

Technical Guideline
for
Handling of Orders
placed by
Ecoclean GmbH
Location Monschau
Outsourced Manufacturing Unit

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Technical guideline for regular suppliers of Ecoclean GmbH Monschau site

1 Services and scope of delivery / Supplies

- 1.1 The supplier's scope of supply and services is defined by the order issued by Ecoclean, the transmitted drawings, the 3D models and the parts list. Unless otherwise agreed, the drawing is always binding. If differences are found between the drawing and the 3D model, these must be reported to us. If the Ecoclean order does not contain any restrictions regarding the scope of delivery and services, the scope of delivery and services must be provided in full.
- 1.2 All manufacturing and processing instructions entered on the production drawings must be strictly observed.
- 1.3 An assembly is also included in the scope of supply and services if no manufacturing service is required, but only the provision of material or parts by the supplier. This also includes the items listed in the drawing in text form, as well as the items listed in the drawing parts list, which have one hundred or more numbers as item numbers.

For the material disposition of the supplier, the BOM column "Reference point", "Bkz." and "FertRel" must be considered. If the BOM item is marked with "L" in the "Vehicle registration number" column, this means that this item is part of its scope of delivery. The marking of the BOM item with "Z" in the "Reference Point" column and "X" in the "FertRel" column means that this item is provided by Ecoclean. Collection of the parts provided by the supplier or provision by mail must be agreed separately. The marking with "W" in the column "Reference" and "X" in the column "FertRel" means that this item is provided by Ecoclean for further processing in the Ecoclean factory and is not required in its scope of supply and services. The marking of the parts list item with "I" in the column "Bkz. Means that this item is not included in the scope of delivery, but will be provided by Ecoclean at a later date. All items tightened on the drawing, all unmarked items of the parts list, small parts (screws, nuts, etc.) that are required for assembly and are not listed individually are part of the supplier's scope of supply and services. See also our sample parts list for the above-mentioned parts list identification.

2 Scope of services for containers, housings, support frames and floor trays

2.1 *The scope of delivery and services is included:*

- Complete **provision of material**. Please note point 1 for your material disposition.
- Creation of the sheet metal unfolding sketches, depending on the CAD system.
- Cutting to size, finishing; all finishing work must be carried out using a low-stress process such as nibbling, laser or water jet cutting or plasma cutting.
- Assembly, welding, straightening and plastering.
In particular, sharp edges caused by shear or laser cutting must be **deburred**.
(Risk of accidental cut injuries)
- Non-drawn but necessary reinforcements must be provided and implemented by the supplier in consultation with Ecoclean and are included in the scope of supply and services. Additional reinforcements are always necessary if housing or container plates can still throw dents under load (e.g. when water is poured into the container) after welding together.
- All attachments shown in the drawing, such as nozzles, sleeves, holders, threaded bolts etc. must be fitted and welded tightly from both sides. Inner sheets or air ducts are sealed on one side, all **outer welds must be welded tight on both sides**. The application and execution of welding instructions can be agreed upon separately for each Ecoclean order. See also chapter 11.
- **Threaded welding studs and pull-in nuts must be tack welded on additionally**
- Priming of all steel parts with FREIOPLAST lacquer paint matt stone-grey RAL 7030. available from FreiLacke | Emil Frei GmbH & Co KG, Am Bahnhof 6, 78199 Bräunlingen
- Pickling of all stainless steel welded joints by spray pickling or immersion pickling, but the surface should not become coarse-grained or change the specified tolerances.
- It must be ensured that uncoils, reinforcements etc. are attached or designed in such a way that pickling can run off and undercuts can be sufficiently flushed.
- As a matter of principle, leakage tests must be carried out:
Tanks, base frames and floor troughs must be filled with water for 24 hours and tested. Coat the inside of the housing welds with paraffin and check after 1 h.
- For the tightness test, a protocol must be sent to us without being asked, containing the following information: Type of leak test, duration, tester, welder. Only the Ecoclean template is to be used for this purpose.

3 Scope of services Pipelines / Spray systems

3.1 *The scope of delivery and services is included:*

- Complete **provision of material**. Please note point 1 for your material disposition.
- Cutting to size, finishing; all finishing work must be carried out using a low-stress process such as nibbling, laser or water jet cutting or plasma cutting.
- Assembly, welding, straightening and plastering.
- For the general applications in our cleaning systems with operating pressures up to 10 bar and working temperatures up to 70°C, stainless steel pipe components (welded fittings) with a wall thickness of at least 2 mm are sufficient.
- Standard parts are to be used with pressure rating PN10 or PN16.
- The material must meet the minimum requirements of 1.4301.
- Threaded fittings and threaded pipes with the appropriate wall thickness must be used for screw connections and screw connections (sleeves, nipples, etc.).
- For applications with expected pressure peaks (e.g. pulse valve) and higher operating conditions, material and wall thickness must be determined by the design.
- The welding of the pipelines must always be carried out under forming gas. See also chapter 11.
- Priming of all steel parts with FREIOPLAST lacquer paint matt stone-grey RAL 7030. available from FreiLacke | Emil Frei GmbH & Co KG, Am Bahnhof 6, 78199 Bräunlingen
- Pickling of all stainless steel welded joints by spray pickling or immersion pickling, but the surface should not become coarse-grained or change the specified tolerances.
- It must be ensured that uncoils, reinforcements etc. are attached or designed in such a way that pickling can run off and undercuts can be sufficiently flushed.
- All necessary piping and splash rings inside and outside the plant (for complete plants) to connect the tanks and aggregates for (usually according to flow diagram/drawings):
 - Water
 - Cleaning medium
 - Cleaning chemicals
 - Compressed air
 - Disposal
 - Leakage

3.2 Thread sealing / screw connections

Please observe chapter 10 with regard to thread sealing and screw locking.

After screwing the pipeline parts together or after completion of the pipeline, the screwing point must be checked for leaks and cleaned of excess hemp and Teflon tape.

Stainless steel screw connections are generally available with a long sealing cone and in heavy-duty design, the thread of the union nut is coated with HT 1200 Paste. The screw connections are always available from Edelstahlservice Sulz GmbH; Gottlieb-Daimler-Str. 6; 72172 Sulz am Neckar.

4 Scope of services for main mechanical assemblies and individual parts

4.1 The scope of delivery and services is included:

- Complete **provision of material**. Please note point 1 for your material disposition.
- Cutting to size, finishing; all finishing work must be carried out using a low-stress process such as nibbling, laser or water jet cutting or plasma cutting.
- Assembly, welding and fettling (observe welding instructions, bare steel material may only be welded using a low-stress metal shielding gas welding process).
- All hollow sections must be welded tightly together. See also chapter 11.
- Low stress annealing according to drawing data
- Walking beam profiles must be checked for straightness and torsion on all levels and "cold" straightened.
- The sharp longitudinal edges of the walking beam profile must be broken.
- Complete mechanical processing according to the drawing specifications.
- In the case of hydraulic components, such as nozzles, HP manifold blocks, sealing caps, etc., care must be taken to ensure that they are absolutely burr-free. Loose chips and flake burrs must be removed completely. These components must be completely cleaned before delivery.
- Hardening, nitriding, cold nitriding, ionitriding or chemical nickel plating according to drawings or parts lists. For cold nitriding, the following supplier should be given preference:

Three bars GmbH

Triple bars 7-9

D - 52156 Monschau

www.dreistegen.com

Alternative suppliers can be obtained from Ecoclean.

All components made of CrNi steel must be post-treated after hardening against possible corrosion for use in cleaning systems. The layer thickness for chemical nickel plating must be taken into account during mechanical processing.

- For all bolts that are hardened, a hardening certificate must be supplied without being requested to record the correct hardening process and to reduce the risk of hardening through the use of rapid hardening processes/parameters. Bolts which are cold nitrided are excluded.
- Hardened parts that are chemically nickel-plated according to the drawing (layer thickness min. 30 μ) must then be annealed to obtain a wear-resistant layer. All surface-treated parts must be checked for freedom from defects before and after installation. The layer thickness for electroless nickel plating must be taken into account during mechanical processing.
- Pickling of all stainless steel welded joints by spray pickling or immersion pickling, but this should not cause the surface to become coarse-grained or alter the specified tolerances.
- It must be ensured that uncoils, reinforcements etc. are attached or designed in such a way that pickling can run off and undercuts can be sufficiently flushed.
- Pre-assembly of the assemblies
- All necessary settings must still be available. The locking holes must be accessible, but are first drilled through and pinned during the final assembly of Ecoclean. (This means that if a fixture has been adjusted in a slotted hole to the stop during adjustment, the slotted hole must be extended if necessary).
- If rework/extra work is required, notify the appropriate Ecoclean representative at the factory so that any costs and necessary changes to drawings are known and taken into account.
- Please observe chapter 10 with regard to thread sealing and screw locking.
- All steel screws must be at least strength class 8.8 and galvanized, for clamping levers at least 10.9; screws made of CrNi - steel must be at least strength class A70. Unless otherwise specified.

- When using Peek plastic, we distinguish between the following two materials:

PEEK reinforced → MCAM Ketron HPV PEEK, Ensinger TECAPEEK PVX, Victrex PEEK 450FC30 or other PEEK of comparable grade.

PEEK unreinforced → MCAM Ketron 1000 PEEK, Ensinger TECAPEEK natural, Victrex PEEK 450 or other PEEK of comparable grade

- All bearing points must be filled with grease (rolling bearing grease).
- Lifting step conveyors are to be completely adjusted, all workpiece supports and receptacles are to be aligned with the indexing template and checked according to the Ecoclean checklist.
- In the case of complex main assemblies or subassemblies that cannot be transported on pallets or in mesh boxes, the scope of supply and services includes a transport rack or transport device.
- The track rollers, guide pins, rails and shafts must be sprayed with protective oil (rust protection during transport). Track rollers and levers should be free of load during truck transport. All moving parts must be fixed so that no damage can occur during transport.

5 Scope of services sound insulation and thermal insulation

5.1 *The scope of delivery and services is included:*

- Complete **provision of material**. Please note point 1 for your material disposition.
- Creation of the complete sheet metal unfolding
- Cutting to size, finishing; all finishing work must be carried out using a low-stress process such as nibbling, laser or water jet cutting or plasma cutting.
- Assembly, welding, straightening and plastering (observe welding instructions).
- Priming and varnishing is not required, if not agreed separately.
- Insulation materials and any plastic parts used must be temperature resistant to at least + 70° C. Mineral wool with fleece lamination, fire protection class A2 non-combustible.
- The design of the cabin must be resistant to moist air.
- Brackets and struts are to be discussed with Ecoclean, are screwable and are included in the delivery.
- Door handle by Schlechtendahl & Söhne: Type WSS gymnasium door fitting No.2-170/3 The locking linkage must engage in the fixed frame of the sound insulation from the door lock upwards and downwards and the closing door must snap into place without operating the door handle. Furthermore, it must be completely covered from top to bottom with a perforated plate cover, which, however, must be removable.

- The perforated plate cover in the remaining door leaf should be welded diagonally to ensure maximum rigidity.
- All door slots must be covered from the inside with a sheet metal angle.
- **All supply air grilles must be fitted with a replaceable filter mat on the inside**

Filter mat:

Type	Viledon-PSB/145 S
Material	Polyester
Filter class	EU 2 (DIN 24185), G2 (EN 779)
Temperature resistance up to	100 degrees Celsius
Humidity resistance up to	100% relative humidity
obtainable from	Company Freudenberg 69465 Weinheim

- Place of installation, unless otherwise agreed: Ecoclean plant in Mon-schau
- For site assembly: Workshop of our customer
- The transport from you to the installation site is included in the scope of delivery
- If the assembly of the sound enclosure is not included in your scope of delivery, sufficient assembly material for a complete assembly of the enclosure must be supplied in addition to an assembly drawing.
- Doors with a height of more than 1200mm have to be fixed with at least 3 hinges, type 1056-U9-PH from EMKA, unless otherwise specified.

6 Performance and scope of delivery Acceptance / test run

6.1 Prior to the agreed delivery date, the responsible Ecoclean employee in the External Production Department must be consulted to determine whether a preliminary acceptance test is to be performed at the supplier's premises. The acceptance test will consist of:

- a visual inspection of the main assemblies or subassemblies manufactured
- For the Ecoclean pre-acceptance test, the individual main assemblies or modules must be available pre-assembled. Any defects found must be corrected immediately. Defects or faults found during installation, test run or at the customer's premises must be corrected immediately and free of charge in consultation with Ecoclean.
- A test run of the transport equipment only in special cases if this is **expressly requested in the award of the contract**.

7 Technical discussions

- 7.1 Technical and commercial queries from the supplier are to be discussed directly and only with the responsible employees of the external production department. The responsible employee shall be named in the enquiry or order.
During order processing, the supplier's production manager is available to us for co-ordination without any special charge, as agreed.
Changes agreed upon on site or by telephone that are contrary to the documentation provided by Ecoclean must be documented. Should these discussions result in consequences in terms of price and/or schedule, Ecoclean must be informed in a separate letter within 7 calendar days after the discussion, stating the additional or reduced prices and/or the postponement of the date without being asked. Any additional charges or postponements of appointments made later will not be accepted. Timely notification of additional charges and/or postponement of dates does not mean that Ecoclean has to accept them. For example, Ecoclean reserves the right to engage other suppliers for support and to charge the costs incurred to the supplier with whom the services and scope of delivery were originally ordered.
Technical discussions shall be held in German or English, for other languages the supplier shall provide a translator.

8 Rust removal and coating

Their scope of services and delivery includes the derusting, degreasing and coating of all items that belong to the ordered scope.

- Unless otherwise stated or agreed, steel parts are always to be painted with FREIOPLAST lacquer colour matt stone-grey RAL 7030. Available from Freilacke I Emil Frei GmbH & Co KG, Am Bahnhof 6, 78199 Bräunlingen
- If a further top coat is required, only the following processes and colours should be used and applied:
 - Roller or spray painting with EFDEDUR Freilack EFDEDUR system structure paint GS9141H
 - Powders with freecoat FREOPOX powder coating PL1033A

We will inform you of the required RAL colours in a separate painting instruction.

- Assembly damage to all coated parts must be repaired before shipment.
- All steel components and stainless steel housings and tanks reinforced with steel profiles from the outside must be primed!
- Excluded from this are the internal CrNi steel parts (e.g. container, housing).
- Topcoat only if expressly requested by Ecoclean!

9 Assembly, disassembly and site assembly

9.1 Assembly

The assembly of the main assemblies or subassemblies is carried out in the supplier's production facility. All equipment required for this purpose, such as overhead crane, tools, etc. must be provided. Energy connections required for possible test runs or test operations are to be provided by the supplier with sufficient dimensions; Ecoclean may provide equipment, if available.

9.2 Disassembly and marking

If the order consists of a complete system, Ecoclean will design it with separation points in dimensions suitable for transport. This does not exclude the possibility that special transport is required for components. The system must be disassembled according to Ecoclean's specifications for shipment.

According to point 10 of this LV, the colour treatment must then be carried out (priming must be carried out before assembly).

Depending on the state of disassembly, all disassembled units must be marked by trailers (can be provided by Ecoclean, also applies to component production). A properly completed trailer will contain the information: Ecoclean order number, main assembly(s) and assembly(s), if any. If screws or similar are provided, the item number is also included.

9.3 Construction site assembly

Site assembly may be included in the supplier's scope of supply and services. Our site manager or the responsible Ecoclean employee of the External Production department will be present on the occasion of acceptance. It should be noted that this employee is authorized to carry out certain functions, to fulfill Ecoclean's customer specifications and can issue instructions.

The transport of the ordered scope of supply to the workshops of our customer is part of the supplier's scope of supply and services.

In the event of cases not covered by these specifications, the ECOCLEAN CONDITIONS OF DELIVERY, SERVICE AND INSTALLATION (to be found at https://ecoclean-group.net/fileadmin/pdf/ECOCLEAN/Terms_of_conditions/DE/Liefer-Leistungs- und Montagebedingungen_2017.pdf) shall apply.

9.4 Documents

The supplier must submit all necessary documents, such as certificates, visas, proofs, social insurance confirmations, residence permits, etc., which are required for a work permit in the respective country or at the respective customer, to Ecoclean in good time and in full, in consultation with our installation coordinator or site manager.

9.5 Registration/Equipment

The supplier must ensure that the customer is properly registered. Factory ID cards, safety training courses, instructions for industrial trucks, work safety instructions, regulations on work clothing etc., which are required by our customer and which are sub-

ject to a charge, are part of the scope of services and delivery and are in no case regarded as additional expenditure.

When leaving the construction site, ensure cleanliness (daily).

The applicable regulations can be obtained from Ecoclean.

9.6 Additional work on the construction site

If work is performed by Ecoclean for the supplier, or by the supplier for Ecoclean, that is not included in the original order, this additional work must be documented in a report/time sheet. These reports must be signed by the Ecoclean site manager and the supplier's representative. Any additional work that is not properly documented will **not** be invoiced or settled between Ecoclean and the respective supplier.

10 Thread sealing and screw locking

10.1 Thread seal:

Optionally Loctite L55:

- caution Do not cut the thread too deep;
- strongly roughen with suitable tools;
- The instructions of Loctite must be observed;
- tighten correctly when screwing together;

or hemp + teflon sealing tape:

- caution Do not cut the thread too deep;
- strongly roughen with suitable tools;
- hemp with enough hemp, i.e. at least as much that no thread is visible anymore;
- coat hemp with Fermit;
- Roll up 3-4 turns of Teflon tape onto the hemp, (2-3 layers)
- tighten correctly when screwing together;

Loctite 542

- nozzles in spray boxes, threaded nozzles also NPT;
- Warning: not for plastic/plastic nozzles and nozzles/HD nozzles with sealing rings!

Please note:

- hemp is heat resistant up to approx. 70 degrees
- threaded tape L55 is heat resistant up to approx. 130 degrees.
- Union nuts do not require sealing or screw locking.
- For some customers and for oil washers, the thread tape is mandatory,
- If you have any questions, please contact the purchasing department;

10.2 Screw lock:

- For all units which are completely or only partially inside the machine housing, all screws are secured medium-tight with Loctite 243 threadlocker. The screw connection must first be cleaned in accordance with Loctite.
- fixing screws of the high-pressure pipe clamps are secured with Loctite 243.
- connections of drive trains (engines, gearboxes, cylinders, clutches, etc.) must be secured with Loctite 243, also their fastening screws.

Exceptions:

- flange connections, (no fuse)
- HD fittings (only HT 1200 paste)
- Pipe clamps, normal (no fuse)
- Union nuts for hydraulic, pneumatic and high pressure fittings (only HT 1200 paste)
- Ring clamping elements (according to manufacturer's specifications)
- All other components that are secured differently according to drawings or installation instructions.

11 Welding instructions

The application and execution of welding specifications can be agreed separately for each Ecoclean order (drawing specifications).

Since our 3D models and drawings only show weld seam symbols for safety-relevant components such as crane attachment points, pressure vessels, etc., the supplier is responsible for the professional execution of all other appropriate welds. By "functional welds" we mean that the appropriate weld seam thickness is determined after taking into account the material thickness. If you have any uncertainties or questions, please do not hesitate to contact us for clarification.

In order to ensure the quality of the welding products, it is a prerequisite that your company is certified according to ISO 3834-4, or at least acts accordingly and can also prove this on request. Welding procedure specifications are not mandatory for the welds to be performed.

are permissible welding procedures according to DIN EN ISO 4063: 111 (manual arc welding), 13 (metal inert gas welding), 141 (tungsten inert gas welding with solid wire or solid rod filler metal). For the use of other welding processes, prior approval by Ecoclean must be obtained and recorded in an agreement.

In general, all welds must be inspected 100% VT (visual inspection).

All external irregularities that do not comply with DEN EN ISO 5817 evaluation group C must be professionally repaired.

12 Prices

- All prices shall be broken down and invoiced to us according to main assemblies or subassemblies according to manufacturing and material costs.

* Prices in euro or in the supplier's national currency

- The above mentioned prices are fixed prices and include all points of this service specification.

13 Dates

After placing a written order, an order confirmation with delivery date must be sent to Ecoclean. (this can be a copy of our order).

If requested by Ecoclean, the price quotation or order confirmation will include a schedule showing the most important trades and their timing. The schedule must include the following items:

- Construction (if included in the scope of delivery)
- Materials procurement
- Parts manufacturing
- Pre-assembly
- Final assembly
- Trial run
- Disassembly
- Shipping

When placing the order (receipt of the written order) an agreement on the schedule is also made. Any subsequent deviations from this schedule must be immediately communicated to Ecoclean and approved by Ecoclean. Ecoclean reserves the right to conduct occasional manufacturing and scheduling reviews during order processing.

14 Cleaning of components

- All components must be cleaned by the supplier before delivery. Residues such as grinding dust, blasting media or pickling residues are not permitted.

15 Delivery instructions and packaging

- Ecoclean expects delivery free to the door or to the point of use, as agreed in the order.
- In the case of the manufacture of complete plants, the transport costs incurred are in any case part of the scope of services and delivery and must be taken into ac-

count accordingly in the offer. Ecoclean uses the most favorable option in the order.

- A complete system or system component must be loaded and secured professionally. In any case, the machine body must be covered with a tarpaulin. Edges and corners of the plant must be padded against the tarpaulin to prevent damage to the paintwork. Individual parts are to be loaded in boxes or secured on pallets. The plant and collis must be secured against slipping on the means of transport with nailed wooden wedges and belts.
- All smaller trades (total weight less than 1000Kg) must be able to be unloaded with a forklift and must therefore be placed on pallets and beams.
- For the execution of this order the packaging regulations of the BRD dated 01.01.2009 must be observed.
- If the packaging is not taken back, it must be designed in such a way that it can be easily disposed of by the Ecoclean customer at low cost. Only paper, steel or wood should be used unless otherwise directed by Ecoclean.
- Due to the risk of frost, all containers must be emptied completely. Pipelines, pneumatics, control or shut-off devices coming into contact with liquids must be blown out with compressed air before dispatch. Heat exchangers must be filled or moistened with antifreeze.
- If delivery by truck is planned, this must take place between 7 a.m. and 3 p.m. and be announced two working days in advance.
- Delivery always free place of delivery. The place of delivery is indicated in the order.
- It must be possible to unload all components with normal forklifts or cranes.
- If in exceptional cases Ecoclean is to pick up the product, a notice of readiness for shipment must be faxed to the responsible Ecoclean employee in the External Production Department in a timely manner with the following information:

Labelling as	listed below under point 1
Colli dimensions in	length x width x height in meters
Colli content	Description by drawing title
Colli weightGross	(for non-EU deliveries gross and net)

The marking of the parts and delivery notes must contain, in addition to the article description, the following information

- 1. Ecoclean order number, HBG, BG, Ecoclean order number (or a copy of our order)**
- 2. The weight per ordered item**
- 3. If a delivery consists of individual parts, these must be marked with material tags, which must contain the above-mentioned information down to the item. This also applies to provided standard part material (screws etc.).**

If deliveries to Ecoclean are delivered without these article designations, Ecoclean may refuse to accept the goods.