

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

Ecoclean GmbH
Hans-Georg-Weiss-Strasse 10
D - 52156 Monschau

Phone: +49 2472 83-0
Fax : +49 2472 83-108

Contents	Page
1 Scope of supply and services / Furnished items	3
2 Scope of services supply for tanks, enclosures, support frames and floor trays.....	3
3 Scope for pipe lines / spraying systems	4
4 Scope for mechanical main assemblies and single parts.....	6
5 Scope for soundproofing and thermal insulation.....	8
6 Scope for acceptance / trial run	9
7 Technical discussions	10
8 Rust removal and coating	10
9 Assembly, dismantling and on-site installation	10
10 Prices	12
11 Time schedule.....	12
12 Packing and shipping instructions	13

Technical Guideline for Regular Suppliers to Ecoclean GmbH - Monschau Site

1 Scope of supply and services / Furnished items

- 1.1 The Supplier's scope of supply and services shall be as indicated in Ecoclean's purchase order, the drawings submitted, and the parts list. If no limitations regarding the scope of supply and services are stated in Ecoclean's purchase order, that scope of supply and services shall be provided in full.
- 1.2 All manufacturing and machining instructions given in the manufacturing drawings must be duly observed.
- 1.3 An assembly shall form part of the scope of supply and services even if it requires no manufacturing work but merely involves the furnishing of material and/or parts on the part of the Supplier. This also applies to items referenced in text form in the drawings, as well as to those stated in the drawing parts list with '100' or higher item numbers

For Supplier's materials scheduling purposes, the columns 'Ref.point' (Reference point), 'MPI' (Material Provision Index) and 'RelPro' (Relevance for Production) in the parts list shall be considered. Thus, an 'L' mark in column 'MPI' of the parts list means that the respective item is in your scope of supply. When a parts list item is marked 'Z' in the 'RefPoint' column and 'X' in the 'ProdRel' column, this indicates that the item will be furnished by Ecoclean. It remains to be separately agreed in this case whether this item shall be picked up by the supplier or is to be furnished by postal delivery. A 'W' mark in the 'RefPoint' column with an 'X' in the 'ProdRel' column means that this item is to be furnished by Ecoclean for purposes of further processing in Ecoclean's factory and is not needed in your scope of supply. When a parts list item is marked 'I' in the 'MPI' column, this means that the item is not included in your scope of supply but will be provided by Ecoclean later. All items appearing in the drawings, all unmarked items in the parts list, as well as small parts (bolts, nuts, etc.) required for assembly but not individually shown are included in the Supplier's scope of goods and services. As regards the above parts list markings please also refer to our specimen parts list.

2 Scope of services supply for tanks, enclosures, support frames and floor trays

2.1 *The scope of supply and services includes the following:*

- **Full supply of materials.** For your materials scheduling, please note Section 1
- Production of flat pattern sketches for sheet metal, depending on CAD system.

- Cutting, trimming: all stock removal is to be performed by a low-stress process, e.g., nibbling, laser beam, water jet, or plasma cutting.
- Assembly, welding, straightening, dressing.
Especially sharp edges produced by shearing or laser cutting must be **deburred. (accident risk of cut injuries)**
- Any reinforcements not shown in the drawing(s) but nevertheless required shall be projected and executed by the supplier following agreement with Ecoclean and shall form part of the scope of supply and services. Additional reinforcements are necessary wherever sheet metal housing or tank assemblies, once joined by welding, may still buckle under load (e.g., as the tank is filled with water).
- All add-on parts shown in the drawings – e.g., pipe stubs, sleeves, brackets, threaded bolts, etc. – must be fitted and shall be seal welded on both sides. Interior sheet metal panels or air ducts shall be seal welded on one side, **all external weld seams shall be seal welded on both sides.**
- All steel parts shall be primed with a B 38 single-pack primer, similar to RAL 9007, unless agreed otherwise. To be sourced from Bisdorf GmbH, Industriestr. 49-51, D-52224 Stolberg (Germany).
- Pickling of all stainless steel weld joints is to be carried out by the spray or immersion pickling method; however, the surface should not become coarse-grained and the specified tolerances must not be altered by the process.
- On principle, leak testing is to be carried out:
Tanks, baseframes and bottom trays shall be filled with water and tested for 24 hrs. Housing welds shall be tested by applying kerosene to the weld joint from the inside and examining it after 1 hr.
- As regards the applicability and execution of welding specifications / codes, separate agreements may be concluded for each Ecoclean purchase order.
On principle, however, DIN technical welding standards shall apply.
- A leak-testing report shall be sent to us unprompted, giving the following information: type of leak test, duration, examiner, welder. This shall be done exclusively on the template provided by Ecoclean.

3 Scope for pipe lines / spraying systems

3.1 The scope of supply and services includes the following:

- Full **supply of materials**. For your materials scheduling, please note Section 1
- Cutting, trimming: all stock removal is to be performed by a low-stress process, e.g., nibbling, laser beam, water jet, or plasma cutting.

- Assembly, welding, straightening, dressing.
- For general applications in our cleaning systems using operating pressures up to 10 bar and working temperatures up to 70°C, stainless steel piping components (welded fittings) with a minimum wall thickness of 2 mm are sufficient.
- Standard parts employed shall meet pressure ratings PN10 or PN16, respectively.
- The material must fulfil the minimum requirements for 1.4301.
- For screw connections and threaded ports (sleeves, nipples, etc.), threaded fittings and threaded pipes of appropriate wall thickness shall be used.
- In applications expected to involve pressure peaks (e.g., due to pulse valve operation) and heavy-duty operating conditions, the material and wall thickness shall be determined by the Engineering department.
- Pipe lines shall always be welded under forming gas.
- All steel parts shall be primed with a B 38 single-pack primer, similar to RAL 9007, unless agreed otherwise. To be sourced from Bisdorf GmbH, Industriestr. 49-51, D-52224 Stolberg (Germany).
- Pickling of all stainless steel weld joints is to be carried out by the spray or immersion pickling method; however, the surface should not become coarse-grained and the specified tolerances must not be altered by the process.
- All necessary pipe lines and splash collars, both within the system and externally (in the case of complete systems) to connect tanks and equipment (usually as shown in the flow diagram/drawings) for:
 - Water
 - Cleaning fluid
 - Cleaning chemicals
 - Compressed air
 - Disposal
 - Leakage flows

3.2 Welding specifications:

As regards the application and execution of welding specifications/codes, separate agreements (drawing specifications) may be concluded for each Ecoclean purchase order.

In order to ensure the quality of welded products, it is mandatory that your enterprise is ISO 3834-4 certified or at least acts in compliance with that standard and can furnish proof thereof upon request.

3.3 Thread sealing / threaded joints

On threaded pipe fittings, the thread shall on principle be roughened first with a suitable tool. Next, it shall be packed in plumber's hemp followed by application of neo-fermit Universal Type 2000/I compound. Finally, Teflon tape shall be wound around the hemp-packed thread in sufficient quantity. Once the threaded joints have been assembled or the pipeline is completed, the threaded fittings shall be checked for leaks and any excess hemp or Teflon tape shall be removed. Please refer to our separate Operating Procedures on this subject.

IMPORTANT: On oil scrubbers, threads must be sealed with Loctite 55 as a matter of principle.

Stainless steel threaded fittings must always be of the long taper, heavy-duty type and shall be assembled with application of neo-fermit Universal Type 2000/I compound.

Threaded fittings shall, on principle, be sourced from Edelstahlservice Sulz GmbH, Gottlieb-Daimler-Str. 6, 72172 Sulz am Neckar.

4 Scope for mechanical main assemblies and single parts

4.1 The scope of supply and services includes the following:

- Full **supply of materials**. For your materials scheduling, please note Section 1
- Cutting, trimming: all stock removal is to be performed by a low-stress process, e.g., nibbling, laser beam, water jet, or plasma cutting.
- Assembly, welding and dressing (observe welding specifications; bright steel shall be welded exclusively by a low-stress gas-shielded metal arc welding process)
- All hollow sections shall be seal-welded.
- Stress-relief annealing to be performed per drawing specifications.
- Walking-beam sectional members shall be inspected for straightness and torsion in all planes, with straightening/levelling to be performed 'cold'.
- On the walking beam sectional member, longitudinal sharp edges shall be broken.
- Complete mechanical machining per drawing specifications.
- On hydraulic components such as, e.g., nozzles, high-pressure distribution blocks, caps, etc., all burrs must be removed. Loose chips and feather burrs shall be removed entirely without residue. These components must be cleaned completely before delivery.

- Hardening, nitriding, cold-nitriding, ionitriding or chemical nickel plating shall be performed according to drawing specifications or per the information given in the parts list. For cold nitriding, the following supplier is to be preferred:

Dreistegen GmbH

Dreistegen 7-9

D - 52156 Monschau

www.dreistegen.com

As for alternative suppliers, queries should be addressed to Ecoclean.

All parts made of CrNi steel must be post-treated against potential corrosion for use in cleaning systems. The thickness of the chemical nickel plating shall be taken into account when performing mechanical machining operations.

- Hardened parts to be chemically nickel plated according to drawing specifications (layer thickness: 30 μ minimum) must be tempered afterwards to obtain a wear-resistant coating. All surface-treated parts must be inspected for an absence of flaws before and after installation. The thickness of the chemical nickel plating shall be taken into account when performing mechanical machining operations.
- Pickling of all stainless steel weld joints is to be carried out by the spray or immersion pickling method; however, the surface should not become coarse-grained and the specified tolerances must not be altered by the process.
- Assemblies shall be pre-assembled.
- All necessary adjustment functions must still be available. Lock holes must be in place and accessible but will only be drilled through and secured with pins during final erection by Ecoclean (i.e., if a device was adjusted all the way to the end of an oblong hole, the oblong hole shall be made longer if applicable).
- If any reworking / extra work should become necessary, the responsible staff member in Ecoclean's Outsourced Manufacturing Unit must be notified so that potential costs and drawing modification needs will be known and taken into account.
- All connecting threads must be treated with LOCTITE No. 243 medium-strength liquid threadlocker before making the connection. Excepted from this rule are pipework flange connections and set screws / adjustment screws. Threaded connections shall be tightened to the prescribed torque according to DIN tables.
- All steel bolts must be at least strength grade 8.8 and galvanized; for clamping levers the strength grade shall be at least 10.9. Bolts made of CrNi steel must be at least strength grade A70. Except where specified otherwise.
- If the plastic material referred to as PEEK is used, the grade must be PEEK-HPV or PEEK-PVX in black; this is a mandatory requirement.
- All bearing points shall be filled with grease (antifriction bearing grease).

- Walking beam conveyors must come fully adjusted (with all workpiece supports and fixtures duly aligned using the master template) and inspected according to Ecoclean's checklist.
- In the case of complex assemblies (or main assemblies) that cannot be transported on pallets or in mesh stillages, the scope of supply/service must include a shipping rack or transport device.
- Track rollers, guide pins, rails and shafts shall be sprayed with a protective oil to inhibit corrosion in transit. Track rollers and levers should not be under load during shipment by truck. All moving parts must be blocked to ensure that they cannot get damaged during shipping/handling.

5 Scope for soundproofing and thermal insulation

5.1 *The scope of supply and services includes the following:*

- Full **supply of materials**. For your materials scheduling, please note Section 1
- Production of all flat pattern sketches for sheet metal.
- Cutting, trimming: all stock removal is to be performed by a low-stress process, e.g., nibbling, laser beam, water jet, or plasma cutting.
- Assembly, welding, straightening, dressing (observe welding specifications).
- No primer application or paintwork, save where separately agreed upon.
- Insulating materials and any synthetic components employed must be temperature resistant up to at least + 70° C. Mineral wool laminated with a non-woven lining on one side, fire classification A2 ('non-inflammable')
- The cabin must be built to withstand moist air.
- Supports / brackets and bracings must be discussed with Ecoclean and shall be attached by means of threaded fasteners; they are included in the scope of supply.
- Door handle sourced from Schlechtendahl & Söhne, type WSS 'gymnasium type' flush door fitting No. 2-170/3. The locking rods extending up and down from the door lock must engage the solid frame of the soundproofing cabin, and the door, when closing, must snap shut without any actuation of the handle. The rod mechanism must be protected from top to bottom by a removable cover of perforated sheet metal.
- The perforated sheet metal covering the remaining door leaf should be diagonally welded for maximum stiffness.

- All door slots must be covered with a sheet metal angle from the inside.
- **All air intake grilles shall be provided 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°C
Moisture resistant	up to 100% relative air humidity
Vendor	Freudenberg Co., D-69465 Weinheim

- Place of installation unless otherwise agreed: Ecoclean, Monschau site
 In case of on-site installation: our customer's shop
- Shipment from your place to place of installation is included in scope of supply.
- If the installation of the soundproofing cabin is outside your scope, the supply must include an installation drawing and an assembly kit containing enough material to install the cabin completely.
- Doors measuring over 1200 mm in height shall be mounted with at least three hinges, type 1056-U9-PH, sourced from EMKA Co.

6 Scope for acceptance / trial run

6.1 Prior to the agreed delivery date it shall be determined by consultation with the responsible staff member in Ecoclean's Outsourced Manufacturing Unit whether or not a preliminary acceptance is to be carried out at the supplier's site. The acceptance shall consist of the following:

- Visual inspection of the main assemblies and/or assemblies produced.
- For pre-acceptance by Ecoclean, the individual assemblies or main assemblies, respectively, must be presented in a fully pre-assembled state. Any defects identified shall be remedied immediately. Any defects or flaws attributable to you that are discovered during installation or trial run or at customer's site shall be remedied in consultation with Ecoclean without delay and at no cost.
- A trial run of the conveyor system shall be conducted in special cases only, if **explicitly stipulated at the time of contract award**.

7 Technical discussions

- 7.1 Any technical and commercial queries raised by the Supplier shall be discussed directly and exclusively with the responsible staff member in Outsourced Manufacturing. The responsible staff member shall be named in the enquiry or purchase order. While the order is being processed, Supplier's head of manufacturing shall be available to us for consultation, as agreed, at no extra cost.
- Any modifications, whether agreed upon on site or by phone, that result in non-compliance with the documents provided by Ecoclean must be documented. If any impact on price or timing is derived from such discussions, Ecoclean shall be notified, without any prompting on its part, of the price increase/decrease or time delay involved by separate letter within 7 calendar days from the discussion date. Surcharges or delays claimed after this interval will not be accepted. Even if notice of a surcharge and/or delay is given in due time, this does not mean that Ecoclean is bound to accept it. Thus, if a time delay is announced, Ecoclean reserves the right, e.g., to hire other suppliers for support and to charge the costs incurred to the supplier who had originally been contracted to provide the scope of supply and services.
- Technical discussions shall be conducted in German or English. If any other languages are used, the supplier shall provide a translator.

8 Rust removal and coating

Your scope of supply and services includes de-rusting, de-greasing and coating of all items in the purchase-ordered scope.

- As a base coat, only chromate-free primer B 38 (metal primer) similar to RAL 9007 is acceptable. To be sourced from Bisdorf GmbH, Industriestr. 49-51; D-52224 Stolberg.
- Blemishes resulting from assembly operations shall be removed from all coated parts by retouching prior to shipment.
- All steel parts as well as stainless steel housings and tanks reinforced with external sectional steel shall be primed!
- Interior CrNi steel components (e.g., tanks, housings) are excepted from the above.
- A top coat shall only be applied where explicitly requested by Ecoclean.

9 Assembly, dismantling and on-site installation

9.1 Assembly

Main assemblies and assemblies shall be assembled on the Supplier's premises. All equipment needed to this end – e.g., an overhead crane, tools, etc. – must be pro-

vided. The supplier shall provide power outlets of sufficient capacity as required for trial runs or test operation. In this context, Ecoclean may contribute equipment if and as available.

9.2 Dismantling and marking

If the purchase order is for a complete system, Ecoclean will design it with partition joints so that adequately sized units will be obtained for shipping. This does not rule out the need for abnormal load transports. The system shall be disassembled for shipping according to Ecoclean instructions.

After that painting is to be performed as indicated under item 10 of this specification (primer to be applied before assembly).

According to the state of disassembly, all disassembled units shall be marked with tags (which may be furnished by Ecoclean, this also applies in case of component manufacturing). A properly completed tag is to show the following information: Ecoclean job number, main assembly/assemblies and assembly/assemblies, respectively. If order is placed for screws and bolts or the like the item number is to be shown as well.

9.3 Installation on site

On-site installation may (or may not) be included in the Supplier's scope. The acceptance will be conducted in the presence of our site supervisor, or of the staff member responsible in Ecoclean's Outsourced Manufacturing Unit. It should be noted that this staff member is authorized by Ecoclean to perform specific functions to ensure the fulfilment of customer specifications, and has the power to give directions.

Moving the purchased scope into our customer's production buildings forms part of the Supplier's scope of supply and services.

Should circumstances arise for which this specification does not provide guidance, Ecoclean installation guidelines shall apply (see http://www.durr-ecoclean.com/fileadmin/user_upload/duerr/de/pdf/agb_01.pdf)

9.4 Documents

The Supplier shall present all requisite documents – e.g., certificates, visas, attestations, social insurance certificates, residence permits, etc. – which are needed to obtain a work permit in the respective country (or on the respective customer's site) to Ecoclean in full and in due time, in consultation with our installation coordinator or site supervisor, respectively.

9.5 Registration / Equipment

The supplier shall duly register / sign in with the customer. Any plant ID badges, safety trainings, industrial truck operator training, occupational safety instructions, regulations concerning workwear, etc., which may be required by our customer and for which a fee is charged, are included in the scope of supply and services and will in no case be deemed an extra cost.

The site shall be left in a clean and tidy state (every day).

The rules/regulations applicable in each case can be obtained from Ecoclean upon request.

9.6 Extra on-site work

If any work not included in the original purchase order is performed by Ecoclean for the Supplier, or by the Supplier for Ecoclean, such extra work shall be documented using manhour reports / time sheets. These manhour reports / time sheets must always be signed by Ecoclean's site supervisor and by the respective representative of the Supplier. Extra work that is not properly documented can neither be charged for nor compensated between Ecoclean and the respective Supplier.

10 Prices

- All prices to be invoiced to us shall be broken down into manufacturing and material costs for each main assembly or assembly.
- Prices to be stated in Euro or in supplier's national currency
- The abovementioned prices are fixed and include all items stated in this specification.

11 Time schedule

On principle, upon issuance of a written purchase order, a confirmation of that order stating the delivery date shall be sent to Ecoclean (this may be in the form of a copy of our purchase order).

At Ecoclean's request, a time schedule indicating key activities and their sequence in time shall be included in the quotation or in the order confirmation. This time schedule must contain the following items:

- Design (if included in the scope)
- Material procurement
- Component manufacture
- Preliminary assembly
- Final assembly
- Trial run
- Dismantling
- Shipping

At the time of order placement (receipt of the written purchase order), the parties will also enter into an agreement regarding the time schedule. Any subsequent deviations from this time schedule must be reported to Ecoclean without delay and require Eco-

clean's approval. Ecoclean reserves the right to carry out occasional production and time scheduling audits during performance of the order.

12 Packing and shipping instructions

- Ecoclean expects deliveries to be made free works or free place of installation, depending on what is stipulated in the purchase order.
- In the case of complete systems being manufactured, the associated shipping is invariably included in the scope of supply and services and must be taken into account accordingly in the quotation. Ecoclean, in its purchase order, will stipulate the option most favourable for itself.
- Each complete system or system component must be loaded and secured in a skilful and professional manner. In any case the machine body shall be covered by a tarpaulin. The system's edges and corners must be padded to avoid damage from contact with the tarp. Individual parts shall be shipped in boxes/crates or duly secured on pallets. The system and the individual packing units must be secured against shifting on the transport vehicle by means of nailed-down wooden wedges and load securing belts.
- All smaller items (total weight < 1000 kg) must be unloadable by forklift truck and shall therefore be placed on pallets or joists.
- In fulfilling this purchase order, the German Packing Ordinance of Jan. 1, 2009, shall be observed.
- Where packing is not accepted in return it must be designed so as to be disposable easily and at low cost by Ecoclean's customer. Unless otherwise specified by Ecoclean, only paper, steel or wood shall be used.
- Given the risk of freezing, all tanks must be emptied completely. Pipelines coming into contact with liquids, pneumatic system components, and control or shutoff devices shall be blown out through with compressed air before shipping. Heat exchangers shall be filled (or wetted, as applicable) with anti-freeze.
- If delivery is to be made by truck, it must be effected between 07:00 a.m and 04:00 p.m. and shall be announced two days in advance.
- Delivery shall in any case be made free delivery point. The point of delivery will be stated in the purchase order.
- All components must be unloadable with standard forklift trucks or cranes.
- In the exceptional case that equipment is to be picked up by Ecoclean, the responsible staff member in Ecoclean's Outsourced Manufacturing Unit shall be notified in due time that the goods are ready to ship. This shall be done by telefax stating the following data:

Marking	as stated at item 1 below
Packaging unit size	length x width x height in meters
Content of packaging unit	description according to drawing title
Weight of packaging unit	gross (in non-EU shipments: gross + net) weight

Markings/designations appearing on parts and delivery notes must include the following, in addition to each item's name:

- 1. Ecoclean contract No., main assembly (HBG), assembly (BG), Ecoclean purchase order No. (or simply a copy of our purchase order)**
- 2. Weight per ordered item**
- 3. If a shipment consists of individual parts, these shall be marked with material tags bearing the above information, down to item level. This also applies to standard items furnished (bolts, etc.).**
- 4. Material tags can be made available upon request.**

Ecoclean reserves the right to reject shipments of goods supplied without such item markings / designations.