

## PURCHASE OF FFS BAGGING, PALLETIZING, STRETCH HOODER LINE TECHNICAL SPECIFICATIONS

### ARTICLE 1: SUBJECT OF WORK

**1.1.** 1 FFS type Bagging, Palletizing and Stretch Hooder Line will be purchased for the need of Değirmenözü Stock and Shipment Facilities of Kirka Boron Works of Eti Mine Works General Management.

**1.2.** Eti Mine Works General Management will be referred as the “**ENTITY**”, Kirka Boron Works will be referred as the “**PLANT MANAGEMENT**”, the bidding firms will be referred to as the “**BIDDER**” and the successful bidder of the tender who is awarded the Contract will be referred to as the “**CONTRACTOR**” hereinunder.

### ARTICLE 2: REQUIRED QUANTITY

**The following will be purchased in the scope of the Bagging, Palletizing and Stretch Hooder Line:**

- 1 FFS (Form Fill Seal) bagging machine and auxiliary equipment with capacity of minimum 1.400 bags/hour for 25 kg bags and minimum 1.000 bags/hour for 50 kg bags,
- 1 palletizing unit and auxiliary equipment with capacity of minimum 1.400 bags/hour for 25 kg bags and minimum 1.000 bags/hours for 50 kg bags,
- 1 stretch hooder unit and auxiliary equipment with a capacity of minimum 50 pallets/hour (according to different recipes)
- Metal Detector 1 pc,
- Check Weigher pc
- Bag Reject Unit 1 pc
- Inkjet Encoder 1 pc
- Laptop Computer and printer 1 pc

### ARTICLE 3: BID SCOPE AND REQUIRED CHARACTERISTICS

#### 3.1. Required Characteristics of the Machine, Equipment Devices

##### 3.1.1. Characteristics of the FFS Bagging Machine and Auxiliary Equipment

###### 3.1.1.1. Bagging Machine

The subject bagging machine of the purchase will be a fully automatic system designed on the principle of collection of the product to be bagged from the silo, filling it in bags and removing the filled bags from the machine, and will have the following **parts** at the same time:

- Film roll hydraulic lowering-lifting machine,
- Bag forming unit,
- Feeder unit containing the connections to the main product silo,
- Electronic weighing unit,

- Emptying unit between the weighing and bag filling
- Filling unit
- Corner “K” sealing system to seal the top and bottom of the bag with chamfering (four corners forming system),
- Bag filling auxiliary compactor unit,
- Film/bag welding device and equipment with heat treatment.
- There will be extra bag grippers, driven with a servo motor between the filling outlet and bag forming unit to transfer the bags safely
- Cyclone dust collection/dust filter system, operating product carriage and product dust recovery system,
- Bagging machine system will be of a structure suitable for continuous operation.
- FFS film roll lifting machine will have a hydraulic structure and a pneumatic shaft will be used at the film roll center.
- Film roll unit must be adjustable transversely (width)
- Diameter measurement of the PE roll will be controlled and continuous control of the remaining PE amount. System will perform this control over the screen and will display the remaining period for next roll replacement on the screen. At the same time, the meters of PE left on the current roll and the number of bags that can be produced with this PE amount will be shown on the same screen also. Machine will stop automatically when the film finished and an audiovisual alarm will be given.
- Bagging machine will use the bag sealing process with the heat sealing system. A dust suction nozzle will be provided for cleaning the dust when sealing the bag.
- A dust suction system with minimum 1200 m<sup>3</sup>/h will be provided to prevent damage of the critical parts inside the machine from the dusts and to ensure that the dust not hinder the sealing process.
- With the dust and static emissions taken into consideration, the bag mouth sealing will be made without any problems both when the bags are empty and full.
- The filling outlet of the machine will be designed with a dust preventing system and a cleaning system will be provided at the heat sealing unit for the top section of the bag.
- A system will be provided for automatic air blowing and removal of the dust on the bag when the filled bags pass over the belt.
- Products falling from bags with improper mouth sealing will be detected with sensors and these bags will be removed away through the bag dropping belt.
- All parts coming into direct contact with the product will be made of stainless steel. (Minimum AISI 304 grade)
- The sealing section of the bagging machine will be equipped with a preventive system that to prevent being affected by the ambient temperature changes.
- Every bag coming out from the bagging machine will go through a flattener. The bag flattener system must consist of the top and bottom belts. The distance between the top and bottom belts must be automatically adjustable and the top belt must have vibration feature.
- Subsequent to signing of the contract, the necessary FFS bag films required from the starting of startup works to the performance tests will be supplied by the Contractor.

### 3.1.1.2. Site Operator Panel and Control Board

- This must be mounted near the bagging machine in a way to allow easy operation by the operator. The panel may be integrated inside the protected cabin of the machine or inside the electrical board. Bagging machine will be checked, controlled and set through this panel. An emergency stop button will be provided on the board.
- Control board will be with cooling.
- The board will have minimum 15 inch daylight series touch screen with high resolution (operator panel). All necessary components of the system must be simulated with graphic interfaces on the operator panel. Turkish language option will be provided.
- All apparatuses, cables, hardware and software necessary for communication between the power control board or operator panel and the plc system will be handed over in fully functioning form.
- The system will display the operation data and error messages, and will have switching off mechanism in emergency.
- Protection/warning measures must be provided to prevent complete resetting of the program by the operator.
- The system must be capable of performing the following processes over the operator panel: Setting of weighing parameters, coarse and precision feeding, automatic resetting, dynamic rate setting, dosing time setting.

The operator panel will be designed to provide the following functions at minimum:

- Set value and tolerance
- Weighing value and error rate
- Number of bags filled and total bagged product quantity (separately for each bag type and in total)
- Weight checker device will give information on the number of bags within and outside the tolerance limits and total product amount.
- Diagnostic test (system will test and report whether each unit under its control is in operation and the possible errors).
- Calibration
- Updating of the received data on daily basis and keeping of records on shift basis will be performed over the control panel of the bagging machine.

### 3.1.1.3. Connection - Communication Components and Cabling

- Electrical, electronic, data lines and connection components of the whole system will be supplied by the Contractor.

### 3.1.1.4. Metal Detector

- A conveyor type metal detector will be provided over the bag carriage conveyor belt for removal of the metal elements that may be placed inside the bags during bagging. Metal detector must be compatible with the bagging speed. In the event of there being any metal inside the bag passing through the detector, the bag will be directed towards the reject belt connected to the detector for removal from the conveyor system and to prevent it from going to the palletizing system. The dimensions of 25/50 kg bags will be taken into

consideration when the dimensions of the metal detector are selected and a detector that may cause an obstacle in the bag flow from the belt will not be selected.

#### 3.1.1.5. Bag Check Weigher Unit

- This must be in suitable dimension for the conveyor carrying the filled bags. Weight checking must be possible up to 60 kg and must have load cell protection for excessive loads.
- The total length will be between 1.000-1.500 mm.
- Control cabin will be made of stainless steel.
- Communication must be provided with the reject unit for removal of the bags under and over the limit entering the check weigher.
- Saving the weighing data on USB flash will be possible.

#### 3.1.1.6. Bag Reject Unit

- This must be in suitable dimension for the conveyor carrying the filled bags.
- It must be designed for removal of the defected bag from the conveyor based on the signal received from the metal detector and bag check weigher. Removal of the bags will be through a conveyor belt with up and down movement, integrated to the conveyor belt to the tower of thee palletizing machine. The conveyor belt with up and down movement will be driven with motor power and must contain a gravity conveyor belt and safety fences.

#### 3.1.1.7. Inkjet Encoder Printer

- To be used for the necessary marking on the filled bag during transfer on the conveyor.
- It will have 1 printer head.
- Printing speed will be compatible with the bagging speed.

### 3.1.2. Characteristics of the Palletizer and Auxiliary Equipment

#### 3.1.2.1. Palletizer

- Palletizer must be of high level type and shall collect the bags output from the bagging machine and stack these properly on the pallet. Bags will be fed to the palletizer from the top with a gradient conveyor from the top and bag elevators etc. will not be used. The machine capacity will be minimum 1.400 bags/hour for 25 kg bags and minimum 1.000 bags/hour for 50 kg bags, In other words, it will operate synchronously with the FFS type bagging machine and thus, it must be compatible this capacity. Palletizer will stack the polyethylene bags carried to the palletizer unit from the bagging unit over the transfer system properly without damaging, tearing the bags or causing product loss. When each layer is placed on the pallet, the machine will apply pressure on the bags to flatten them.
- Pallets will be taken into the palletizing environment with an automatic pallet dispense. Pallets will be fed to the charge unit with a forklift. It shall be possible to collect the pallets which are stacked on the conveyor at required level with a forklift and these will be fed automatically to the stretch hooder machine with the conveyor at the same time. A flat cardboard will be placed on the empty pallets and a cornered cardboard will be placed on loaded pallets automatically. The cardboards will be supplied by the Plant.
- The palletizer scope will include all components required for performance of the task as a whole such as machinery, bag collection conveyor, pallet conveyor, materials, instruments, control panel, bag gripper, cable, cable rack, fence wire for safety and all other necessary

hardware, electrical board, local control switch, alarm, protection panels, non-standard set tools etc.

- Palletizer will realize the stacking of the bags that are filled in the FFSS bagging machine, in the required manner and required number of layers automatically.
- The general characteristics of the palletizer which will be designed with a capacity compatible with the FFS machine for the filled bags, coming from the FFS machine, to be stacked on the pallets, are as follows:

Table-1:

PRODUCT	BORAX PENTAHYDRATE
FULL BAG DIMENSIONS (WIDTH X LENGTH X HEIGHT) mm	550x330x140
BAG WEIGHT	25/50 KG
BAG TYPE	FFS
PALLET DIMENSIONS (WIDTH X LENGTH X HEIGHT) mm	1100X1100X120
NO. OF BAGS ON EACH LAYER	6
BAG STACKING CAPACITY (BAG/HOUR)	minimum 1400
PALLET STACKING HEIGHT MAX. KG	1900
PALLET STACKING WEIGHT MAX. KG	2000

- The bag carriage conveyors necessary for transfer of the bags to the palletizer, the bag balancing conveyor, bag flattener, bag turning unit etc. all auxiliary equipment will be designed by the Contractor according to the required capacity and stacking type.
- Stacking type of the bags on the pallet will be shown by the Plant.
- Electrical board of the Palletizer will be equipped with cooling.
- A cardboard placement unit will be provided in front of the palletizer, a cardboard layer will be placed on the empty pallet on which the bags will be stacked.
- A cardboard placement unit will be provided at the outlet of the palletizer and a cardboard cap will be placed on the pallet which comes out from the palletizer after the pallet is stacked.
- Pallets will be placed on the pallet dispenser with a forklift and the machine will take each pallet automatically.
- The board will have minimum 10 inch daylight series touch screen with high resolution (operator panel). It will have Turkish language option.
- Surrounding of the palletizer will be enclosed with a panel fence at a suitable distance for safety purposes.
- Pallets at the Palletizes to be used during startup, testing and performance tests will be supplied by the Plant.

### 3.1.2.2. Operator Panel



The operator panel will be designed to provide the following functions at minimum:

- Set value and tolerance
- Weighing value and error rate
- Number of bags filled and total bagged product quantity (separately for each bag type and in total)
- Number of bags within and outside tolerance and total product amount
- Diagnostic test (system will test and report whether each unit under its control is operation and the possible errors).
- Calibration
- Updating of the received data on daily basis and keeping of records on shift basis will be performed.

### **3.1.2.3. Connection - Communication Components and Cabling**

- Electrical, electronic, pneumatic, data lines and connection components of the equipment and devices of Palletizer will be supplied by the Contractor.

### **3.1.3. Characteristics of the Stretch Hooder Machine and Equipment**

#### **3.1.3.1. Stretch Hooder Machine**

- The machine will pick the stretch film in rolls automatically and cut these into lengths suitable for the pallet height, and adhere the top part and stretch wrap it over the pallet. The stretch film will be top-wrapping type and will wrap the pallet and bags together.
- The stretch hooder machine will be compatible with the capacities of the FFS bagging machine and the palletizer unit before it. (Minimum 50 pallets/hour)
- The stretch hooder machine will be designed to communicate with all devices before it.
- It will be possible to place the loaded pallet to the input conveyor from the side for stretch wrapping with a forklift when necessary.
- The machine will be designed to have minimum 4 stretch wrapped pallets waiting on the output conveyor.
- A centering conveyor must be provided in order to position the pallet to be stretch wrapped at a proper angle.
- The length will be calculated automatically for the stretch film to be cut by measuring the height of the pallet to be stretch wrapped with sensors
- The stretch tensioning frame will be designed to be lowered for maintenance-repair and the maintenance-repair will be made on the ground.
- Surrounding of the stretch wrapper unit will be enclosed with a panel fence at a suitable distance for safety purposes.
- Stretch Hooder machine must have 2 PE roll magazines. Thus, the next PE film roll will be attached to the other one to continue operation without the machine being stopped.
- The necessary films required to be used on the Stretch Hooder machine from the starting of startup works to the performance tests will be supplied by the Contractor.

#### **3.1.3.2. Operator Panel**

The operator panel will be designed to provide the following functions at minimum:

- This must be mounted near the machine in a way to allow easy operation by the operator. Stretch wrapping machine will checked, controlled and set through this panel.
- Set value and tolerance
- Weighing value and error rate
- No. of stretch wrapped pallets
- Diagnostic test (system will test and report whether each unit under its control is in operation and the possible errors).
- Calibration
- Updating of the received data on daily basis and keeping of records on shift basis will be performed.
- Stretch wrapping machine will have minimum 12 inch daylight series touch screen with high resolution (operator panel). It will have Turkish language option.

### 3.1.3.3. Connection - Communication Components and Cabling

- Electrical, electronic, pneumatic, data lines and connection components of the equipment and devices of stretch wrapping system will be supplied by the Contractor.

### 3.1.4. Laptop Computer and Printer

- The laptop computer will come installed with the archiving program that provides for reporting of the bagging processes made on the bagging machine, sorting on shift, day, month and year basis and saving, and for access to the archived information on date and time basis when necessary.
- PLC programs of the Bagging Line will be installed on the laptop computer.
- Data communication (compatible with network structure of 10/100/1000 Mbps rate operating with TCP/IP protocol) and the necessary communication hardware and cable will be included to the offer.
- Laptop computer will be of two-in-one type (with touchscreen).

#### 3.1.4.1. Computer Characteristics

The laptop computer will have the following characteristics at minimum:

- Product Model: Two-in-one
- Processor Manufacturer :Intel®
- Processor Speed: 2,4 GHz or higher
- Screen size: Minimum 13"
- Disc Capacity: 256 GB SSD and higher
- Cable Network: Ethernet 10/100/1000
- Keyboard: Turkish Q
- Processor Model: Core™ i5 or i7
- Screen resolution: 1920 x 1080 px
- Memory: 8 GB
- Battery Time: Minimum 6 hours
- Operating System: Windows 10
- Wireless Connection: Yes/Available

#### 3.1.4.2. Printer Characteristics

- The proposed printer must have printing, copying, scanning, faxing and independent e-mail scanning functions.
- The printing technology of proposed printer must be Color Laser for A4 printing.
- The proposed printer must have WIFI connection, 10/100 cable Ethernet network, USB 2.0, RJ-11 connectivity.

#### 3.1.4.3. Common Characteristics of the Computer and Printer

- The technical specifications of all products offered, which are provided in the bid must not conflict with the information on the web pages of the producer firms or the original technical documents submitted with the bid.
- All accessories, cables and documents (CD, DVD, discs, user manual, reference books and accessories etc.) will be delivered in their original packaging, in good and working condition.

### 3.2. Bid Scope:

Covers, starting from the lower flange of the mechanical valve at the existing product silo;

- Transfer of the Etibor-48 product to the FFS bagging machine bunker, filling in FFS type bags of 25/50 kg at required weight precisions, sealing of the mouths,
- Check weighing of the filled bags after passing through a conveyor type metal detector,
- Taking filled bags in which a metal is detected and/or not being in conformity with the weight precision out of the system,
- Coding with the inkjet encoder device of the properly filled bags during carriage to the palletizer unit by conveyors,
- Removal of the bags with mouths not sealed properly from the conveyor,
- Placement of a cardboard layer on the empty pallet on the palletizer unit,
- Stacking of the filled bags on the pallets,
- Placement of cardboard cap on the pallets with stacked bags at the outlet of the palletizer,
- Transfer of the loaded pallet output from palletizing to the stretch hooder unit, and stretch wrapping,
- Supply of all kinds equipment and devices that are required for smooth, accurate, safe operation of the system as a whole such as all machinery, equipment, conveyor, safety systems, access platforms, instruments, electrification and automation and alarm systems, laptop computer and printer, power and control panel, site operator monitoring and control boards, connection communication elements, cabling, software etc. and installation of the supplied materials, startup and performance testing in functioning form will be included into the scope.
- No additional payments will be made to the Contractor for any kind of materials-devices, works and services that are needed in the scope within the battery limits.

### 3.3. Design Parameters:

FFS Bagging Machine, palletizer unit, stretch hooder unit and auxiliary equipment will be installed inside the second packaging building of Değimenözü Facilities with minimum area loss and with the delivery-stocking operation issues taken into account.

FFS bagging machine will be horizontal type and the weighing system will be equipped with a weigher that operates on net weighing basis. Volumetric based weighing systems will not be accepted. Use of spiral is not preferred in the system to ensure that the crystal grain structure of the product is not disrupted.

As there are slight differences in bulk densities of Borax pentahydrate product produced in five different factories at the Kirka Boron Works, this issue must be taken into consideration in the design of the FFS bagging machine.

**As the dust created during bag filling has adverse impacts on the sealing unit, this issue must be taken into consideration in the design of the filled bag sealing unit.**



The contractor will design all units forming the system to operate 3 shifts a day and 330 days a year.

Feeding filled pallets with a forklift will be possible at the stretch hooder machine.

### 3.3.1. Characteristics of the Product to be Bagged

Table-2:

<b>Product Name</b>	Granule Etibor-48 (Borax Pentahydrate)
<b>Chemical formula</b>	Na <sub>2</sub> B <sub>4</sub> O <sub>7</sub> ·5H <sub>2</sub> O
<b>Bulk density (kg/m<sup>3</sup>)</b>	860-1050
<b>Moisture (%)</b>	0.5-1
<b>Sieve Analysis (Typical Analysis)</b>	+1,180 mm: Maximum %4 -0,075 mm: Maximum %5
<b>Issues Requiring Attention</b>	Every product to be bagged in produced in 5 separate factories. The produced product may show different physical characteristics although the chemical characteristics are the same. (Moisture rate, bulk density etc.) Moreover, the product has hygroscopic structure and has dehumidifying characteristic. Coagulation and caking occurs when the product is kept waiting.

### 3.3.2. Bag characteristics:

The characteristics of the bag to be used are as follows:

#### 25 kg FFS Bags:

Table-3:

<b>TYPE</b>	FFS Film (TUBULAR FFS FILM), Gusseted Type
<b>WIDTH (A)</b>	<b>320 mm - 360 mm</b>
<b>GUSSET (B)</b>	<b>70 mm ±1mm</b>
<b>LENGTH (L)</b>	<b>660 mm</b>
<b>THICKNESS</b>	<b>140 microns ±5%</b>
<b>ROLLER OUTER DIAMETER (D)</b>	Min. 1000mm, Max. 1500 mm.
<b>ROLLER SPOOL DIAMETER (E)</b>	150 mm (PVC)
<b>COLOR</b>	Opaque White
<b>EMBOSSING</b>	Double embossing will be applied on the upper surface of the bag with a width of 85 mm and height of 0.5 mm with 70 mm in between. Air holes will be opened on the embossed section.
<b>MICRO HOLES</b>	To be placed on the side surfaces of the bag with 20x20 mm intervals. Micro holes will be on the gusseted section of the bag in a strip of 80 mm wide and 40 microns (±5%) width.
<b>BAG CUTTING MARK</b>	Marks will be placed in black color on the film with dimensions of 15 x 40 mm in <b>660 mm intervals</b> for automatic cutting by the FFS machine with the sensor.
<b>ANTISTATIC CHARACTERISTICS</b>	Bags must antistatic characteristics both on the inside and the outside.
Bags will be of material that catches the heat fast and that is easily welded.	

#### 50 kg FFS Bags:

Table-4:

<b>TYPE</b>	FFS Film (TUBULAR FFS FILM), Gusseted Type
<b>WIDTH (A)</b>	<b>400 mm ±2mm</b>
<b>GUSSET (B)</b>	<b>80 mm ±1mm</b>
<b>LENGTH (L)</b>	<b>810 mm</b>
<b>THICKNESS</b>	<b>140 microns ±5%</b>
<b>ROLLER OUTER DIAMETER (D)</b>	Min. 1000mm, Max. 1500 mm.
<b>ROLLER SPOOL DIAMETER (E)</b>	150 mm (PVC)
<b>COLOR</b>	Opaque White
<b>EMBOSSING</b>	Double embossing will be applied on the upper surface of the bag with a width of 85 mm and height of 0.5 mm with 70 mm in between. Air holes will be opened on the embossed section.
<b>MICRO HOLES</b>	To be placed on the side surfaces of the bag with 20x20 mm intervals. Micro holes will be on the gusseted section of the bag in a strip of 80 mm wide and 40 microns (±5%) width.
<b>BAG CUTTING MARK</b>	Marks will be placed in black color on the film with dimensions of 15 x 40 mm in <b>810 mm intervals</b> for automatic cutting by the FFS machine with the sensor.
<b>ANTISTATIC CHARACTERISTICS</b>	Bags must antistatic characteristics both on the inside and the outside.
Bags will be of material that catches the heat fast and that is easily welded.	

### 3.3.3. Pallet Characteristics

- The dimension of the existing pallets and the pallets to be used is 1100 x 1100 mm, and pallets are two or four directional and two-sided with a pallet height of 12-13 cm.
- Maximum loaded pallet height can be taken as approximately 1.20 m.

### 3.3.4. Stretch Hood Film Characteristics

Table-5:

<b>TYPE</b>	Stretch Hood Film Gusseted type
<b>FILM WIDTH</b>	950 mm ±8mm
<b>GUSSET</b>	440 mm ±4mm
<b>THICKNESS</b>	140 Microns ±5% (one layer)
<b>UV STABILIZATION</b>	12 months under 120kLy/year outdoors
<b>ROLLER OUTER DIAMETER</b>	800 mm
<b>ROLLER SPOOL DIAMETER</b>	76 mm
<b>WEIGHT/METER</b>	477,25 g/m ±2%
<b>Gross Roller Weight</b>	424,58 kg ±2%
<b>NET ROLLER WEIGHT</b>	421,41 kg ±2%
<b>ROLLER LENGTH</b>	883 m
<b>COLOR</b>	Natural Transparent
<b>ROLLER SPOOL</b>	Iron or PVC Pipe

### 3.3.5. Installation Place of the Bagging, Palletizing and Stretch Hooder Line

- The packaging system consisting of the FFS (Form Fill Seal) bagging machine, palletizer and stretch hood machine will be installed under product silo with 100-tons capacity, which is at a height of 6-7 meters from the ground, inside the second packaging building of the Değirmenözü Facilities.
- Layout will be arranged to cause minimum space loss and in compliance with the work safety and machine-equipment maintenance-repair requirements and with the forklift manipulations taken into account.

### 3.3.6. Climate Information

The bidder will obtain itself any meteorological data for the location where the machines will be installed, if necessary.

### 3.3.7. Worksite Visit and Test Sampling

The Bidders will be able to see the location where the machines will be installed by applying to Kirka Boron Works Plant Management. Bidders who do not visit the location where the work will be carried out will be considered as having seen the place in the event of any disputes. Objections on this matter will not be accepted.

Upon application to the Plant Management, the Bidders may obtain up to 100 kg of the product (Borax pentahydrate) with the shipping, customs etc. costs to the account of the Bidder without being charged for the product for examination of the product and necessary testing. In the event of a greater amount of product being necessary, this may be provided against charge for the amount in excess of 100 kg with the shipping, customs etc. costs to the Bidders account.

## ARTICLE 4: WORK ENVIRONMENT AND CONDITIONS

**4.1. Work Environment:** This article is left blank.

**4.2. Process Description:** This article is left blank.

**4.3. Auxiliary Units:** This article is left blank.

## ARTICLE 5. WORK COMMENCEMENT DATE, WORK TERM, DELIVERY PLACE AND CONDITIONS

**5.1. Work commencement date:** The work commencement date is the contract signing date.

### 5.2. Work Term:

The work term is **240 (two hundred)** calendar days as of the work commencement date until the work is completed and the complete system is made ready for performance tests, including installation and testing works. Contractor will have the personnel, machines, equipment and materials necessary for completion of the work in the specified period. The Plant Management is entitled to suspend the work based on the condition of the activities at the Plant. In this case, a period equal to the number of days of work suspension will be added to the work term without any fine application and the Contractor will not be entitled to any claims and objections regarding this event.

### 5.3. Delivery Place and Conditions:

**5.3.1. Inland:** The Contractor will deliver the material/machine-equipment to Kirka Boron Works Değirmenözü Facilities of Eti Mine Works General Management.

**5.3.2. Abroad:** Contractor will deliver the material/machine-equipment on DAP (Delivered at Place) basis to the address of Eti Maden İşletmesi Genel Müdürlüğü, Kırka Bor İşletme Müdürlüğü Değirmenözü Tesisleri Merkez-İhsaniye Köyü/KÜTAHYA.

#### **5.4. Battery Limit:**

**From:** Starting from the lower flange of the mechanical valve at the existing product silo;

**To:** Point where the palletized and stretch wrapped product is collected at the outlet conveyor of the Stretch Hooder Machine.

#### **5.5. Entity's Responsibility:**

Water, electricity energy and compressed air needing during installation will be provided by the Plant free of charge.

Lunch service may be provided against charge for the Contractor's personnel during the assembly.

#### **5.6. Contractor's Responsibility:**

##### **5.6.1. Submission of the General Layout Designs for Approval**

Subsequent to signing of the contract, the Contractor will present the general layout designs of the packaging line to the approval of the Plant within maximum 30 days. Plant reserves the right to make changes and corrections on said designs. If a changes are foreseen on the design by the Plant, the Contractor will be required to make the corrections and changes and submit it to the Plant's approval again. Manufacturing work will not be started without the design approval being obtained from the Plant.

##### **5.6.2. Liabilities related with the Personnel**

- Contractor will ensure that the personnel assigned to the areas under its responsibility take the occupational safety measures and the legislation on occupational safety in force will be applied. Contractor will be responsible for taking and application of all safety measures during execution of the work, having necessary safety materials available, and ensuring that the safety materials are used.
- Contractor will be obliged to take all kinds of health and safety measures in conformity with the provisions of the occupational health and safety provisions in force regarding locations where persons working under its service are living and working individually or collectively, and to observe the provisions of the related legislation or the instructions to be issued by the supervision body regarding providing healthy eating, drinking, resting sleeping, washing conditions, protection from vocational diseases, and their treatment in the event of illness or accidents, with all costs to the Contractor's account..
- Moreover, the Contractor cannot employ persons who cannot prove with certificates that related vocational training is received in works classified as dangerous and very dangerous, requiring vocational training.
- Contractor will be required to take occupational health and safety measures that are required to be taken pursuant to the occupational health and safety legislation during execution of the subject work of the contract, with all costs to its account.
- All kinds of personal protective equipment of the personnel to be employed for the term of the work (safety harness, safety helmet, work gloves, welding gloves, steel toed shoes,..) will be supplied by the Contractor and a list of the personal protective equipment given against signature to the employees will be submitted to the Plant Management. It will be documented that the same materials are provided to the new personnel who are recruited to replace the personnel leaving for various reasons during the term of the work. In the event

of the safety helmet, work clothes and work shoes used by the employees working for thee Contractor being deformed for any reason during the work term, the Contractor will replace these materials with new ones. All tangible, regulators and legislative responsibility of any accidents occurring during execution of the work will be borne by the Contractor. In the event of any issues in breach with the specifications being found in terms of work safety, the Plant Management will be entitled to suspend the work.

- Contractor will be obliged to carry out all kinds of works and processes and take all kinds of safety measures required pursuant to the Occupational Health and Safety Law No. 6331, Labor Law No. 4856, occupational health and safety regulation etc. legislation when providing the services In issues that are excluded from the authority and responsibility of the Contractor, the Contractor will act in conformity with the instructions issued by the Plant Management.
- In the event of occurrence of any work accidents during execution of the work, the Contractor will be directly responsible for the damages, losses and harm given to its own employees, the Plant Management, employees of other firms, third persons or the environment. Contractor will be responsible for all tangible, non-tangible, legal liability and responsibility regarding any accident that may occur. Moreover, all kinds of regulatory, legal fines and compensations caused to the ENTITY and/or the ENTITY's personnel will be collected from the progress payment or amounts payable to the CONTRACTOR
- The party responsible and addressee for the workers employed by the Contractor under this Technical Specifications will be the Contractor.

### 5.6.3. General Responsibilities

- Contractor will ensure that works listed in the Technical Specifications are carried out by the connector's personnel in a complete, perfect and safe manner.
- The Contractor will be required to observe all kinds of instructions given by the Plant Management's officials and cooperate with the Plant Management's officials continuously during execution of the work.
- Prior to starting work, the Contractor will supply all occupational safety signs and warning signs foreseen by the laws and install these at suitable locations pursuant to the occupational health and safety legislation. Contractor firm will be responsible for occupational health and safety of all personnel at the work site and all kinds of occupational safety at the work site during execution of the work. The cost any damage given to all kinds of machines, equipment and material of the Plant Management by the Contractor's personnel during the works carried out will be covered by the Contractor.
- Contractor will ensure that the working personnel are not at locations outside the work areas. As bagging, container filling, delivery etc. actions are carried out at the Değirmenözü Stock and Delivery Facilities and there is a heavy vehicle traffic due to vehicles such as forklifts, trucks, reach stackers etc., the working personnel will be prevented from entering these areas.
- The Contractor is responsible for applying thee legislation in force on occupational health and safety and will be responsible for applying and monitoring all measures related with Occupational Health and Safety.
- The party responsible for the Contractor's personnel assigned to execution of the works in the scope of the specification and the contract will be the Contractor.



- Firm will be responsible for ensuring that the locations where it carries at work and the locations where the social needs of the personnel are fulfilled are clean and tidy. Packets, packages, bags, plastic wastes resulting from the eating, drinking, smoking etc. needs of the firm's personnel will not be present at the work site.
- The cleaning of the areas where the works will be carried out will also be provided by the Contractor.
- All kinds of materials, devices and equipment used will be in compliance with TSE and/or international standards.
- All devices will have protective structure to prevent effects of the physical conditions of the environment, and these will not be affected by dust, moisture, temperature and vibration.
- Contractor will cover all kinds of subsistence allowance (transportation, accommodation, lunch...) of personnel to be assigned to this work. The Contractor may benefit from the Plant Management's worker's refectory upon request.

## ARTICLE 6: REQUIRED DOCUMENTS, INFORMATION AND SAMPLE

The Contractor will submit the following documents for the machines, equipment and devices used on the line free of charge.

- Power and Control Designs (Electrical - electronic - pneumatic)
- Specifications of Equipment, Materials and Instrument Devices
- Foundation and Load Drawings
- Catalogs and detailed information for each device and equipment used
- Spare parts catalog for ordering
- All equipment, hardware and software to be used for programming, updating, re-installation etc. regarding the system
- Designs related with assembly (2 sets)
- As-built designs for mechanical, electrical, assembly and automation (with the revisions marked, if any) (2 sets with 1 set on flash memory)
- Operating and maintenance instructions will be in Turkish.

## ARTICLE 7: BID AND PAYMENT CONDITIONS:

### 7.1. Bid and Payment Conditions:

Bids may be given in TL, USD or EURO. Payments will be made in the proposed currency.

**7.1.1. Inland:** Following approval of the acceptance, payment will be made against invoice at a rate of 75% of the contract price.

**7.1.2. Abroad:** Letter of credit will be opened for 80% of the contract price and 5% of the contract price will be paid against shipping documents for 100% upon arrival of the material at the customs and the balance 75% will be paid following approval of acceptance.

### 7.2. Advance Payment:

- **Inland:** Advance payment will be paid at a rate of 25% of the contract price following signing of the contract.

- **Abroad:** Advance payment will be paid at a rate of 20% of the contract price following signing of the contract.

**7.3. Elements other than Price:** Elements other than price will not be taken into consideration in the bids.

## ARTICLE 8: INSTALLATION, TEST, STARTUP AND PERFORMANCE TESTS

Contractor will be responsible for assembling the material/machines-equipment at the site and carrying out the startup and performance testing. Installation will be realized at Kütahya province, Central subprovince, Ihsaniye Village Değirmenözü Facilities and climate information related with the place of installation will be under the responsibility of the firm.

### 8.1. Installation:

- Installation of all machines, equipment, devices and other hardware used on the line will be made by the Contractor.
- All lifting-lowering machines (cranes, hoists ...) tools, devices, cutting, welding machines (oxygen machine, welding machine ...), fasteners etc. equipment consumables (oxygen gas, acetylene gas, electrodes...) needed during the assembly works will be supplied by the contractor firm. The Plant Management will not be responsible for loss of these materials and equipment.
- Contractor will provide all assistance necessary for control and inspection to the personnel assigned by the Plant Management during execution of the work.
- If the Plant Management suspends the work for a certain period due to the work with a protocol, a period equal to the suspension period will be added to the end of the work term without fine application.
- Contractor may fulfill its water, compressed air and electricity needs for the assembly free of charge from the points designated by the Plant Management. Necessary installations (connection lines etc.), laying of the installation and the connection components will be under the Plant Management's responsibility.
- The surfaces requiring paint will be delivered with antirust primer and two coats of paint on it.
- For all machines, equipment and devices on the line, measures necessary for worker's health and safety (railing, protection panels, noise insulation, warning signs, alarm etc.) will be taken by the Contractor.
- Contractor will be required to have adequate number of personnel during assembly and startup, performance tests and training. All costs of the personnel will be borne by the Contractor and additional payments will not be made.
- All kinds of materials, devices and equipment used will be in compliance with TSE and/or international standards.
- Contractor will obtain the 220 V AC, 380 V AC, 50 Hertz, Three-phase electricity, 4-6 bar instrument air from the existing panel and vales designated by the Plant Management inside the same building.
- All devices will have protective structure to prevent effects of the physical conditions of the environment, and these will not be affected by dust, moisture, temperature and vibration.
- Plant Management will receive the system on turnkey basis for a lump sum price.

## 8.2. Testing and Startup Works:

Following completion of assembly works related with the machines, auxiliary equipment, hardware-software of the bagging, palletizing and stretch wrapping system and the testing process of the system, the Contractor will commence the startup works of the system and will submit a written request to the Entity when the required performance is met by the system.

## 8.3. Performance Tests:

- Starting of the performance tests within a period of 10 day as of the completion of the testing and startup and training of the personnel is essential. Performance tests will be conducted together with the Contractor at a date to be designated by the Plant Management upon the written request of the Contractor following completion of the performance tests, testing and startup works. Period lapsing during the performance tests will not be included into the delivery period.
- Performance test refers to operation of the bagging line, palletizing and the stretch hooder machine in conformity with this specification and testing whether these fulfill the capacity and precision specified in these technical specifications. The following parameters will be taken as the basis during the performance test:
  - ✓ Machine capacity (Bagging, palletizing, stretch hooder machines)
  - ✓ Weight precision in grams (only for the bagging machine)

The Plant Management will provide the following issues for the performance test.

- A regular and trouble-free product feed will be provided in conformity with the capacity of the bagging and palletizing machines.
- The products will have the specs stipulated in this specification.
- PE rolls made of polyethylene (PE) to be supplied by the Plant Management and used on the stretch hooder machine will be supplied in conformity to automatic use with the specs of the Contractor taken into consideration.

### 8.3.1. FFS Bagging Machine Performance Tests

- For the bagging and palletizing machine lines, each performance test will be carried out as 4 hours in 1 shift. Start of the performance tests to be conducted together as the bagging and palletizing machine lines will be determined by the Plant Management and the Contractor together.
- In the event of failure in start of this performance test within a period of 60 days after completion of the startup process due to reasons not attributable to the Contractor, it will be construed that the performance test is passed.
- The obtained results will be recorded and signed by both parties.
- In the event of the performance test not being conducted or completed due to reasons attributable to the Plant Management, the Contractor will have no responsibility. The test will not be completed if it is determined that continuation of the test may injure/damage the personnel or machines/equipment during any performance test.
- If the performance test cannot be continued due to reasons specified above, the Plant Management and the Contractor will agree upon a new date.

#### 8.3.1.1. Check Weigher Precision Performance Test

- The performance testing period for the weight precision of the FFS Bagging Machine will be 4 hours.
- Performance test for precision in grams will be made for the 25 kg - 50 kg bags with the participation of the representatives of the Contractor and the Plant Management.
- Weight precision will be  $\pm 50$  grams for 25 kg bags and  $\pm 100$  grams for 50 kg bags.
- For the precision measurements, 100 bags to be selected successively for each hour during the test period will be weighed for control with a calibrated weighing machine to be supplied by the Plant Management.
- As a result of the measurements, number of bags deviating from the precision tolerances must not exceed 10% of the number bags controlled.
- If the number of bags deviating from the precision tolerances as a result of the weighing performed for 4 hours exceeds 10% of the number of bags controlled, i.e. 40 bags, and/or if the mean precision value of the 400 bags is not within the tolerance limits, necessary interventions will be made to the system by the Contractor and the test will be repeated. This repeating process cannot be more than 3. If the required precision requirements cannot be met as a result of the intervention and repeated performance tests, a period 15 days will be granted to the Contractor without fine and the Contractor will investigate the reasons of the failure and take necessary corrective actions free of charge during this period. If the necessary precision requirements cannot be met as a result of the corrective actions during this period in the repeated test, a period subject to fine will be granted as foreseen by the Plant Management. If the necessary precision requirements cannot be met in the performance test performed at the end of the period granted subject to fine, the balance amount will be paid after a deduction is made at the rates specified in Table 6 on the basis of the contract price of the FFS Bagging Machine for every 5% portion between 11%-30% in terms of ratio of the number of bags deviating from the tolerances to the number of bags that are weighed. In the event of ratio of the number of bags deviating from the precision tolerance to the number of bags controlled exceeding 30%, the FFS bagging machine will not be accepted.

Table-6:

<b>Ratio of Number of Bags Outside the Tolerance to the Total Number Bags</b>	<b>Fine Amount</b>
11% - 15%	1%
16% - 20%	4%
21% - 25%	7%
26% - 30%	10%

- The machine will be operated without interruption during the performance tests, however in the event of an interruption due to a reason not attributable to the Contractor (compressed air or energy failure, bag replacement, product silo feeding interruption, change in product density etc.), the test will be resumed from the point it was interrupted after the interruption is over and the system achieves optimum operation conditions. The period and performance results before the interruption will be added to the resumed period and results.

- In the event of the performance values undertaken by the Contractor in the bid being met as a result of the performance tests, a Performance Test Protocol will be signed between the Contractor and the Plant Management.
- Machine passing the weight precision performance test will be subjected to the bagging capacity performance test.
- If the performance tests cannot be conducted for 60 days after the assembly and startup works due to reasons not attributable to the Contractor, it will be considered that the work is completed successfully.

### 8.3.1.2. Bagging Speed Performance Test

- The performance testing period for the FFS Bagging Machine Capacity will be 4 hours.
- FFS Bagging Machine is required to bag minimum 1.400 bags/h for 25 kg bags and minimum 1.000 bags/h for 50 kg bags in an uninterrupted manner during thee 4 hours.
- In the event of failure in meeting the specified capacities at the end of bagging for 4 hours, necessary interventions will be made to the system by the Contractor and the performance test will be repeated. This repeating process cannot be more than 3. If the required capacity cannot be met as a result of the intervention and repeated performance tests, a period 15 days will be granted to the Contractor without fine and the Contractor will investigate the reasons of the failure and take necessary corrective actions free of charge during this period. If the necessary capacity cannot be met as a result of the corrective actions during this period in the repeated test, a period subject to fine will be granted as foreseen by the Plant Management. If the necessary capacity cannot be fulfilled in the performance test repeated at the end of the period subject to fine, the balance amount will be paid after a deduction of 1% for every 14 bags (1 percent) between 1.400-1.260 bags/h for 25 kg bags and 1% for every 14 bags (1 percent) between 1.000-860 bags/h for 50 kg bags over the price of the FFS Bagging Machine, as shown in the following Table 7. In terms of capacity, the rejection limit will be 1.260 bags/hour (90% capacity) for 25 kg bags and 860 bags/hour (90%) for 50 kg bags, and the FFS bagging machine will not be accepted if the capacity value is realized below this amount.

Table-7:

<b>Bagging Quantity 25 kg. (Bags/Hours)</b>	<b>Fine Rate</b>	<b>Bagging Quantity 50 kg. (Bags/Hours)</b>	<b>Fine Rate</b>
1399 - 1386	1%	999 - 986	1%
1385 - 1372	2%	985 - 972	2%
1371 - 1358	3%	971 - 958	3%
1357 - 1344	4%	957 - 944	4%
1343 - 1330	5%	943 - 930	5%
1329 - 1316	6%	929 - 916	6%
1315 - 1302	7%	915 - 902	7%
1301 - 1288	8%	901 - 888	8%
1287 - 1274	9%	887 - 874	9%
1273 - 1260	10%	873 - 860	10%



- The machine will be operated without operation during the performance tests , however in the event of an interruption due to a reason not attributable to the Contractor (compressed air or energy failure, bag replacement, product silo feeding interruption, change in product density etc.), the test will be resumed from the point it was interrupted after the interruption is over and the system achieves optimum operation conditions. The period and performance results before the interruption will be added to the resumed period and results.
- In the event of the performance values undertaken by the Contractor in the bid being met as a result of the performance tests, a Performance Test Protocol will be signed between the Contractor and the Plant Management.
- If the performance tests cannot be conducted for 60 days after the assembly and startup works due to reasons not attributable to the Contractor, it will be considered that the work is completed successfully.

### 8.3.1.3. Bag Mouth Sealing Performance Test

- The performance testing period for Bag Mouth Sealing off the FFS Bagging Machine will be 4 hours. This test can be carried out when the bagging capacity of the machine is tested.
- The FFS Bagging Machine is required to seal the mouth of 99.5% of the number of bags filled in the performance test, properly for an uninterrupted period of 4 hours.
- If the number of bags with non-sealed mouths exceed 0.5% at the end of bagging for 4 hours, necessary interventions will be made to the system by the Contractor and the performance test will be repeated. This repeating process cannot be more than 3. If the required capacity cannot be met as a result of the intervention and repeated performance tests, a period 15 days will be granted to the Contractor without fine and the Contractor will investigate the reasons of the failure and take necessary corrective actions free of charge during this period. If the necessary capacity cannot be met as a result of the corrective actions during this period in the repeated test, a period subject to fine will be granted as foreseen by the Plant Management. If the necessary capacity cannot be met in the performance test performed at the end of the period granted subject to fine, the balance amount will be paid after a deduction is made at the rates specified in Table 8 on the basis of the contract price of the FFS Bagging Machine for the ratio of number of bags with mouths not sealed to the number of the bags filled. 2.5% is the rejection limit for the ratio of number of bags with mouths not sealed to the number of bags filled and in the event of a value above this ratio, the FFS bagging machine will not be accepted.

Table-8:

Percentage of Bags not Sealed	Fine Rate
0,5% - 0,7%	1%
0,7% - 1,0%	2%
1,0% - 1,5%	5%
1,5%- 2,0%	7%
2,0%- 2,5%	10%

- The machine will be operated without interruption during the performance tests , however in the event of an interruption due to a reason not attributable to the Contractor (compressed air or energy failure, bag replacement, product silo feeding interruption, change in product density etc.), the test will be resumed from the point it was interrupted after the interruption is over and the system achieves optimum operation conditions. The period and performance results before the interruption will be added to the resumed period and results.
- In the event of the performance values undertaken by the Contractor in the bid being met as a result of the performance tests, a Performance Test Protocol will be signed between the Contractor and the Plant Management.
- If the performance tests cannot be conducted for 60 days after the assembly and startup works due to reasons not attributable to the Contractor, it will be considered that the work is completed successfully.

### 8.3.2. Palletizer Performance Test

- The performance testing period for the Palletizer will be 4 hours.
- FFS Bagging Machine is required to bag minimum 1.400 bags/h for 25 kg bags and minimum 1.000 bags/h for 50 kg bags in an uninterrupted manner during thee 4 hours.
- In the event of failure in meeting the specified capacities at the end of palletizing for 4 hours, necessary interventions will be made to the system by the Contractor and the performance test will be repeated. This repeating process cannot be more than 3. If the required capacity cannot be met as a result of the intervention and repeated performance tests, a period 15 days will be granted to the Contractor without fine and the Contractor will investigate the reasons of the failure and take necessary corrective actions free of charge during this period. If the necessary capacity cannot be met as a result of the corrective actions during this period in the repeated test, a period subject to fine will be granted as foreseen by the Plant Management. If the necessary capacity cannot be fulfilled in the performance test repeated at the end of the period subject to fine, the balance amount will be paid after a deduction of 1% for every 14 bags (1 percent) between 1.400-1.260 bags/h for 25 kg bags and 1% for every 14 bags (1 percent) between 1.000-860 bags/h for 50 kg bags over the price of the FFS Bagging Machine, as shown in the following Table 9. In terms of capacity, the rejection limit will be 1.260 bags/hour (90% capacity) for 25 kg bags and 860 bags/hour (90%) for 50 kg bags, and the FFS bagging machine will not be accepted if the capacity value is realized below this amount.

Table-9:

<b>Palletizing Quantity 25 kg. (Bags/Hours)</b>	<b>Fine Rate</b>	<b>Palletizing Quantity 50 kg. (Bags/Hours)</b>	<b>Fine Rate</b>
1399 - 1386	1%	999 - 986	1%
1385 - 1372	2%	985 - 972	2%
1371 - 1358	3%	971 - 958	3%
1357 - 1344	4%	957 - 944	4%
1343 - 1330	5%	943 - 930	5%
1329 - 1316	6%	929 - 916	6%
1315 - 1302	7%	915 - 902	7%
1301 - 1288	8%	901 - 888	8%
1287 - 1274	9%	887 - 874	9%
1273 - 1260	10%	873 - 860	10%

- The machine will be operated without interruption during the performance tests, however in the event of an interruption due to a reason not attributable to the Contractor (compressed air or energy failure, bag replacement, product silo feeding interruption, change in product density etc.), the test will be resumed from the point it was interrupted after the interruption is over and the system achieves optimum operation conditions. The period and performance results before the interruption will be added to the resumed period and results.
- In the event of the performance values undertaken by the Contractor in the bid being met as a result of the performance tests, a Performance Test Protocol will be signed between the Contractor and the Plant Management.
- If the performance tests cannot be conducted for 60 days after the assembly and startup works due to reasons not attributable to the Contractor, it will be considered that the work is completed successfully.

### 8.3.3. Stretch Hooder Machine Performance Test

- The performance testing period for the capacity of the Stretch Hooder Machine will be 4 hours.
- The Stretch Hooder Machine is required to stretch wrap minimum 50 pallets/hour for 4 hours without interruption.
- In the event of failure in meeting the capacity of minimum 50 pallets/hour as a result of performance testing for 4 hours, necessary interventions will be made to the system by the Contractor and the performance test will be repeated. This repeating process cannot be more than 3. If the required capacity cannot be met as a result of the intervention and repeated performance tests, a period 15 days will be granted to the Contractor without fine and the Contractor will investigate the reasons of the failure and take necessary corrective actions free of charge during this period. If the necessary capacity cannot be met as a result of the corrective actions during this period in the repeated test, a period subject to fine will be granted as foreseen by the Plant Management. If the necessary capacity cannot be fulfilled in the performance test repeated at the end of the period subject to fine, the balance amount will be paid after a deduction of 1 % for every 1 pallet between 50-40 pallet/hours in terms of capacity over the price of the Stretch Hooder Machine, as shown in the following Table 10. 40 pallets/hour is the rejection limit in terms of capacity and the Stretch Hooder Machine will not be accepted if the capacity value is found below this limit.

Table-10:

Stretch Hooding Quantity (Pallets/Hour)	Fine Rate
49	1%
48	2%
47	3%
46	4%
45	5%
44	6%
43	7%
42	8%

41	9%
40	10%

- The machine will be operated without interruption during the performance tests, however in the event of an interruption due to a reason not attributable to the Contractor (compressed air or energy failure, bag replacement, product silo feeding interruption, change in product density etc.), the test will be resumed from the point it was interrupted after the interruption is over and the system achieves optimum operation conditions. The period and performance results before the interruption will be added to the resumed period and results.
- In the event of the performance values undertaken by the Contractor in the bid being met as a result of the performance tests, a Performance Test Protocol will be signed between the Contractor and the Plant Management.
- If the performance tests cannot be conducted for 60 days after the assembly and startup works due to reasons not attributable to the Contractor, it will be considered that the work is completed successfully.

#### 8.4. Performance Guarantee:

The Contractor will achieve the following performance:

##### In the FFS Machine;

- Bagging capacity of minimum 1.400 bags/hour for 25 kg bags,
- Bagging capacity of minimum 1.000 bags/hour for 50 kg bags,
- Filling precision of  $\pm 50$  grams for the 25 kg bags,
- Filling precision of  $\pm 100$  grams for the 50 kg bags,
- Bag mouth sealing precision of 99.5%,

##### In the Palletizer;

- Palletizing capacity of minimum 1.400 bags/hour for 25 kg bags,
- Palletizing capacity of minimum 1.000 bags/hour for 50 kg bags,

##### Stretch Hooder Machine;

- Minimum stretch wrapping capacity of 50 pallets/hour

## ARTICLE 9: ACCEPTANCE PROCESSES

FFS Bagging, Palletizing, Stretch Hooder Line delivered by the Contractor will be accepted after control and inspection in the scope of the following conditions. Partial acceptance will not be applied.

**9.1.** Subsequent to delivery of the FFS Bagging, Palletizing, Stretch Hooder Line, necessary controls and measurements will be made by the Inspection and Acceptance Commission, and receipt process will take place if found to be conformant.

9.2. This article is left blank.

9.3. Following issuance of the performance protocol as subsequent to determination that the guarantees specified in Article 8.4 and undertaken by the Contractor are met or are within the acceptance limits under fine, as a result of the performance tests specified in Article 8.3, the acceptance of the work will be realized with the issuance of the acceptance protocol pursuant to the “Regulation on the Regulation on Inspection, Examination and Acceptance Processes for Goods Procurement” if the system is operating free of faults. Beginning of the acceptance is the approval date of the Plant Management.

9.4. The conditions for acceptance, acceptance under fine and rejection of the FFS Bagging, Palletizing, Stretch Hooder Line are specified in Article 8.3. The Contractor will replace the machinery, equipment and devices that do not meet the conditions for acceptance without and/with fine application as a result of the performance tests, which are included in the FFS Bagging, Palletizing, Stretch Hooder Line with machines, equipment and devices in conformity with the conditions specified in the technical specifications within a period of 90 days subject to fine as of the performance test protocol with all costs (Shipping, customs duties and all other costs) to its account and install these and make them ready for the performance test. The contract will be terminated in the event of failure in delivering these or achieving the performance guarantee conditions this time.

9.5. In the event of damaged-defected/non-conforming /missing materials, the contractor will replace the damaged-defected/non-conforming/missing materials with ones that are in conformity within 30 calendar days and under the same contract conditions, free of charge, with all costs (freight, all customs duties and other costs etc.) to its account. If the contractor will request returning of the damaged-defected/non-conforming/missing materials, the Contractor will collect these materials with all costs (freight, all customs duties and other costs etc.) to its account.

## ARTICLE 10: WARRANTY

### 10.1. Material/Machine-Equipment Warranty:

Hardware and software related with all machinery, auxiliary equipment and devices supplied by the Contractor will be under the Contractor’s warranty for a period of **1 year (12 months) as of the final acceptance date**. The Contractor guarantees that the bagging machine, palletizer, stretch hooder machine and other auxiliary equipment on the line are new production, unused and in conformity with the requirements of the specification. Contractor will guarantee to remedy all defects caused by the design of the line, material, workmanship or Contractor’s own fault, free of charge. The Plant Management will notify the Contractor in writing in the event of defects occurring within the warranty period. The contractor will be required to respond to this notification and replace the defected good or parts or replace them free of charge to ensure that the system is in operating form within 15 (fifteen) days at the latest after the notification receipt. Period lapsing during repair, replacement or completion of the missing material will be added to the warranty period.

## ARTICLE 11. FINES

The fines regarding the performance of the FFS Bagging, Palletizing, Stretch Hooder Line are detailed in article 8.3.

The delay fine specified in the contract/administrative specifications will be applied for delays in completion of the work (until the phase of completion of the work including assembly and



testing works as of the work commencement date, and making it ready for performance tests) and/or periods to be granted subject to fine for improvements in the performance tests.

## **ARTICLE 12: OTHER ISSUES**

### **12.1. Training**

Operation and process (operator) training will be given to the Operation group and maintenance, repair, calibration and project training will be given to the electrical and automation maintenance-repair group for a period of 3 (three) with minimum 4 (four) hours per day. This training will be at the level of responding to the system when necessary and making additions or modifications. No fees will be claimed for the training services specified above. The final acceptance of the goods will not be realized before the training is completed due to the nature of said goods.

### **12.2. Information and Documents requested with the Bid**

The Bidders will give the following information and documents with their bids:

- For all machines, auxiliary equipment, devices, hardware-software and services offered;
- Detailed price list
- Process general description
- Name, brand, type, technical information of the main equipment (FFS Bagging machine, Palletizing Machine, Stretch Hooder Machine) to be used in the system,
- Minimum and maximum ambient temperatures for the system to operate in problem-free manner.

### **12.3. Delivery**

Package contents will be delivered with a truck to the assembly place. Necessary packaging processes shall be realized to prevent damaging and provide adequate protection of the equipment during loading/shipping, unloading and assembly. All parts necessary for assembly will be supplied by the Contractor. Contractor will provide the forklift to be used during unloading of the assembly materials, itself.

### **12.4. CE Marking**

All machines shall have the CE marking to evidence conformity to the (EU) standards.

### **12.5 Production Control**

The productions may be controlled at the site during manufacture by the Plant Management's officials, if required, on the condition that all related costs are borne by the Entity.

### **12.6 Damage Costs**

Any damages caused on the existing plant and equipment during installation will be remedied free of charge by the Contractor. In the event of failure in remedying, this will be remedied by the Entity and the related costs will be collected from the Contractor with an addition of 20 %.

## **ARTICLE 13: ARTICLES OF THE TECHNICAL SPECIFICATIONS**

This technical specification consists of 13 (thirteen) articles, including this article.

Technical Specification Prepared by:

**Emre HOŞBAŞ**

Bagging and Packaging Responsible  
(Automation Engineer)

**Cüneyt AKSAK**

Stock and Delivery Unit Responsible  
(Mining Engineer)