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Section C – Mechanics

Part 1: General

The following delivery specifications of Wieland-Werke AG form part of the contract.
Any deviating specifications are to be agreed upon between the supplier/contractor and Wieland, and documented.

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1. Project planning

1.1 Assessment of shop drawings

The supplier/manufacturer of the plant must submit assembly drawings for all assemblies for assessment by Wieland at his own expense in good time before production begins. These will be inspected by Wieland and approved within 2 to 3 weeks. Change requests can be discussed and implemented during this procedure.

Responsibility for the functionality shall still remain with the supplier.

1.2 Inspection of construction plans

The inspection of construction plans (formwork plans) for dimensional correctness is part of the supplier's scope of services. The plans shall be handed over by Wieland and returned to Wieland by the supplier with approval stamp, date and signature within 2 to 3 weeks.

1.3 Motor/component list and electromechanical functional description

A motor/component list (MCL) and an electromechanical functional description (EFD) shall be prepared by the supplier of the mechanical equipment for all assemblies in the entire plant.

The descriptions are the basis for the project planning of the electrical equipment of the plant, and are to be delivered to the manufacturer of the electrical equipment and to Wieland at the same time.

The final design of the plant based on the MCL and EFD shall be agreed in a meeting with all parties involved.

1.4 TPM – Total Productive Maintenance

The TPM tool provides the opportunity to achieve sustained improvements in manufacturing machinery through simple technical measures. Wieland wishes to use this tool and start already in the design phase. It should be consciously implemented through a partnership between the supplier and Wieland, in which useful approaches are worked out together.

Objective

- Improve machine availability
- Stabilise processes
- Reduce throughput times and maintenance costs

2. Plant design specifications

The supplier undertakes:

- to comply with all higher-level directives, official standards and generally accepted engineering practice in accordance with EN, DIN, VDE, VDI, VDS, etc.
- to comply with the accident prevention regulations (UVV) of the employers' liability insurance associations (BGV regulations) that are valid and relevant at the time of delivery
- to comply with the EU Machinery Directive that is valid and relevant at the time of delivery
- to prepare the required manufacturer's declaration or Declaration of Conformity (including affixing a CE mark)
- to comply with the German Electromagnetic Compatibility Act (*Elektromagnetische-Verträglichkeit-Gesetz,* EMVG)
- to comply with national standards currently in force at the place of use until they are replaced by corresponding harmonised European standards (e.g. DIN EN)
- to comply with laws and regulations in the respective country of operation that are valid and relevant at the time of delivery

2.1 Identification marking / referencing / calibration devices

2.1.1 Identification marking of production line axes

Particular axes (e.g. longitudinal axis of a production line, centre axis of assemblies etc.) in the machinery and plant must be marked by the supplier. It must be agreed with Wieland on which assemblies and in what form this identification marking shall be made.

The marking in the agreed form is part of the supplier's scope of services.

2.1.2 Measuring points

Before installation work begins, Wieland will set up measuring points for the main axes of the machinery in the floor of the production building as well as measuring points for the vertical position at suitable places in the building. The number and position of these points will be agreed with the supplier in advance.

The alignment of the machinery in the production building shall then be performed entirely on the basis of these markings. Information about the actual orientation and positioning of the installation as a whole as well as key plant components shall be kept by the supplier and recorded in a separate measurement report. This measurement report prepared by the supplier of the plant and the records of the measured data shall be handed over to Wieland with the documentation for the installation.

2.1.3 Referencing of position-controlled axes

For the accurate referencing of position-controlled axes, the supplier of the plant must attach auxiliary devices to the installation which match the positioning accuracy of the units and ensure a corresponding reproducibility.

Reference points can be realised, for example, by applying markings with reference information (e.g. notches, punch marks, scribe marks, arrows, etc. as well as engraved signs) on the moving and stationary machine part. But other aids (stops, gauges for existing machine edges) can also be used. The exact form is to be agreed in advance with Wieland.

The implementation of these devices in the agreed form is part of the supplier's scope of services.

2.1.4 Calibration devices

Necessary calibration devices (gauges) for encoders are to be taken into account by the supplier of the plant during the planning, and manufactured and delivered for the commissioning of the plant.

The provision of such auxiliary devices is part of the supplier's scope of services.

2.2 Aids

The scope of supply of the manufacturer of the machinery or plant includes all auxiliary equipment and aids for the operation and maintenance of the systems (e.g. extraction devices, dismantling tools including hoists, special tools, etc.) Cranes and lifting devices are to be manufactured and documented in accordance with the Machinery Directive 2006/42/EC; cranes in accordance with the rules in BGV D6; lifting devices in accordance with DGUV Rule 100-500 and, depending on the application, in accordance with the DIN EN 13155 and DIN EN 13001 standards.
Cranes and lifting devices are to be procured with digital documents (drawings, 3D model as .prt or .step, operating instructions, inspection book, etc.) and painted in RAL 3028.

2.3 Spare parts and tool changing parts

The supplier and Wieland must agree at a sufficiently early stage on the necessity for and scope of an initial stock of spare parts and tool changing parts. The aim is to include a reasonable scope of an initial stock of spare parts and tool changing parts in the scope of supply for the plant, or at least to manufacture them together with the actual equipment.

2.4 Lubrication

The concept for lubrication and for the supply of lubricant for the machinery and the plant as a whole must be agreed with Wieland in advance.

In the case of grease lubrication, the following specifications must be observed:

- Connection points for all lubrication points grouped together centrally on the respective assembly
- Lubricant delivered to each lubrication point via a separate line
- Use of lubricant dispensers with adjusted quantity setting (option)
- Lubrication points of subcontractors are to be integrated into the overall concept
- All lubrication points on the installation must be marked (form or execution of marking to be agreed with Wieland)

All lubrication points on the machinery and equipment must be positioned so that they are easily accessible for maintenance work (relubrication, oil change, etc.)

If sites of operation are not accessible, the lubrication lines should be extended if necessary or lifetime lubrication must be used. Necessary rework on this implementation is included in the supplier's scope of supply.

During installation or commissioning, but in any case before acceptance of the plant, a joint inspection of all the plant's lubrication and refilling points shall be carried out by the supplier and the Wieland maintenance department. In the course of this inspection, the required marking of all lubrication points on the installation shall be jointly specified.

2.5 Specifications for paintwork

The concept for the colour scheme of the installations including piping is to be agreed and specified with Wieland during the project phase.

General
All parts of the machinery and of the plant must be made of a material that meets the requirements, or else these parts of the system shall be painted or galvanised (corrosion protection). Immediately after derusting, the components are provided with a quick-drying primer coat. The top coat is then applied to this primer coat in accordance with the manufacturer's instructions. The total dry film thickness of 120 µm must be applied in at least 2 coats (at least 40 µm per coat). The paintwork finish must be silk gloss and resistant to oil and emulsions.

2.6 Linear guide systems

WWAG requires that the design specifications and tolerances specified by the manufacturer of the systems are observed. The supplier and type must be agreed with WWAG in advance (preferred by Wieland: THK, Bosch Rexroth).

2.7 Sliding surface guideways

All sliding surfaces must be covered on both sides with replaceable wear plates. A suitable lubrication system must be provided.

2.8 Rollers in general

All rollers in the plant being supplied must be dimensioned to meet at least the requirements of DIN 743, parts 1-4. The maximum and minimum roller diameters must be adapted to the respective operating conditions.

The supplier must ensure that as few different types of roller as possible are used within a plant (standardisation). If possible, roller types already in use at WWAG should be used.

For the coordination of the execution of rollers, a consultation with WWAG must take place in advance, with regard to the following criteria:

- Roller type (use of roller types already in use at Wieland)
- Manufacturer
- Quality of surface coating
- Design of roller body
- Design of rollers to be mounted in machine tools for machining (e.g. design of pins or centring devices)

2.9 Hydraulic cylinders

Suppliers and types of hydraulic cylinders are to be agreed in advance with Wieland (preferred by Wieland: Storz, Hänchen, Bosch Rexroth, Hydair, Hoven)

2.10 Valve stands/islands for hydraulics or pneumatics and lubrication points

Valve stands for hydraulics and pneumatics as well as lubrication points are to be positioned in consultation with Wieland-Werke AG. It must be ensured that, if the function permits it, these are positioned accessibly and outside of safety areas.

2.11 Gears

Gearbox housings must generally have an oil level monitoring device (sight glass, dipstick). If accessibility is poor, an electrical monitoring system must be used.

Furthermore, all gear units must be positioned in such a way that both the oil drain plug and the refill plug are easily accessible.

The supplier and type of the gear units used must be agreed in advance with WWAG (preferred by Wieland: Nord, Hüber-Baacke, Flender) and they must in principle be suitable for the use of polyglycol oils (PG oils) and polyalphaolefin oils (PAO).

For large gear units, transmission ratios, numbers of teeth and details of the bearings used must be documented. Drawings with mounting dimensions, interference contours and external dimensions must be supplied.

2.12 Bolted connections

The supplier must ensure that bolted connections in the installation are dimensioned, executed and locked in accordance with the prevailing operating conditions.

Immediately before acceptance of the plant, the manufacturer shall check that bolted connections are properly executed and sufficiently secure. This check shall be carried out jointly with the Wieland maintenance department, and consists of retightening all screwed/bolted connections and fittings. The work is fully included in the supplier's scope of supply – Wieland is only on hand to provide support. If it is found in the course of this check that there is a need for rework of individual screwed/bolted connections or fittings, then the rework shall be carried out by the supplier at his expense.

Damage arising due to defective screwed/bolted connections or fittings within the warranty period shall be at the supplier's expense.

2.13 Pipe routing

Pipe feed-throughs through ceilings and walls shall be executed in such a way that removal and installation of the pipe is possible without any problems (e.g. by means of bulkhead plates) and a permanent seal is ensured.

All screw fittings in the pipeline must be fully accessible with the necessary tools. The pipe lengths must be chosen in such a way that all sections can be removed without having to cut them.

If, for technical reasons, any of these specifications cannot be met, this must be indicated in advance and agreed with Wieland.

2.14 Name plates

All units on installations (e.g. pumps, fans, heat exchangers, motors etc.) must be installed in such a way that the name plate on these units can be easily read. If this is not possible, a second name plate with clear assignment must be affixed to the machine frame. In the case of on-site installation of name plates, good accessibility must be ensured.

Original name plates of subcontractors (purchased parts) must not be removed by the general contractor.

2.15 Traction drives

For traction drives (e.g. coil lift trucks), positive drives (e.g. toothed rack – no friction drives) should generally be used.

2.16 Standstill brakes

Separate, external brakes must be provided as standstill brakes for strip roller drives or lifting devices (no motor brakes).

Implementation:
Spring-applied, pneumatically released disc brake with pressure monitoring

Supplier and types of brakes used must be agreed in advance with Wieland (preferred by WWAG: Deutsche van Rietschoten).

2.17 Machine anchorages

The anchorage of machinery and assemblies to the foundation is to be implemented with corrugated pipes and anchor bolts (new foundation). If an existing foundation is used, anchoring shall preferably be done with anchor bolts concreted into core holes. The approval of WWAG must be obtained for the use of adhesive anchors / screw anchors. In the detailed project planning, the supplier shall indicate the exact locations of use and the expected loads for all machine anchorages.

2.18 Steel constructions

For steel components, a verifiable structural analysis must generally be supplied as proof. The delivery of the official structural analysis shall be subject to consultation.

2.19 Requirements associated with official permits

Requirements associated with official permits must be taken into account in the plant design and are included in the supplier's scope of delivery.

2.20 Requirements for stainless steel constructions

The execution of stainless steel constructions must be agreed with Wieland in advance, especially in regard to material selection, work done (e.g. welding) and subsequent treatment (e.g. pickling, passivation).

In principle, the generally applicable standards and guidelines as well as the manufacturer's processing guidelines for stainless steel processing must be observed and followed.

3. Safety equipment

The manufacture and installation of all safety equipment (guards and protective devices) is included in the total price of the plant. The supplier guarantees that the plant and the safety equipment are compliant with all current legal requirements (including German product safety legislation and the relevant regulations of the employer's liability insurance association *(Berufsgenossenschaft)*.

The implementation of the safety equipment must allow for maintenance and operating activities. Good accessibility must be ensured for all required activities. The enclosure of persons for particular activities is not accepted. The implementation of the safety equipment and the protective concept (e.g. safety circuits) must be coordinated with Wieland during project planning.