

## TLV Technical delivery specification of Aerne Engineering AG

1. Scope of application
  - 1.1 These technical delivery specifications are part of the offer. Any agreements deviating from them must be set out in writing. The following order of priority applies: 1.2 Priority 1: Legal regulations, in particular safety regulations 1.3 Priority 2: The printed text of the offer. Handwritten changes require mutual sign-off. 1.4 Priority 3: Written agreements which deviate from the following regulations, provided that reference is made to them in the order. 1.5 Priority 4: General technical regulations.
2. Compliance with the regulations
  - 2.1 Aerne Engineering AG (hereinafter referred to as AERNE) guarantees by the order confirmation the compliance with all individual components of these technical delivery specifications as far as they are not excluded by special agreements. AERNE guarantees in particular the compliance with the following directives:
    - Machinery Directive 2006/42/EC - Low Voltage Directive 2014/35/EU - EMC - Directive 2014/30/EU.
3. Prices, conditions and scope of delivery
  - 3.1 Unless otherwise described, the prices quoted in the offer include the following components: - Project management - Development and design - Preparation of the production documents - Procurement and manufacture of the production parts - Procurement of the machine components - Switch cabinet construction - Programming - Assembly at AERNE - Commissioning (hereinafter IBN) at AERNE.
  - 3.2 The assembly and IBN includes the installation and wiring of all components and plant parts included in the scope of delivery. Acceptance shall take place at AERNE under the operation defined in the specifications or the list of requirements. The duration shall be determined at the discretion of AERNE.
  - 3.3 The definitive documentation shall be completed after acceptance and submitted to the customer no later than four weeks after acceptance. It will be submitted once in paper form and once in electronic form (excluding purchased part documentation). The documentation is in German and contains the following chapters: - Operating instructions (AERNE template) - Electrical diagram, if necessary - Pneumatic diagram, if necessary - Submission of relevant assembly e-drawings for ordering wear and spare parts - CE declaration of conformity or EC declaration of incorporation - Acceptance protocol.
  - 3.4 The training of the personnel takes place in Arbon.
  - 3.5 In the event of changes to the order confirmation and the specifications or the list of requirements, AERNE shall notify the additional costs and the delay in delivery as soon as possible.
  - 3.6 AERNE is not responsible for the following components: - Energy supply (interface: control cabinet, compressed air preparation) - Samples and individual parts are to be provided to AERNE in sufficient quantities. Deadline postponements due to missing parts to be provided must be accepted if Aerne is not at fault - Procurement of dummy parts - Adjustments on the construction side
  - 3.7 The prices are quoted EXW Arbon, unpacked (Incoterms 2010). See also GTC.
  - 3.8 Payments are due within 30 days net. - 30% after order - 30% after concept approval - 30% after acceptance at Aerne Engineering or before delivery - 10% after signing of commissioning report or 30 days after delivery at the latest.
  - 3.9 The prices are based on the current exchange rates. In the event of exchange rate fluctuations of 5% or more to the disadvantage of AERNE, prices are subject to adjustment.
  - 3.10 Delivery deadlines are stated in the offer and confirmed in the order confirmation. The order confirmation shall be deemed to be the start date.
  - 3.11 AERNE shall not be liable to pay any compensation in the event of a delay in delivery. However, AERNE shall be obliged to notify any postponement of the deadline without delay.
  - 3.12 If the equipment is not collected from AERNE within 30 days of acceptance at the latest, storage costs in the customary amount will be charged.
  - 3.13 A bank guarantee can be issued on request. The costs are not included in the offer and will be invoiced separately.
4. Project procedure
  - 4.1 Initialisation - In the preliminary study, the outstanding questions are clarified in order to complete the specifications - Calculation based on the information - Preparation and presentation of the offer - Project order (release for conception phase)
  - 4.2 Concept
    - Creation / definition of the requirements specification or the list of requirements - Development of the solution proposal as a basis for decision-making - Creation of the entire schedule with milestones - Discussion of the concept with the client - Concept release by the client (milestone, max. 48h after receipt)
  - 4.3 Development - Development and elaboration of the concept - Release of the design (milestone, max. 48h after receipt) - Preparation of the production documents
  - 4.4 production - manufacture and procurement of the individual components - assembly - control construction and programming - IBN at AERNE
  - 4.5 Introduction - Acceptance by the client at AERNE - Training at AERNE
5. System design, machine elements
  - 5.1 In principle, AERNE endeavours to build the plant according to the latest state of the art. Care will be taken to ensure the quietest possible operation and the best possible accessibility to the various stations.
  - 5.2 The facility will be built on a stable base frame.
  - 5.3 The following points describe the design of a typical AERNE system or machine. In the case of special requirements, AERNE reserves the right to use components from other manufacturers. Components from well-known manufacturers are used. Special customer requirements can be catered for, but must be recorded in writing when the quotation is prepared. - Profile systems: Robotunits - Protective enclosures: Robotunits, Troax - Pneumatics: FESTO, Schunk, SMC - Gripper systems: Schunk - El. linear systems: Schunk, FESTO, LinMot - El. Drives, gearboxes, frequency converters: Nord, MT, Tramec, Varmec, Servomech, MDrive, Dunker, Toshiba, SEW - Servo drives: FESTO, Panasonic, Bosch, Yaskawa, B&R - Robotics: ABB, Stäubli, Yaskawa, KUKA, FANUC - Controls: Siemens, Eaton, Beckhoff, B&R - Sensors: Baumer, SICK, Cognex, Wenglor - Feeders: ASBA (own product)
- 5.4 The input devices are chosen according to the complexity of the installation.
- 5.5 As standard, no permanent sensor monitoring is carried out over all sensors. Only those sensors which are important for the current programme sequence or which contribute to the safety of man and machine.
- 5.6 The colours are selected as follows: - Base frame: RAL7035, RAL5017 silk gloss - ASBA drives: polished stainless steel - Control cabinets: RAL 7035 - Purchased parts: standard supplier colour.
6. System performance, environment, connections
  - 6.1 The system performance shall be described in the mutually signed specifications or the list of requirements or in the offer.
  - 6.2 The following environmental conditions must be submitted to AERNE without request, at the latest when the order is placed: - Ambient temperature - Air humidity - Floor load - Lift mass - Gate mass.
  - 6.3 Connection data - Electrical connection: 400/230V ±5%, 50Hz - Pneumatic connection: 5-6bar, cleaned and unoled air
7. Acceptance
  - 7.1 The date of acceptance shall be mutually agreed.
  - 7.2 The defined system performance and requirements (6.1.) must be fulfilled in order for the acceptance to take place.
  - 7.3 In principle, acceptance shall take place at AERNE, the signature of the commissioning report shall only serve as a functional test at the customer's premises.
  - 7.4 Changes and requests compared to the offer, concept or design approval will be invoiced at additional cost.
  - 7.5 Is a plant, machine or system developed or developed and built by Aerne Engineering AG on behalf of the customer not released or accepted by the customer, the accepted by the customer, the customer may not put it into and thus not produce any parts/components, assemble, test, etc. (no intended operation). If the customer nevertheless puts the plant, machine or assembly, Aerne Engineering AG cannot be held liable for any personal injury or damage (parts/components, damage to the plant, etc.) nor for consequential damage.
8. Non-disclosure agreement
  - 8.1 A confidentiality agreement can be signed at the customer's request. The scope of the agreement will be determined by the client.

Status: May 2019, AERNE reserves the right to make changes to these TLV at any time without prior notice. The current TLV are available on the homepage.