

<b>ETN010</b> EN July 2013	<b>Equipment Specification</b> Preferred Components	 JOINTLY INNOVATIVE
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## 1 Purpose and Scope

**This company standard is currently valid for ETO MAGNETIC GmbH.**

This equipment specification (ES) contains a list of series, assemblies and components, if applicable, which shall be preferred. This equipment specification shall be applicable to all orders placed by ETO. The technical design is examined during machine acceptance testing.

In case of contradiction between this equipment specification and the specifications sheet, the design in the specifications sheet shall be applicable.

Should other than the specified preferred components be used, the supplier shall request approval from ETO in the specifications sheet. If special agreements are made, these shall only apply to the relevant order and shall be documented in writing. Oral agreements shall not apply.

If during acceptance testing, deviations from the equipment specification are detected, the observance of which would have been possible, a modification at supplier's expense may be requested.

The aim of this equipment specification is the following:

- High availability (operational availability) of the machine.
- Minimum spares inventory and short downtimes in case of repairs due to the use of suitable preferred components.
- Avoid additional work and costs during start-up.
- Ensure safety for the operating and service personnel.
- Ensure use of modern technology in respect of cost effectiveness, maintenance and set-up times
- Due to the standardization forming the basis of the equipment specification, ETO personnel can familiarize themselves quickly with new machines and facilities.

## 2 Change history

Issue	Amendment Description
November 2014	Translation of the German version July 2013

### 3 Preferred Components

#### 3.1 Frame, table plate, basic structure and safety

N°	Components	Preferred:		As an alternative:	
		Manufacturer:	Type:	Manufacturer:	Type:
1.	"Aluminum" frame	<b>Item Industrietechnik</b>	Profile series 8 (40x40) / (80x80) ⇒ Upper edge of table plate 1050 mm for manual workstations	<b>ASSTEC</b>	Profile series 8
2.	"Steel" frame		"Welded" steel frame ⇒ Upper edge of table plate 1050 mm for manual workstations		
3.	Table plate		Steel ⇒ electroless nickel plated		Aluminum ⇒ anodized (natural color)
4.	Vision panels		Polycarbonate (MAKROLON® and LEXAN®), min. 6 mm, clear, uncolored		
5.	Roof	<b>Distribution: e.g. Carl Pfeifer, Stockach</b>	Polycarbonate (MAKROLON® and LEXAN®), min. 10 mm as twin-wall sheet or four-wall sheet, translucent		
6.	Drawer storage cabinet	<b>Treston</b>	Drawer storage cabinet ML or LMC		
7.	Safety enclosure / machine enclosure	<b>Item Industrietechnik</b>	Profile series 8 (40x40) Profile series 6 (30x30)	<b>ASSTEC</b>	Profile series 8 Profile series 6
8.	Doors / lift doors	<b>Item Industrietechnik</b>	Profile series 8 (40x40) Profile series 6 (30x30)	<b>ASSTEC</b>	Profile series 8 Profile series 6
9.	Illumination for manual workstations	<b>LED2WORK</b>	UNILED 24W -96W Item no. 110914-02, 110914-03, 110914-04, 110914-05, 110914-06 LEANLED 6W – 36W Item no. 110814-01, 110814-02, 110814-05, 110814-06	<b>ASSTEC</b>  <b>Waldmann</b>	SAL 255 EVG SAL 136 EVGL AWDCE118 with louver

		Preferred:		As an alternative:	
N°	Components	Manufacturer:	Type:	Manufacturer:	Type:
					LED lamp, depending on the application
10	Illumination for cabinets		Consult ETO		
11	Operating housing / support arm	<b>Rittal</b>	Operating housing / connection > Hinge > Support arm, light 45x60		
12	Operating housing, mobile	<b>Rose</b>			

### 3.2 Installation elements

		Preferred:		As an alternative:	
N°	Components	Manufacturer:	Type:	Manufacturer:	Type:
1.	Cable carriers	<b>Igus</b>	Easy Chain Zipper E-chains Triflex R		
2.	Cable duct	<b>Hager</b> <b>Hager</b> <b>ITEM</b>	Tehalit VK-flex, nonhalogen Tehalit.HA7 wiring duct system, nonhalogen, light grey  Cabel duct ALU with cover, depending on the application		

### 3.3 Machine and standard elements

		Preferred:		As an alternative:	
N°	Components	Manufacturer:	Type:	Manufacturer:	Type:
1.	Rubber stops, Rubber, general	<b>Reiff</b>	depending on application / properties	<b>Schlösser</b>	depending on application / properties
2.	Clamps	<b>Destaco</b>		<b>Norelem</b>	
3.	Special sealing elements	<b>Schlösser</b>	depending on application / properties	<b>Reiff</b>	depending on application / properties
4.	Standard elements	<b>Norelem</b>	depending on application / properties	<b>Steinel</b>	depending on application / properties
5.	Springs	<b>Gutekunst</b>	depending on application / properties		
6.	Disk springs / system springs	<b>Steinel</b>	depending on application / properties		
7.	O-rings	<b>COG</b>	depending on application / properties	<b>Trelleborg Sealing Solutions</b>	depending on application / properties

### 3.4 Guides / bearings

		Preferred:		As an alternative:	
N°	Components	Manufacturer:	Type:	Manufacturer:	Type:
1.	Linear guides	<b>Dr. Tretter</b> <b>NSK</b> <b>THK</b>	depending on application / properties	<b>Bosch Rexroth</b>	depending on application / properties
2.	Guide shafts	<b>Dr. Tretter</b>	1.1214 1.4112	<b>NSK</b>	depending on application / properties
3.	Plain bearing bushings	<b>Igus</b>	iglidur G iglidur W300	<b>Glacier</b>	DU bearings
4.	Antifriction bearings	<b>SKF</b> <b>FAG</b>	depending on application / properties	<b>INA</b>	depending on application / properties
5.	Cam rollers, support rollers	<b>Dr. Tretter</b>	depending on application / properties	<b>SKF</b> <b>FAG</b>	depending on application / properties
6.	Needle bearings	<b>SKF</b> <b>FAG</b>	depending on application / properties	<b>INA</b>	depending on application / properties
7.	Scrapers, shaft seals	<b>HUG®</b> <b>Industrietechnik und Arbeitssicherheit GmbH</b> <b>Trelleborg Sealing Solutions</b>	depending on application / properties	<b>COG</b>	depending on application / properties
8.	Adjustment slides / positioning tables	<b>ERO</b>	VSLs or depending on application / properties	<b>IEF Werner</b> <b>Schneeberger</b>	depending on application / properties

### 3.5 "Pneumatic" machine actuators

		Preferred:		As an alternative:	
N°	Components	Manufacturer:	Type:	Manufacturer:	Type:
1.	Cylinder	<b>Festo</b>	ADVU series ADN series DSBC series DSNU series	<b>Festo</b>	DSN series
2.	Swivel / rotary modules	<b>Schunk</b>	depending on application / properties	<b>Afag</b>	depending on application / properties
3.	Clamping module	<b>Festo</b>	depending on application / properties	<b>Sitema</b>	depending on application / properties

### 3.6 "Electromechanical" machine actuators

		Preferred:		As an alternative:	
N°	Components	Manufacturer:	Type:	Manufacturer:	Type:
1.	Drives / drive motors incl. drive controllers	<b>Schneider Electric</b> <b>Motion</b> <b>Faulhaber</b>	see drive list TBM	<b>Bosch</b> <b>Rexroth</b> <b>SEW</b> <b>EURODRIVE</b>	For exchangeable standard drives
2.	Gears	<b>harmonic drive</b> <b>Neugart</b>	SP & LP & TP series		
3.	Drive chains	<b>Mädler</b>	depending on application / properties		
4.	Timing belts	<b>Mulco</b>	depending on application / properties, metric profiles and preferred lengths	<b>Reiff</b>	depending on application / properties
5.	Toothed racks, gearwheels	<b>Mädler</b>	depending on application / properties		

### 3.7 Handling and assembly components

		Preferred:		As an alternative:	
N°	Components	Manufacturer:	Type:	Manufacturer:	Type:
1.	Linear drive, pneumatic	<b>Festo</b>	DGSL series DFM series SLT / SLS series	<b>Schunk</b>	
2.	Linear drive, electric, including drive controller	<b>Schneider Electric</b>	depending on application / properties	<b>Schunk</b> <b>IEF Werner</b>	depending on application / properties depending on application / properties (together with Schneider Electric Drives)
3.	Balancer	<b>Bosch</b> <b>Deprag</b>			
4.	Rotary modules	<b>Schunk</b>	depending on application / properties	<b>Afag</b>	depending on application / properties
5.	Rotary indexing table	<b>Weiss</b>	depending on application / properties, for three-phase ac motors with frequency converter	<b>Fibro</b>	depending on application / properties, for three-phase ac motors with frequency converter
6.	Grippers	<b>Schunk</b>	depending on application / properties	<b>Afag</b> <b>Sommer</b>	depending on application / properties
7.	Collision protection	<b>Schunk</b>			
8.	Assembly compensator	<b>Schunk</b>		<b>Sommer</b>	
9.	Brakes	<b>Ringspann</b>			
10.	Shock absorber, external	<b>ACE</b>	depending on application / properties	<b>Festo</b>	depending on application / properties
11.	Roboters	<b>Adept</b>	SCARA: i600, i800 Articulated arm: s650, s850		

### 3.8 Pneumatic system

		Preferred:		As an alternative:	
N°	Components	Manufacturer:	Type:	Manufacturer:	Type:
1.	Valve terminal	<b>Festo</b>	CPV series, size 10 CPV series, size 14 including the following order options: with electric terminal: field bus node for Profibus DP with CPI string extension manual override manual override, latching pneumatic supply external instrument air, supply air on both sides, ducted exhaust air sign holder: with sign holder, transparent E.g. 10P-10-8A-D2-R-Z-8C+GCPTA-D		
2.	Service unit	<b>Festo</b>	MSB4 series, MSB6 series		
3.	Regulators	<b>Festo</b>			
4.	Non-return valve	<b>Festo</b>	HGL		
5.	Manual override	<b>Festo</b>	HAB for HGL non-return valve (for manual exhaust of an air volume locked-in in the cylinder)		
6.	Individual valves	<b>Festo</b>	CPE individual valves series VUVB individual valves series		
7.	Hose	<b>Festo</b>	PUN	<b>Legris</b>	
8.	Ejectors	<b>PIAB</b>		<b>Festo</b>	
9.	Pressure amplifier	<b>Festo</b>	DPA	<b>SMC</b>	

		Preferred:		As an alternative:	
N°	Components	Manufacturer:	Type:	Manufacturer:	Type:
10.	Pneumatic quick coupling	<b>Riegler</b>	243.01 quick connect coupling NW 7,2, double sided sealing, brass, external thread 243.50 fitting NW 7,2, double sided sealing, brass, external thread		

### 3.9 Sensor safety technology and data transfer

		Preferred:		As an alternative:	
N°	Components	Manufacturer:	Type:	Manufacturer:	Type:
1.	Inductive sensors	<b>Balluff</b>	with M8 screw connections		
2.	capazitive sensors	<b>Balluff</b>	depending on application / properties		
3.	Proximity sensor	<b>Festo</b>	depending on application / requirements	<b>SMC</b>	depending on application / requirements
4.	Photo sensors	<b>Keyence</b>	depending on application / requirements	<b>Wenglor</b>	depending on application / requirements
5.	Light curtain	<b>ABB Jokab Safety</b>	Focus F4-4-14-450 or depending on application / requirements		
6.	Safety sensors (door protection switch)	<b>ABB Jokab Safety</b>	Adam/Eva (monitoring system) Magne (door guard control)	<b>Schmersal</b>	As agreed upon with ETO
7.	Two-hand-push button	<b>ABB Jokab Safety</b>	JSTD1, JSTD20 PU-1PA	<b>Bernstein</b>	
8.	Safety control	<b>ABB Jokab Safety</b>	Pluto, Vital		
9.	Safety relay	<b>ABB Jokab Safety</b>	depending on application / requirements		
10.	Image processing / camera systems	<b>Cognex</b>	As agreed upon with ETO	<b>Sensopart (Qualiychek)</b> <b>Keyence</b>	As agreed upon with ETO

		Preferred:		As an alternative:	
N°	Components	Manufacturer:	Type:	Manufacturer:	Type:
11.	Scanners (bar code)	<b>Cognex</b>	As agreed upon with ETO		
12.	Scanners (DMC, Data-Matrix Code)	<b>Cognex</b>	Fixed: depending on application / properties Handheld scanner: DataMan 8100 or 8500 / depending on application / properties → Consult ETO		
13.	WT data storage media Read/write devices RFID	<b>Siemens</b>	Simatic RF 300 series, selection depending on requirements	<b>Balluff</b>	
14.	Light conductors	<b>Wenglor</b>	depending on application / requirements	<b>Keyence</b>	depending on application / requirements
15.	Fork light barriers	<b>di-soric</b>	depending on application / requirements	<b>Wenglor</b> <b>Keyence</b>	depending on application / requirements
16.	Front panel interfaces	<b>MurrElektronik</b>	Mounting frame, simple: item no. 4000-68113-0000000 or mounting frame, double : item no. 4000-68123-0000000 e.g. insert with RJ45: Item No. 4000-68000-1200000 (2x RJ45) or item no. 4000-68000-1210000 (1x RJ45))		

### 3.10 Workpiece carrier and transport system

		Preferred:		As an alternative:	
N°	Components	Manufacturer:	Type:	Manufacturer:	Type:
1.	Conveyor belts	<b>Bosch Rexroth</b>	TS1, TS2 (separate project plan) > belt system > belt height to be clarified with ETO		
2.	Lift and position	<b>Bosch Rexroth</b>	> Standard : HP1 (frame fixture, x, y, z), PE1 (belt fixture, x, y) > Heavy duty: PE1/HX  (Automated cabinet : without protective casing; HAP : with protective casing)		
3.	Stoppers	<b>Bosch Rexroth</b>	VE1-D, VE1 depending on application / requirements		
4.	Transfer systems	<b>Bosch Rexroth</b>	TS1, TS2, carrier plate made of metal		

### 3.11 Feeding technology

		Preferred:		As an alternative:	
N°	Components	Manufacturer:	Type:	Manufacturer:	Type:
1.	Feeders, in general	<b>Hörmler</b>	depending on application / properties	<b>Fimotec- Fischer AFAG</b>	depending on application / properties
2.	Spring feeders	<b>AFAG</b>	depending on application / properties		
3.	Conveyor belt feeders / decoilers	<b>Ebso Soprem</b>	depending on application / properties		
4.	O-ring feeder	<b>Ohrmann</b>	depending on application / properties		
5.	Stacking palettizers	<b>IEF Werner</b>	Variostack depending on application / properties	<b>Sortimat</b>	depending on application / properties
6.	Tray feeders with lift table	<b>IEF Werner</b>	depending on application / properties		

### 3.12 Testing and measuring systems

		Preferred:		As an alternative:	
N°	Components	Manufacturer:	Type:	Manufacturer:	Type:
1.	Force-displacement monitoring	<b>Burster</b>	9310 series with Profibus interface, incl. DigiControl-Plus (Type 9310-P100) data logging software	<b>Burster</b>	9306 series with Profibus interface, incl. DigiControl-Plus (Type 9306-P100) data logging software
2.	Precision probes	<b>Peter Hirt</b>	depending on application / properties	<b>HBM</b> <b>Keyence</b>	depending on application / properties GT2 series
3.	Load cells	<b>Burster</b>	depending on application / properties	<b>HBM</b>	depending on application / properties
4.	Leak detection	<b>Ateq</b>	Ateq: F520 „ETO Standard“		
5.	Pneumatic pressure sensors (quasi-static)		Consult ETO	<b>Aircom</b> <b>HBM</b> <b>Burster</b> <b>STW</b> <b>SMC</b>	Type: D6V / D8V Type: P8AP (DMS) Type: 8227 A09 Upon agreement
6.	Pneumatic pressure sensors (highly dynamic)		Consult ETO	<b>Burster</b>	8201 series
7.	Pressure transducer for pressure and vacuum monitoring	<b>SMC</b>			
8.	Proportional valves for testing technology	<b>Emerson (Asco Numatics)</b>	614357 series		
9.	Resistance testers	<b>Agilent</b>	Type: 34401A (no integrated temperature compensation)		
10.	High voltage AC testers	<b>Elabo</b>	G1-1G.3 with G1-1G E11 (RS232 interface)	<b>Elabo</b>	F1-1A (options)
11.	High voltage DC testers	<b>Elabo</b>	G1-1A.3 (options upon agreement)	<b>Elabo</b>	G1-1B.3 (options)

12.	High voltage testers for AC and DC	<b>Elabo</b>	F1-1A.3 (options upon agreement)		
13.	Insulation resistance testers	<b>Elabo</b>	Type: 90-2E (500VDC fixed) (options) Type: 90-4K (50-1000VDC) (options)		
14.	PE conductor testers	<b>Elabo</b>	Type: 90-2A (options)		
15.	Pulse width modulators	<b>Turzer (IBT Electronic)</b>	Type: SRG 3A		
16.	Test piece supplies, variable	<b>Delta Electronica BV</b>	ES030-10-P001-P185 (Output terminals at the rear panel; manual setpoint setting behind covers)	<b>Delta Electronica BV</b>	ES030-5-P001-P120 (Output terminals at the rear panel; manual setpoint setting behind covers)
17.	Measuring boards		Consult ETO	<b>NI USB-Modul</b>  <b>NI cDAQ</b>	NI USB-6251 NI USB-6341 (steel, modern)  depending on application / properties
18.	Shunt resistors for current measurement	<b>Isabellenhütte</b>	depending on application / properties		

### 3.13 Welding components

N°	Components	Preferred:		As an alternative:	
		Manufacturer:	Type:	Manufacturer:	Type:
1.	Laser welding of metallic materials	<b>Trumpf</b>	depending on application / properties		
2.	Laser welding of plastic materials	<b>DILAS</b>	depending on application / properties	<b>LPKF Laser &amp; Electronics AG</b>	
3.	Ultrasonic welding	<b>Hermann Ultraschalltechnik GmbH&amp;Co. KG</b>			
4.	Resistance welding	<b>Crede</b>	depending on application / properties		
5.	Gas valve for inert gas	<b>Bürkert</b>	3/2-way Miniature Rocker Solenoid Valve Order No.: 126411 / depending on application / properties		
6.	Flat fan nozzles for crossjet	<b>Lechler</b>	600.130 series or 600.283.42 series		

### 3.14 Threaded fastener technology

		Preferred:		As an alternative:	
N°	Components	Manufacturer:	Type:	Manufacturer:	Type:
1.	Screw units	<b>Deprag</b> <b>PSM</b>	depending on application / properties	<b>Bosch</b>	depending on application / properties
2.	Torque bar sockets	<b>Stahlwille</b> <b>Horex</b> <b>Garant</b>	depending on application / properties	<b>Bosch</b> <b>Saltus</b>	depending on application / properties

### 3.15 Marking systems

		Preferred:		As an alternative:	
N°	Components	Manufacturer:	Type:	Manufacturer:	Type:
1.	Printer / ticketing	<b>Topex,</b> <b>Intermec</b>		<b>Zebra</b>	
2.	Labeling	<b>Topex</b>	topex 50/50/200 (SAP:1018338)		
3.	Tampon printing machines	<b>Tampoprint</b>	depending on application / properties		
4.	Scribe marking	<b>Borries</b>	depending on application / properties	<b>Saurer</b>	
5.	Laser marking	<b>Trumpf</b>	depending on application / properties		

### 3.16 Presses

		Preferred:		As an alternative:	
N°	Components	Manufacturer:	Type:	Manufacturer:	Type:
1.	Power packages	<b>Tox Pressotechnik</b>	depending on application / properties	<b>Schmidt Technology</b>	
2.	Hand lever presses	<b>Schmidt Technology</b>			
3.	Servo presses	<b>Promess</b>		<b>Schmidt Technology</b>	

### 3.17 Heating technology

		Preferred:		As an alternative:	
N°	Components	Manufacturer:	Type:	Manufacturer:	Type:
1.	Heating elements, temperature sensors	<b>G. Maier (heating plates)</b>	depending on application / properties	<b>Watlow</b>	depending on application / properties
		<b>Keller-Ihne-Tesch</b>	depending on application / properties		

### 3.18 Supplementary components

		Preferred:		As an alternative:	
N°	Components	Manufacturer:	Type:	Manufacturer:	Type:
1.	Vacuum exhaust systems	<b>RIBO</b>	depending on application / properties	<b>ESTA</b> <b>Fuchs</b>	depending on application / properties
2.	Shut-off valves for vacuum exhaust systems	<b>HO-Matic</b>	Pinch valves, depending on application / properties		
3.	Dosing (adhesives, silicone)	<b>ViscoTec</b> <b>Hormec</b> <b>Loctite</b> <b>Delo</b> <b>Vieweg</b>	depending on application / properties		
4.	UV illumination	<b>Delo</b>	LED, depending on application / properties		
5.	Casting	<b>Consult ETO</b>	depending on application / properties		
6.	Oiling	<b>Walther Systemtechnik</b>	depending on application / properties		
7.	(Wobble) riveting	<b>KMT</b>	depending on application / properties	<b>Friedrich</b>	depending on application / properties

### 3.19 Electrical enclosure components

		Preferred:		As an alternative:	
N°	Components	Manufacturer:	Type:	Manufacturer:	Type:
1.	Control components / main switch	<b>Moeller</b>	Circuit breaker T0	<b>Siemens</b>	
2.	Push button switches	<b>Moeller</b>	RMQ Titan	<b>Siemens</b>	
3.	Contactors / relays	<b>Siemens</b> <b>Murr</b>	DILMC	<b>Moeller</b>	
4.	Output terminals	<b>Phoenix</b>	ST Quattro		
5.	Distributor systems	<b>Murr-Elektronik</b> <b>Beckhoff</b>			
6.	Power supply packs	<b>Siemens</b> <b>Murr</b>			
7.	Electrical enclosures	<b>Rittal, Schroff</b>	RAL 7035		

### 3.20 Electrical components

		Preferred:		As an alternative:	
N°	Components	Manufacturer:	Type:	Manufacturer:	Type:
1.	Mushroom actuators	<b>Telemecanique (Schneider Electric)</b>	Schneider limit switch consisting of: ZCD21 limit switch body ZCE07 limit switch head ZCDEP16 cable gland entry		

### 3.21 Control components

		Preferred:		As an alternative:	
N°	Components	Manufacturer:	Type:	Manufacturer:	Type:
1.	PLC	<b>Siemens</b>	S7/1200 CPU depending on application S7/300 CPU depending on application		
2.	Display (HMI)	<b>Siemens</b>	For small-scale machines: KTP400 for S7/1200 For cabinets: TP177B 6" PN/DP COLOR (6AV6642-0BA01-1AX1) for S7/300 For complex tasks: Consult ETO		
3.	Distributed I/O	<b>Beckhoff</b>	BK3120, KL14x8, KL2408, KL6001-0001		
4.	E/A Module	<b>Festo</b>	CP series, if possible M8 plug, e.g. CP-A08-M12-EL-Z CP-E16-M8-EL		

### 3.22 Energy distribution components

		Preferred:		As an alternative:	
N°	Components	Manufacturer:	Type:	Manufacturer:	Type:
1.	Contact rails	<b>Schneider Electric</b>	Canalis series KN		

### 3.23 Injection molding tool components

		Preferred:		As an alternative:	
N°	Components	Manufacturer:	Type:	Manufacturer:	Type:
1.	Hot runner	<b>Günther-Heißkanalsystem</b>		<b>Mold Masters</b>	
2.	Pressure transmitter	<b>Kistler</b>	-2.6pC/bar, type 6159		
3.	Combined pressure / temperature sensor	<b>Kistler</b>			
4.	Terminal connector plugs	<b>WIELAND</b>	16 pole 220V / 24V 1 pc. screwed connection bush insert 70.300.1640.0 1 pc. screwed connection plug insert 70.310.1640.0 2 pcs. lower housing section open (with single locking lever) 1.320.1628.0		
5.	Mold insulation	<b>Meusburger</b>			
6.	Hydraulic connection	<b>ERMETO</b>	Straight male stud fittings GE6-PL/1/4/NPT		
7.	Connectors for displacement transducer cable	<b>Conrad Elektronik</b>	Order No.: 7394 13-99 (7 pole)		
8.	Quick connect coupling	<b>HASCO</b>	Z6303 (on the machine side Z6075, Z6055)	<b>Nonnenmann</b>	090EU (on the machine side SK090S)