37/EF (Machine directive), directive No. 97/23/EF (pressurized equipment), directive No. 73/23/EØF (low voltage directive) and directive No. 89/336/EØF (EMC directive). Consequently, only Guldager A/S can confirm conformity with the directives in a "Declaration of Conformity" and place the CE-label for control purposes of the authorities.

In any other case Guldager A/S is solely producer of the "original plant", which is to be considered as single components after alterations. The responsibility for the plant including all legal consequences is thus transferred to the company or installation business that has added the mentioned "standard application" to the plant. It is important to stress, that a new, complete technical dossier with updated estimation of risk, list of components etc. should be prepared, once the plant has undergone changes.

By changes of the construction, use of other components, or safety relevant components, the "Declaration of Conformity" no longer applies.

Appendix B. Fundamental Safety Regulations

Observe the Instructions

In order to ensure correct and safe handling of the plant, and to make sure that it will work to the utmost without interruption, you must possess knowledge of the fundamental safety regulations and instructions.

This appendix lists the most important precautions for a correct and safe handling of the plant. This user manual with its safety regulations, including the company's internal safety regulations, must be observed by anyone, working with or near the plant.

The user manual must be stored in visible distance to the area, where the operators control the plant, and safety regulations and warnings must be placed close to the plant on a permanent and visible spot.

The Company's Obligations

The company is under the obligation only to let personnel, who meet with the following demands, work with and around the plant, i.e. personnel who has

- been instructed in the use of the plant.
- read this appendix about fundamental safety regulations.

Inspection of the Plant

On demand, the employer must take care that the device undergoes a safety inspection. This, however, must be done at least once a year. The inspection is to be carried out by an expert and a report on the inspection results must be written.

An expert is defined as somebody, who, on the basis of his professional education and knowledge, possesses thorough knowledge of the tool in question, and is familiar with the relevant national, occupational safety regulations, regulations for the prevention of accidents, directives, safety rules, and technical rules, which have been generally approved (i.e. DIN norms, VDE

User manual

rules) to such an extent that he/she is able to estimate the safety condition of the tool. These demands are met by Guldager's technicians and by employees with similar education.

Dangers by Handling the Plant

This plant has been constructed according to the present technological development and the present technical safety rules. In spite of this, by unskilled use, situations that are dangerous to the operator and others and damages to the plant and other damages on material may occur.

The plant is only to be used for its normal purpose, see section 2.1, and in good and safe condition.

Defects, which have an influence on safety, e.g. leaks on pressurized parts and other similar elements of danger, must be repaired immediately in a professional, correct manner.

Remaining Risks

In spite of all safety precautions, protective outfit and the optimal organizational precautions, damage on material or even personal injuries can not be excluded.

Should an accident occur, Guldager must be informed. In order to minimize potential remaining risks or completely eliminate these through technological progress, we aim to react to even the smallest irregularity within the terms of our duty to supervise our plants.

Appendix C, Declaration of Conformity

Konformit tserkl ring Overensstemmelseserkl ring

I henhold til maskindirektivet 98/37/E F, Bilag II, A

According to the following directive: Machinery 98/37/E F, Encl. II, A
gem   den Richtlinien f r Maschinen 98/37 EG, Anlage All, A

Guldager A/S
Hejrevang 1-3
3450 Aller d

erkl rer p  eget ansvar at f lgende produkt
declare, under own responsibility, that the following product:
best tigt unter Eigenverantwortung, dass das folgende Produkt:

Produkt: Katolyse og Elektrolyse
Type: Elektrolyse, Katorack, UniCat, OxyFree og CatoCool
Styreskab: K-skab, Microskab og Standardskab

(navn, type eller model, parti, portion eller serienummer, eventuelt kilde og antal emner)
(name, type or model, part, batch, or serial number, source, if any, and number of subjects)
(Name, Typenbezeichnung oder Modell, Partie, Portion oder Seriennummer, evtl. Quelle und St ckanzahl)

som er omfattet af denne erkl ring, er i overensstemmelse med f lgende standard(er) eller andre normative dokument(er)
which is covered by this declaration, complies with the following standard(s) or other normative document(s)
umfa t von dieser Konformit tserkl ring, in  bereinstimmung mit den folgenden Richtlinien oder anderen normativen Dokumenten ist.

EN 1050, EN 292-1, EN 292-2, EN 292-2/A1, EN 1708-1, EN 418, EN 954-1, EN 60439-1, EN 60204-1
(titel og/eller nummer samt udgivelsesdato for standard eller andre normative dokumenter)
(title and/or number and date of publication of standard or other normative documents)
(Titel und /oder Nummer sowie Erscheinungsdatum f r Standards oder andere normativen Dokumente)

i henhold til bestemmelserne i Direktiv: Maskindirektivet (98/37/E F), Trykb rende udstyr (97/23/E F),
Lavsp ndingsdirektivet (73/23/E F) og EMC-direktivet (89/336/E F)
As stated in the requirements of the following directives: Machinery (98/37/EF), Pressurised Equipment (97/23/EF), Low Voltage Electrical Equipment (73/23/EF), and EMC (Electromagnetic Compatibility, 89/336/EF)
gem   den Bestimmungen der folgenden Richtlinien: Maschinen (98/37/EG), Druckger te (97/23/EG), elektriske Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen (73/23/EG) und die elektromagnetische Vertr glichkeit (89/336/EG).

Leverand rerkl ringer er indhentet fra vore underleverand rer – alle komponenter overholder nedenst ende direktiver
Statements from sub-suppliers have been asked for – all components observe the directives mentioned below
Lieferantenerkl rungen wurden von unseren Zulieferanten eingeholt – alle Komponente erf llen die nachfolgenden Direktiven.

73/23/EC, 89/336/EC, 89/392/EC, 97/23/EF
(overensstemmelseserkl ring, oversigt over normative dokumenter, direktiver og standarder benyttet til konstruktion af lev. komponenter)
(declaration of conformity, review of normative documents, directives, and standards used for construction of delivered components)
(Konformit tserkl ring, Oversigt  ber normative Dokumenter, Direktiven und Standards benyttet zur Konstruktion der geliefereten Komponenten)

Aller d, 23.01.2002

Per Jensen

(udstedelsessted og dato) (navn og underskrift eller tilsvarende identifikation af bemyndiget person)
(Place, date) (name, and signature of subscriber)
(Ort, Datum) (Name und Unterschrift des Unterzeichners)

Denne overensstemmelseserkl ring f lger DS/EN 45 014
This declaration of conformity complies with DS/EN 45 014
Diese Konformit tserkl ring befolgt DS/EN 45 014