ELEKTROMAG MAKİNE SANAYİİ ve TİC. A.Ş.

FUNCTIONAL SPECIFICATION (FS)

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YOUR INNOVATIVE SOLUTION PARTNER

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1. Purpose

The purpose of this functional specification document is to define the design and function of Modular Capping and its components project by the system designer

2. Scope

This functional specification document is prepared for Modular Capping Machine automation system and its related components.

3. System / Description of Equipment

3.1 Equipment / Description of System

The Modular Capping Machine which is EMG-20-036 order code,consist of following equipment and components.

Equipment Name	Equipment Code	Equipment / Serial No
Modular Capping Machine	M-MDL	3844

3.2 Machinery Technical Datas

Machine	MODULAR CAPPING MACHINE
Type	M-MDL
Machine-No	3844
Weight	kg
Supply Voltage	3 Faz 380V 50 Hz
Power Consumption	4.5 kW
Air Sply	4-6 bar

Automation Panel / Modular Capping Machine – 3844
The equipment has stainless steel electric cabinet
Modular Capping has done in Turkish
AC supply
DC supply
Cabinet Dim : 1100L x 1000W x 1100H
Power Supply System
Operator Consule
Touchable monitor Turkish / english user screen
Controller (CPU)
Beckhoff CX5130-0122 Basic Cpu Modüle CX5130 Microsoft PC based Windows 7 Embedded Software
Electric installation
Protection class IP44, IP32, P55, IP65 IP66 exist
Sensors have plug in-out design
All electrical connections are numbered and labeled.

3.3 Rules and Regulations

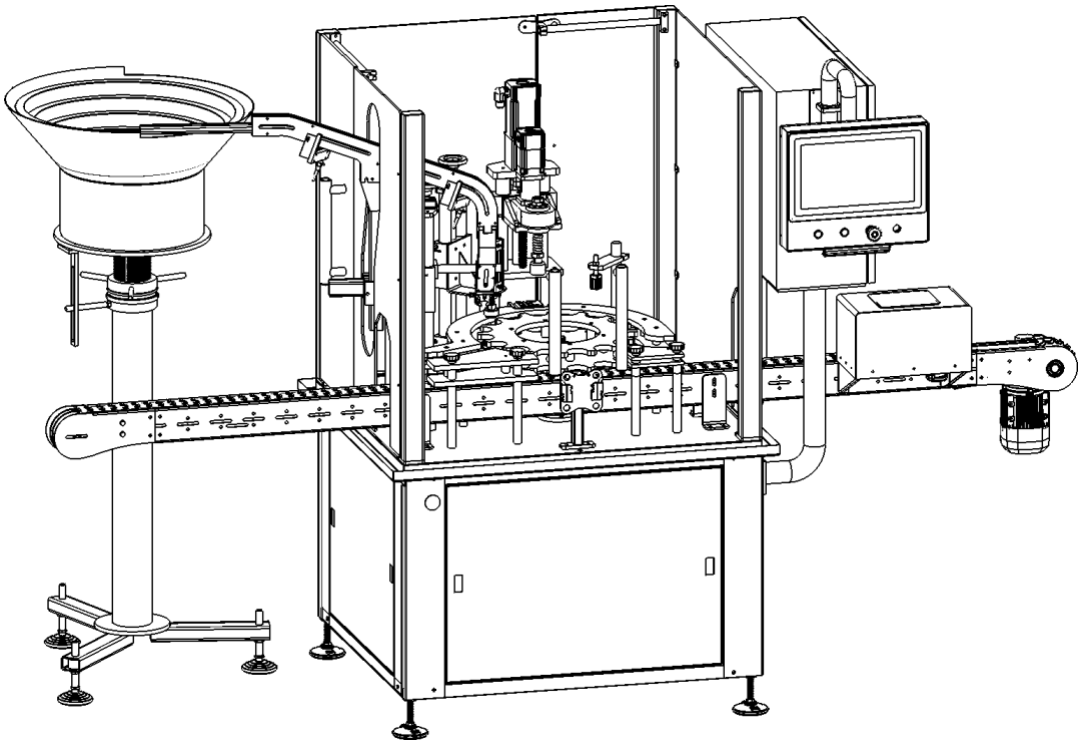
The machine is designed and manufactured in accordance with the following rules and regulations.

ISO 9001 : 2015	EMG-20-036.3844.FS_EK.3	Automatic packaging machines design, development, production, sale and service
042119-TSEK-02/01	EMG-20-036.3844.FS_EK.4	Packaging Machines Capping Machines (Edge Crimping, Screw Gear Pressure, Rake Screw)

3.4 System Drawing

Modular Capping Machine Electric Scheme, I/O List	EMG-20-036.3844.FS_EK.1
Modular Capping Machine Compenent Listes	EMG-20-036.3844.FS_EK.2

3.5 System General View



4. Functional Description

Modular Capping consists of the following equipment and systems;

- Modular Capping Machine
- User and Management Panels PC & Software

It performs all electrical management functions of Modular Capping Machine.
All operation systems are managed by automation board. The computer system is also connected to the clipboard, and inputs from CPUs are displayed in the user interface thanks to the software.

The machine has parameters that can be adjusted within the scope of its operational specifications and manages the process fully automatically..

The modular capping machine is used for the capping process of bottles with caps fed into the system. The Capping machine closes according to the format set within the specified limits.
Bottles coming to the star from the constantly fed conveyor mechanically take the lid through the lid channel. Caps applied in pneumatic fastening process are tightened with torque precision single head.
Bottles that do not enter torque and bottles that are outside the cap height limit are received by pneumatic system.

Security and operational alarms are available in each system.
The computer infrastructure records these alarms simultaneously.

5. Assembling Parts Description

5.1 Electrical Cabinet - Automation System & PC

5.2 Function

CPU control unit, driver and electrical components, transmitters ve convertors

5.3 Operational Function

For all line components;

HMI System substructure, Monitor
User Management, data management, programme management and limit decided will be manage by using that system.Data archived is happen by user interface

6. System Function

6.1 Operational Modes

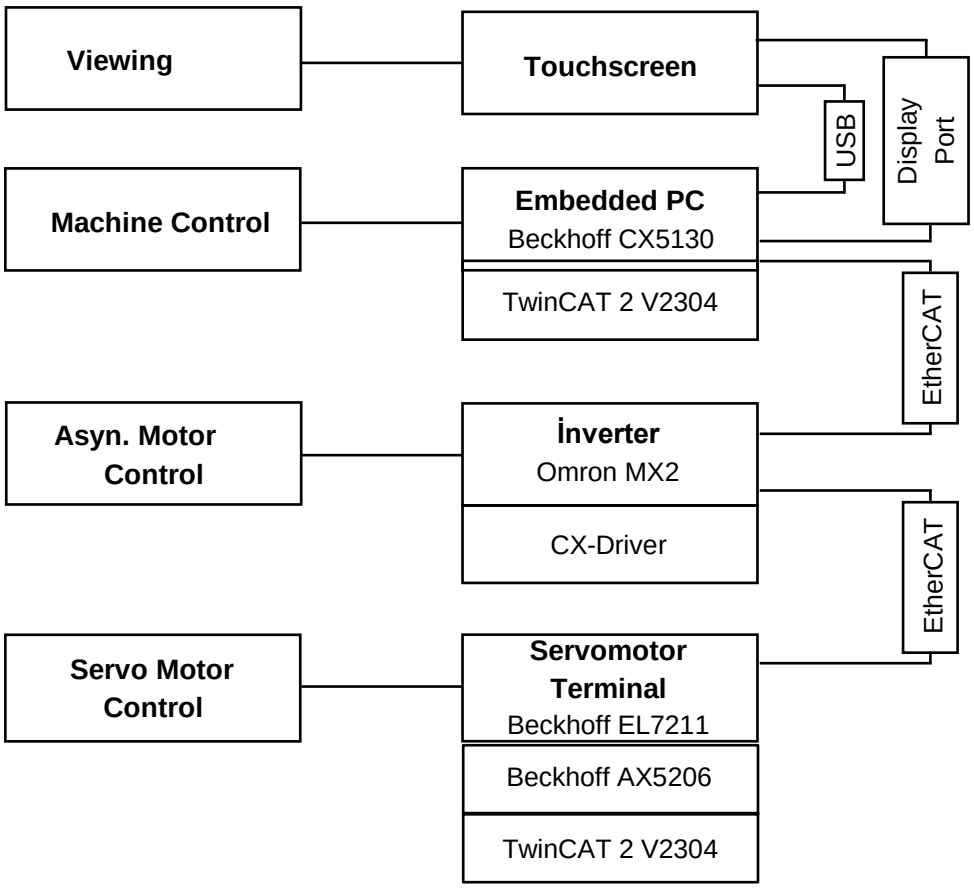
Modular Capping Machine opeartion Mode

Manual Control	It works as long as the jog button is pressed and held
Receipt Control	Works according to selected receipt type.

7. Description of Used System

System Architecture ;

Modular Capping Machine



7.1 Software General View

MODULAR CAPPING MACHINE	
Device	Embedded PC
Manufacturer / Type	CX5130-0122
Hardware Version	V3.8 2019-04-05
Operating System	Windows Embedded Standart 32-Bit
Operating System Version	6.1, Build 7601

7.2 Alert Signal

Each line equipment has an illuminated alarm signal. Alarms are recorded.

8. Start Condition

To start the automation system, the following prerequisites must be met.

- Open the power
- User input must be made from the HMI PC panel
- Input Receipt
- It can start operations within the user's authority

9. Error Situations

- The system works even if the dashboard covers are open.
- Alarms are displayed on the screen.After resetting the Alarm, the system can be started.
- Alarms can be accepted within the information.
- Alarms are stored in a log and cannot be deleted.
- It can be exported as a paper copy if desired.(printer is not included in the system).

10. Description of Security Concept

10.1 General Description

Safety markings are included on Modular Capping Machine.

10.2 Emergency Stop Button

The machine has an emergency stop button. The machine can be stopped manually immediately using an E-stop button. The E-stop button is connected to a safety controller.

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Switch No	Fonksiyon	After activated	Seen Messages
100	Emergency stop push button at operator panel	System stops	HMI – Emergency Stop Hold

11. System Error In Case of Common Source of Error

11.1 Power Feeding

In case of power failure, the automation system stops. The system is completely de-energized. The automation panel must be connected to an uninterrupted power supply for process continuity.

12. Appendix

EMG-20-036.3844.FS_EK.1 : Modular Capping Machine Electric Schme, I/O List
EMG-20-036.3844.FS_EK.2 : Modular Capping Machine Compenent List
EMG-20-036.3844.FS_EK.3 : Automatic packaging machines design, development, production, sale and service
EMG-20-036.3844.FS_EK.4 : Packaging Machines Capping Machines (Edge Crimping, Screw Gear Pressure, Rake Screw)

13. Comment and Explanation