Table of Contents

[Screening Line 3](#_Toc87867392)

[1. Pay-off device 6](#_Toc87867393)

[2. Pay-off traverse control device with support roller 8](#_Toc87867394)

[3. Taping head for non-metallic fabric tapes with a set of self-centring rollers at the entrance and exit of the taping head. 8](#_Toc87867395)

[4 In option :additional taping head for metallic tapes before cage with a set of self-centring rollers at the exit of the head 10](#_Toc87867396)

[5 Cages for Ø 500mm bobbins 12](#_Toc87867397)

[6 Cage for Ø 500mm bobbins with the section for paying-off steel fiber optic tubes at a later time 13](#_Toc87867398)

[7 Dividing head for wires based on a system of adjustable rotating rollers 14](#_Toc87867399)

[8 Closing die with fixing and position control 15](#_Toc87867400)

[9 Taping head for metallic tapes with a set of self-centring rollers at the entrance and exit of the head 16](#_Toc87867401)

[10 Taping head for non-metallic fabric tapes with a self-centring roller at the exit 17](#_Toc87867402)

[11 Caterpillar-type metre counter 19](#_Toc87867403)

[12 Pulling caterpillar 20](#_Toc87867404)

[13 Hydraulic cable cutters 20](#_Toc87867405)

[14 Support roller 21](#_Toc87867406)

[15 Take-up 22](#_Toc87867407)

[16 Line control 23](#_Toc87867408)

[17 Additional equipment 24](#_Toc87867409)

[18 Materials necessary for installation, start-up and commissioning tests. Supervision over the installation and start-up by line supplier representatives. 25](#_Toc87867410)

**Annex no. 1**

In response to the Request for Proposal of 21.08.2023, request no. **130005428 - Screening line** for the design preparation, delivery and start-up of a new, highly efficient line for application of round Cu and Al wires of the cable screen during production of MV and HV cables, together with necessary control system, which would have functionality and technical parameter that would meet the requirements in the tables below. The line shall consist of the following components:

- cable core pay-off

- pay-off traverse control system with a support roller

- set of self-centring rollers

- taping head for application of textile fabric tapes

- in option: additional taping head for metal tapes with the loading device before cage

- cages for bobbins with Cu or Al wires. Bobbins dimensions: Ø 500

- cage no. 1

- cage no. 2

- cage no. 3 with system for paying-off bobbins with fibre optic tubes and the device for loading

- set of 180 bobbins type DIN 500 (as an option)

- manual and hydraulic cold pressure welding device (as an option)

- bobbin loading system from the floor level to each cage

- wire dividing head – the system based on rotating wheels

- closing die with the table

- set of self-centring rollers

- taping head for metal tapes with the loading device

- welding device for copper, steel and aluminium foil tapes,

- set of self-centring rollers

- taping head for textile fabric tapes

- set of self-centring rollers

- caterpillar-type meter counter

- pulling capstan (caterpillar)

- hydraulic cutters – 1 piece

- support roller

- take-up

- line control system

- drum pusher up to 100T (as an option)

- additional equipment

# Screening Line

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| --- | --- | --- |
| Item | Functionality – screening line | Information on meeting required functionality  enter  YES or NO |
| 1. | Line for screen application to be used in the production of MV and HV cables.  Line for simultaneous application of screens consisting of wires (Cu or Al round and Cu or Al tape) with uniform tension and spacing around circumference of the core as well as application of non-metallic tapes underneath the screen wires, and metallic and non-metallic tapes over the wires in a single operation.  The line must equipped with application of up to four fibre optic tubes around the circumference of the cable core in between the Cu or Al wires at the distance of every 90° during the screening process with the system securing against tubes twisting. |  |
| 2. | Pay-off for cable cores on rails with the drive enabling reversing the cable core, equipped with traversing system with the system for tension control. |  |
| 3. | Device for pay-off traverse control with a support roller. |  |
| 4. | Taping head for non-metallic fabric tapes with the set of self-centring rollers at the entrance and exit of the taping head. |  |
| 5. | In option :additional taping head for metal tapes before cages with the set of self-centring rollers at the exit of the taping head |  |
| 6. | 2 cages for Ø 500 bobbins |  |
| 7. | 1 cage for Ø 500 bobbins with installation of the system for paying-off 4 bobbins with steel fibre optic filled tubes and the system for loading the bobbins |  |
| 8. | Dividing head for wires based on the system of rotating adjustable wheels. |  |
| 9. | Closing die with fixing system and adjustable table |  |
| 10. | Set of Ø 500 bobbins |  |
| 11. | Loading system for Ø 500 bobbins from the floor level with the possibility of loading and unloading the whole row of bobbins as well as an individual bobbin |  |
| 12. | Taping head for metal tapes with the set of self-centring rollers at the entrance and exit of the taping head |  |
| 13. | Welding device for metallic tapes |  |
| 14. | Taping head for textile fabric tapes with a set of self-centring rollers at the entrance and exit of the taping head |  |
| 15. | Caterpillar-type meter counter |  |
| 16. | Pulling caterpillar with a set of self-centring rollers at the entrance and exit |  |
| 17. | Hydraulic cutters with a fixing system |  |
| 18. | Support roller |  |
| 19. | Take-up installed on rails with traverse system and the system for tension control with the possibility of taking-up the cable with a set pitch (lay length). |  |
| 20. | Line control system |  |
| 21. | Additional equipment |  |
| 22. | Materials necessary for installation, start-up and commissioning tests, supervision over the installation by supplier representatives, start-up by supplier representatives. |  |

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| **Item** | **Technical parameters – Screening Line** | **Value** | Information on meeting the requirement  (declare whether the value meets the requirement **by entering**  **YES or NO**) | Information on meeting the requirement  (**enter the parameter value of the offered item)** | Comments  (enter if applicable) |
| 1. | Range of cable core diameters (before screen application) | from 15mm to 155 mm |  |  |  |
| 2 | Range of cable core diameters (after screen application) | from 18mm to 160mm |  |  |  |
| 3. | Diameter of inner inlets – trough pipes | Min 200 mm |  |  |  |
| 4. | Dimensions of round wires | AL. Ø 1,0- 3,5mm  Cu. Ø 0,8- 3mm |  |  |  |
| 6. | Maximum quantity of wires possible for production preparation (without steel fibre-optic tubes) | 90 |  |  |  |
| 7. | Direction of wire application | S or Z |  |  |  |
| 8. | Adjustable wire tension | 0 – 20 kg |  |  |  |
| 9. | Wire lay length | 100 – 2500 mm |  |  |  |
| 10. | Weight of 1m of cable | 2-50 kg/m |  |  |  |
| 11. | Maximum linear speed | 60 m/min |  |  |  |
| 12. | Pay-off and take-up lifting capacity | 95 t |  |  |  |
| 13. | Range of drum sizes for pay-off and take-up | The maximum range of the pay- off and take up that can be implemented in the available space in the planned location in the production building  Min range Height:2,2 – 5,0m  Width: 1,8 – 5,0m (if possible max. 3,0m) |  |  |  |
| 14. | Length of line | Approximately 70m – must be appropriate for the production building |  |  |  |
| 15. | Height of screening line axis | 1000 mm |  |  |  |
| 16. | Line direction | Right (will be defined) |  |  |  |
| 17. | Line colour:  - fixed components  - moving elements  - control panels and cabinets | Ral 6021  Ral 1003  Ral 7035 |  |  |  |
| 18. | CE certificate | Yes |  |  |  |
| 19. | Max. noise level | 85 dB |  |  |  |
| 20. | Braking times | Normal: 15 – 25 s  Fast: 10 – 14 s  Emergency: 7 – 8 s  No defective production due to braking. |  |  |  |

## Pay-off device

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| **Item** | **Functionality – Pay-off device** | **Information on meeting required functionality by entering**  **YES or NO** |
| 1. | Automatic drum lifting and lowering |  |
| 2. | Pay-off to be installed on rails with the drive and control of the braking force. Must be possible to pull back (with motor – not manually) the cable core. |  |
| 3. | Automatic traverse during production |  |
| 4. | Control with the use pendant station and wireless remote control. |  |
| 5. | Drum pusher |  |
| 6. | Core paying-off from the bottom |  |

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| **Item** | **Technical parameters – Pay-off device** | **Value** | Information on meeting the requirement  (declare whether the value meets the requirement **by entering**  **YES or NO**) | Information on meeting the requirement  (**enter the parameter value of the offered item)** | Comments  (enter if applicable) |
| **1.** | Quantity of pay-off devices | 1 piece | **….** | **….** |  |
| **2.** | Range of drum sizes for the pay-off device | The maximum range of the pay- off that can be implemented in the available space in the planned location in the production building  no less than :  height: 5,0m  Min. height: 2,2m  width: 5,0m  Min. width: 1,8m |  |  |  |
| **3.** | Weight capacity | up to 95 T |  |  |  |
| **4.** | Diameters of interchangeable pins | 123, 138, 178, 198, 248 mm |  |  |  |
| **5.** | Quantity of interchangeable pins | 2 pieces per each diameter size |  |  |  |
| **6.** | Drum pusher for 100 T drums | 1 piece |  |  |  |

## Pay-off traverse control device with support roller

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| **Item** | **Functionality – Pay-off traverse control device with a support roller** | **Information on meeting required functionality by entering**  **YES or NO** |
| 1. | Pay-off traverse control device |  |
| 2. | Support roller with adjustable height for facilitating guiding the cable core to the taping head. |  |

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| **Item** | **Technical parameters – Pay-off traverse control device** | **Value** | Information on meeting the requirement  (declare whether the value meets the requirement **by entering**  **YES or NO**) | Information on meeting the requirement  (**enter the parameter value of the offered item)** | Comments  (enter if applicable) |
| 1. | Range of core diameters | 15 - 155mm |  |  |  |

## Taping head for non-metallic fabric tapes with a set of self-centring rollers at the entrance and exit of the taping head.

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| **Item** | **Functionality– Taping head for non metallic fabric tapes with the set of self-centring rollers at the entrance and exit of the head** | **Information on meeting required functionality by entering**  **YES or NO** |
| 1. | Application of one or two nonmetallic fabric tapes over the cable core with an overlap or a gap/clearance. |  |
| 2. | Electronic adjustment of tape tension, controlled from the main control panel. |  |
| 3. | Tape break and tape end detection signalled by automatic line stop. |  |
| 4. | End of tape rolls signalling and automatic line slow-down. |  |

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| **Item** | **Technical parameters – Taping head no. 1 for non-metallic fabric tapes with the set of self-centring rollers at the entrance and exit of the head** | **Value** | Information on meeting the requirement  (declare whether the value meets the requirement **by entering**  **YES or NO**) | Information on meeting the requirement  (**enter the parameter value of the offered item)** | Comments  (enter if applicable) |
| 1. | Quantity | 1 piece |  |  |  |
| 2. | Number of tape pads used at the same time | 2 pieces |  |  |  |
| 3. | Tape pads diameter:  Inner diameter  Outer diameter | 100 mm  800 mm |  |  |  |
| 4. | Tape width | 10 – 80 mm |  |  |  |
| 5. | Tape thickness | 0,1 – 4 mm |  |  |  |
| 6. | Tape pad weight | 45 kg |  |  |  |
| 7. | Tape tension  Special modes of tension depending on the type of material | 0 – 20 kg  Min 3 programs |  |  |  |
| 8. | Types of materials used | Paper  PVC  Mylar  Semi-con swelling tape  Insulating swelling tape |  |  |  |
| 9. | Safe and soundproof housing of the taping head with an electromagnetic lock. | 1 piece |  |  |  |
| 10. | Direction of rotations | Right and left |  |  |  |
| 11. | Number of dies in the taping head | 3 pieces |  |  |  |
| 12. | Number of self-centring rollers | 2 pieces |  |  |  |
| 13. | Additional control and signalling panel at the taping head | 1 piece |  |  |  |

## In option :additional taping head for metallic tapes before cage with a set of self-centring rollers at the exit of the head

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| **Item** | **Functionality – Taping head for metallic tapes before cage wth a set of self-centring rollers at exit of the head** | **Information on meeting required functionality by entering**  **YES or NO** |
| 1. | Application of one or two metallic tapes on the cable core at the same time, with an overlap or a gap/clearance. |  |
| 2. | Mechanical tape tension control |  |
| 3. | Tape break and tape end signalling by automatic line stop |  |
| 4. | Signalling and automatic line slow-down at the end of tape pads. |  |
| 5. | Possibility of welding (connecting) Cu, Al and FeZn tapes. |  |
| 6. | Device for loading metallic tapes onto the taping head (slewing jib crane with a special sling) |  |

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| **Item** | **Technical parameters-**  **Taping head for metallic tapes before cage with the set of self-centring rollers at the exit** | **Value** | Information on meeting the requirement  (declare whether the value meets the requirement **by entering**  **YES or NO**) | Information on meeting the requirement  (**enter the parameter value of the offered item)** | Comments  (enter if applicable) |
| 1. | Quantity of taping heads | 1 piece |  |  |  |
| 2. | Amount of tape pads used | 2 piece |  |  |  |
| 3. | Tape pad diameter:  Inner diameter  Outer diameter | 100 mm  800 mm |  |  |  |
| 4. | Tape width | 10 – 50 mm |  |  |  |
| 5. | Tape thickness | 0,1 – 0,5 mm |  |  |  |
| 6. | Max. weight of tape pad | 200 kg |  |  |  |
| 7. | Tape tension | 5 – 125 kg |  |  |  |
| 8. | Type of materials used for tapes | Cu , Al, Fe, FeZn |  |  |  |
| 9. | Welding device with a set of tooling for welding Al, Cu, Fe, FeZn | 1 piece  (Set) |  |  |  |
| 10. | Device for loading tapes into the taping head with a special sling | 1 piece  Set  Lifting capacity 250kg |  |  |  |
| 11. | Safe and soundproof housing for the taping head with electromagnetic lock | 1 piece |  |  |  |
| 12. | Rotation direction | right and left |  |  |  |
| 13. | Number of dies in the taping head | 3 pieces |  |  |  |
| 14. | Amount of self-centring rollers | 2 pieces |  |  |  |
| 15. | Additional control and signalling panel at the taping head | 1 piece |  |  |  |

## Cages for Ø 500mm bobbins

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| **Item** | **Functionality – Cages for Ø 500mm bobbins** | **Information on meeting required functionality by entering**  **YES or NO** |
| 1. | Spiral application of wires onto the cable core with a set lay length/pitch |  |
| 2. | Keeping uniform tension of wires with the whole range of speeds and core diameters whilst taking into account cable weight. |  |
| 3. | Cage rotations directions: S or Z |  |
| 4. | Individual braking for each bobbin set from the central control panel. Braking force variation proportional to the remaining content of the bobbin. |  |
| 5. | Soundproof housing |  |
| 6. | Possibility of installing and removal of the whole row of bobbins as well as of a single bobbin. |  |
| 7. | Wire break detection |  |
| 8. | For wires with the diameter of up to 0,8mm it should be possible to have double amount of wires on a bobbin. |  |
| 9. | For wires with diameter of more than 0.8mm only single wire on a bobbin. |  |
| 10. | Wires guiding system in the cage based on ceramic grommets |  |

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| **Item** | **Technical parameters – Cages for Ø 500mm bobbins** | **Value** | Information on meeting the requirement  (declare whether the value meets the requirement **by entering**  **YES or NO**) | Information on meeting the requirement  (**enter the parameter value of the offered item)** | Comments  (enter if applicable) |
| 1. | Number of bobbins | 30 pieces |  |  |  |
| 2. | pass-through pipe diameter | 200 mm |  |  |  |
|  | Number of cages | 2 pieces |  |  |  |

## Cage for Ø 500mm bobbins with the section for paying-off steel fiber optic tubes at a later time

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| **Item** | **Functionality – Cage for Ø 500mm bobbins with the section for paying-off steel fiber optic tubes** | **Information on meeting required functionality by entering**  **YES or NO** |
| 1. | Spiral application of wires and fibre optic tubes onto the cable core with a set lay length/pitch. |  |
| 2. | Keeping uniform tension of wires within the whole range of speeds, and core diameters whilst taking into account cable weight. |  |
| 3. | Direction of cage rotation: S or Z |  |
| 4. | Individual braking for each Ø 500mm bobbin, to be set from the main control panel. Braking force changeable proportionally to the amount of wire/tube remaining on the bobbin. |  |
| 5. | Soundproof housing |  |
| 6. | Possibility of placing and taking out the whole row of bobbins as well as a single individual bobbin. |  |
| 7. | Wire break detection. |  |
| 8. | For wires with diameter of up to 0.8mm it must be possible to have double amount of wires on a bobbin |  |
| 9. | For diameters of more than 0.8 mm only single wire on a bobbin |  |
| 10. | System of guiding wires in a cage based on ceramic grommets |  |

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| **Item** | **Technical parameters – Cage for Ø 500mm bobbins with the section for paying-off steel fiber optic tubes** | **Value** | Information on meeting the requirement  (declare whether the value meets the requirement **by entering**  **YES or NO**) | Information on meeting the requirement  (**enter the parameter value of the offered item)** | Comments  (enter if applicable) |
| 1. | Number of bobbins | 30 pieces |  |  |  |
| 2. | Diameter of the trough pipe | 200 mm |  |  |  |
| 3. | Number of cages + r paying-off 4 steel fibre optic tubes with the system protecting against tube twisting. | 1 piece |  |  |  |
| 4 | Dimensions of the spools for optical fibers | fi 600mm  Width 220mm |  |  |  |

## Dividing head for wires based on a system of adjustable rotating rollers

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| **Item** | **Functionality – Dividing head for wires based on a system of adjustable rotating rollers** | **Information on meeting required functionality by entering**  **YES or NO** |
| 1. | Uniform spacing around the circumference of the cable core regardless of the number of used wires |  |

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| **Item** | **Technical parameters -**   **Dividing head for wires based on a system of adjustable rotating rollers** | **Value** | Information on meeting the requirement  (declare whether the value meets the requirement **by entering**  **YES or NO**) | Information on meeting the requirement  (**enter the parameter value of the offered item)** | Comments  (enter if applicable) |
| 1. | Number of rotary rollers with adjustable angle on the dividing head | 94 |  |  |  |

## Closing die with fixing and position control

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| --- | --- | --- |
| **Item** | **Functionality – Closing die with fixing and position control** | **Information on meeting required functionality by entering**  **YES or NO** |
| 1. | Must enable uniform spacing of wires on the cable core |  |
| 2. | Possibility of linear movement of the closing die. |  |

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| **Item** | **Technical parameters – closing die with fixing and position control** | **Value** | Information on meeting the requirement  (declare whether the value meets the requirement **by entering**  **YES or NO**) | Information on meeting the requirement  (**enter the parameter value of the offered item)** | Comments  (enter if applicable) |
| 1. | Range of cable core diameters after application of wires | 15 – 160 mm |  |  |  |
| 2. | Range of closing die movement | Min 600 mm |  |  |  |

## Taping head for metallic tapes with a set of self-centring rollers at the entrance and exit of the head

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| **Item** | **Functionality – Taping head no. 2 for metallic tapes with a set of self-centring rollers at the entrance and exit of the head** | **Information on meeting required functionality by entering**  **YES or NO** |
| 1. | Application of one or two metallic tapes on the cable core at the same time, with an overlap or a gap/clearance. |  |
| 2. | Mechanical tape tension control |  |
| 3. | Tape break and tape end signalling by automatic line stop |  |
| 4. | Signalling and automatic line slow-down at the end of tape pads. |  |
| 5. | Possibility of welding (connecting) Cu, Al and FeZn tapes. |  |
| 6. | Device for loading metallic tapes onto the taping head (slewing jib crane with a special sling) |  |

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| **Item** | **Technical parameters-**  **Taping head for metallic tapes with the set of self-centring rollers at the entrance and exit** | **Value** | Information on meeting the requirement  (declare whether the value meets the requirement **by entering**  **YES or NO**) | Information on meeting the requirement  (**enter the parameter value of the offered item)** | Comments  (enter if applicable) |
| 1. | Quantity of taping heads | 1 piece |  |  |  |
| 2. | Amount of tape pads used | 2 piece |  |  |  |
| 3. | Tape pad diameter:  Inner diameter  Outer diameter | 100 mm  800 mm |  |  |  |
| 4. | Tape width | 10 – 50 mm |  |  |  |
| 5. | Tape thickness | 0,1 – 0,5 mm |  |  |  |
| 6. | Max. weight of tape pad | 200 kg |  |  |  |
| 7. | Tape tension | 5 – 125 kg |  |  |  |
| 8. | Type of materials used for tapes | Cu , Al, Fe, FeZn |  |  |  |
| 9. | Welding device with a set of tooling for welding Al, Cu, Fe, FeZn | 1 piece  (Set) |  |  |  |
| 10. | Device for loading tapes into the taping head with a special sling | 1 piece  Set  Lifting capacity 250kg |  |  |  |
| 11. | Safe and soundproof housing for the taping head with electromagnetic lock | 1 piece |  |  |  |
| 12. | Rotation direction | right and left |  |  |  |
| 13. | Number of dies in the taping head | 3 pieces |  |  |  |
| 14. | Amount of self-centring rollers | 2 pieces |  |  |  |
| 15. | Additional control and signalling panel at the taping head | 1 piece |  |  |  |

## Taping head for non-metallic fabric tapes with a self-centring roller at the exit

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| --- | --- | --- |
| **Item** | **Functionality – taping head for non-metallic fabric tapes with self-centring roller at the exit** | **Information on meeting required functionality**  **by entering**  **YES or NO** |
| 1. | Application of one or two non-metallic tapes over the cable core at the same time with an overlap or a gap/clearance. |  |
| 2. | Electronic tape tension control, controlled from the main control panel. |  |
| 3. | Tape break and tape end signalling by automatic line stop. |  |
| 4. | Signalling and automatic line slow-down at the end of tape pads. |  |

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| **Item** | **Technical parameters-**  **Taping head for non-metallic fabric tapes with a self-centring roller at the exit** | **Value** | Information on meeting the requirement  (declare whether the value meets the requirement **by entering**  **YES or NO**) | Information on meeting the requirement  (**enter the parameter value of the offered item)** | Comments  (enter if applicable) |
| 1. | Quantity of taping heads | 1 piece |  |  |  |
| 2. | Amount of tape pads used | 2 pieces |  |  |  |
| 3. | Tape pad diameter:  Inner diameter  Outer diameter | 100 mm  800 mm |  |  |  |
| 4. | Tape width | 10 – 80 mm |  |  |  |
| 5. | Tape thickness | 0,1 – 4 mm |  |  |  |
| 6. | Pad weight | 45 kg |  |  |  |
| 7. | Tape tension  Special modes of tension control depending on the type of material used | 0 – 20 kg  At least 3 programmes |  |  |  |
| 8. | Taping head to be in a safe soundproof housing with electromagnetic lock | Paper  PVC  Mylar  Semi-con swelling tape  Insulating swelling tape |  |  |  |
| 10. | Direction of rotations | Right and left |  |  |  |
| 11. | Number of dies in the taping head | 3 pieces |  |  |  |
| 12. | Amount of self-centring rollers | 2 pieces |  |  |  |
| 13. | Additional control and signalling panel at the taping head | 1 piece |  |  |  |

## Caterpillar-type metre counter

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| **Item** | **Functionality – Caterpillar-type metre counter** | **Information on meeting required functionality**  **by entering**  **YES or NO** |
| 1. | Measurement of currently produced core length |  |
| 2. | Possibility of reading measured length on the main control panel |  |
| 3. | Possibility of resetting the counter on the main line control panel |  |

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| **Item** | **Technical parameters – caterpillar-type metre counter** | **Value** | Information on meeting the requirement  (declare whether the value meets the requirement **by entering**  **YES or NO**) | Information on meeting the requirement  (**enter the parameter value of the offered item)** | Comments  (enter if applicable) |
| 1. | Measurement accuracy | min. 0,2 % | …. | …. |  |
| 2. | Quantity | 1 piece | …. | …. |  |
| 3. | Calibration certificate acc. to UE | Yes |  |  |  |

## Pulling caterpillar

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| --- | --- | --- |
| **Item** | **Functionality– Pulling caterpillar** | **Information on meeting required functionality**  **by entering**  **YES or NO** |
| 1. | Keeping uniform and stable tension of the cable core by synchronised operation with line operation |  |

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| **Item** | **Technical parameters–** **Pulling caterpillar** | **Value** | Information on meeting the requirement  (declare whether the value meets the requirement **by entering**  **YES or NO**) | Information on meeting the requirement  (**enter the parameter value of the offered item)** | Comments  (enter if applicable) |
| 1. | Cable diameter range | 25 – 180mm | …. | …. |  |
| 2. | Max weight of 1m of cable | 50 kg/m |  |  |  |
| 3. | Quantity | 1 piece | …. | …. |  |
| 4 | Production speed | 0 - 60 m/min |  |  |  |
| 5. | Self-centring rollers at the entrance and exit of the caterpillar | 2 pieces |  |  |  |

## Hydraulic cable cutters

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| **Item** | **Functionality – Hydraulic cable cutters** | Information on meeting required functionality  **enter**  **YES or NO** |
| 1. | Possibility of cutting the product |  |

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| **Item** | **Technical parameters –** **Hydraulic cable cutters** | **Value** | Information on meeting the requirement  (declare whether the value meets the requirement **by entering**  **YES or NO**) | Information on meeting the requirement  (**enter the parameter value of the offered item)** | Comments  (enter if applicable) |
| 1. | Cable cutters covering the diameter range of 0-180 mm with the pump and transport trolley | 1 piece |  |  |  |
| 2 | Jib crane for hanging cable cutters | 1 piece |  |  |  |

## Support roller

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| **Item** | **Functionality – Support roller** | Information on meeting required functionality  **enter**  **YES or NO** |
| 1. | Support roller with adjustable height facilitating core guiding to the take-up |  |

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| **Item** | **Technical parameters-**  **Traversing unit** | **Value** | Information on meeting the requirement  (declare whether the value meets the requirement **by entering**  **YES or NO**) | Information on meeting the requirement  (**enter the parameter value of the offered item)** | Comments  (enter if applicable) |
| 1. | Range of core diameters | 15 - 180mm |  |  |  |

## Take-up

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| **Item** | **Functionality – Take-up** | Information on meeting required functionality  **enter**  **YES or NO** |
| 1. | Possibility of spooling cable core produced onto take-up drums |  |
| 2. | Possibility of taking-up from the bottom |  |
| 3. | Automatic traverse during taking-up operation |  |
| 4. | Take-up operation synchronised with the whole line |  |
| 5. | Possibility of controlling with the use of a pendant station and a remote control |  |
| 6. | Drum pusher |  |

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| **Item** | **Technical parameters–** **Take-up** | **Value** | Information on meeting the requirement  (declare whether the value meets the requirement **by entering**  **YES or NO**) | Information on meeting the requirement  (**enter the parameter value of the offered item)** | Comments  (enter if applicable) |
| 1. | Number of Take-up devices | 1 piece | …. | …. |  |
| 2. | Range of drum sizes for take-up devices | The maximum range of the pay- off that can be implemented in the available space in the planned location in the production building  no less than :  height: 5,0m  Min. height: 2,2m  width: 5,0m  Min. width: 1,8m |  |  |  |
| 3. | Weight capacity | up to 95 T |  |  |  |
| 4. | Diameters of interchangeable pins | 123, 138, 178, 198, 248 mm |  |  |  |
| 5. | Quantity of interchangeable pins | 2 pieces per each diameter |  |  |  |
| 6. | Drum pusher for 100t drum | 1 piece |  |  |  |

## Line control

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| **Item** | **Functionality -line control** | Information on meeting required functionality  **enter**  **YES or NO** |
| 1. | Central main control panel with a touchscreen located near the dividing head |  |
| 2. | Auxiliary control panels installed at the pay-off, take-up and the taping heads that would enable change of production parameters and starting the machine |  |
| 3. | Control parameters and production parameters data to be recorded with the possibility of easy data export and reading on a separate computer – server location and external data carrier |  |
| 4. | Production history, trend analysis, possibility of printing the data |  |
| 5. | Integration with measuring systems |  |
| 6. | System of alarms connected with the line operation divided into priorities |  |
| 7. | Control panels, line operation button descriptions, and operating manuals are to be in Polish |  |

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| **Item** | **Technical parameters– Line control** | **Value** | Information on meeting the requirement  (declare whether the value meets the requirement **by entering**  **YES or NO**) | Information on meeting the requirement  (**enter the parameter value of the offered item)** | Comments  (enter if applicable) |
| 1. | Control panel | 1 piece | …. | …. |  |
| 2. | USB port | 2 pieces |  |  |  |
| 3. | Keyboard, controller and mouse | set |  |  |  |

## Additional equipment

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| **Item** | **Functionality– Additional equipment** | Information on meeting required functionality  **enter**  **YES or NO** |
| 1. | Machine vision with 4 cameras, monitor, CD/DVD writer |  |
| 2. | Cold pressure welding devices |  |
| 3. | Ultrasonic device for connecting textile tapes |  |
| 4. | Battery operated reciprocating saw with two batteries and a charger – must be possible to cut core with up to 180mm of diameter |  |

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| **Item** | **Technical parameters– Additional equipment** | **Value** | Information on meeting the requirement  (declare whether the value meets the requirement **by entering**  **YES or NO**) | Information on meeting the requirement  (**enter the parameter value of the offered item)** | Comments  (enter if applicable) |
| 1. | Machine vision (CCV) for viewing the following locations:  - take-up  - pay-off  - dividing head  - core behind the 1st taping head    Monitor and CD/DVD writer near the control panel – on the operator’s desk | 1 piece  Set |  |  |  |
| 2a | Manual cold pressure welder with a set of dies for wire diameters: Ø 0,7; 0,8; 0,95; 1,04mm | 1 piece |  |  |  |
| 2b | Table cold pressure welding machine with a set of dies for range of wire diameters: Ø 1,44; 1,63; 1,95; 2,20; 2,50; 3,0; 3,50; 4,0mm | 1 piece |  |  |  |
| 3 | Ultrasonic device for connecting textile fabric tapes together with sonotrodes with the following widths: 40; 60; 80 mm | 1 piece  Set |  |  |  |
| 4. | Battery operated reciprocating saw with two batteries and a charger – possibility of cutting cables with the diameter of up to 180mm | 1 piece  Set |  |  |  |

## Materials necessary for installation, start-up and commissioning tests. Supervision over the installation and start-up by line supplier representatives.

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| **Item** | **Functionality – Materials necessary for installation, start-up and commissioning tests of the line, supervision and start-up to be performed by supplier representatives** | Information on meeting required functionality  **enter**  **YES or NO** |
| 1. | Set of cabling and wiring |  |
| 2. | Control and power cabinets |  |
| 3. | cable trays and anchors |  |
| 4. | Remaining materials necessary for line installation and start-up |  |
| 5. | Set of tooling for commissioning tests with selected cables |  |
| 6. | Supplier supervision during line installation/; supplier conducted start-up |  |

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| **Item** | **Technical parameters – Materials necessary for installation, start-up and commissioning tests of the line, supervision and start-up to be performed by supplier representatives** | **Value** | Information on meeting the requirement  (declare whether the value meets the requirement by **entering**  **(YES or NO)** | Information on meeting the requirement  **(enter the parameter value of offered device)** | Comments  (enter if applicable) |
| 1. | Set of cabling/wiring  Control leads  Power supply cords  ICT cables  Special cables and connectors necessary for line connection and start up | 1 set  1 set  1set  1 set |  |  |  |
| 2. | Control and power cabinets  Power cabinets  Control cabinets | 1 set  1 set |  |  |  |
| 3. | Cable trays, anchors and other materials necessary for line installation and start-up | 1 set |  |  |  |
| 4. | Sets of tooling for commissioning tests on selected cables | 3 sets |  |  |  |
| 5. | Supplier supervision during installation and line supplier conducted start-up  a. supplier supervision during installation  b. line synchronisation and start-up  c. commissioning tests and training for personnel of the customer  d. costs connected with transport and accommodation of supplier representatives | min. 10 days  min. 35 days  min. 10 days  1 set |  |  |  |