

# SPECIFICATIONS

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## PET-POY (ATi-415R/10) SPINNING & TAKE-UP MACHINE Project No.

Line POY No.1 ~ 16

Line type A-1~4: 4 Lines for fine denier

Line type B-1~8: 8 Lines for regular denier

Line type C-1~3: 3 Lines for micro denier

Line type D-1: 1 line for coarse denier

DATE: November 05, 2009

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# 1. Main Specification

|       |                             |                                                                                                                                               |
|-------|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| 1.1   | Products                    | : Polyester POY                                                                                                                               |
|       |                             | On bobbin titer:                                                                                                                              |
|       |                             | Line A-1~4: 89~134dtex (80~120de)/24~48f                                                                                                      |
|       |                             | Line B-1~8: 134~267dtex (120~240de)/36~96f                                                                                                    |
|       |                             | Line C-1~3: 124~267dtex (112~240de)/72~288f                                                                                                   |
|       |                             | Line D-1: 267~533dtex (240~480de)/36~136f                                                                                                     |
|       |                             | After drawn:                                                                                                                                  |
|       |                             | Line A-1~4: 55~83dtex (50~75de)/24~48f<br>dpf range: 1.4~3.0 de/f                                                                             |
|       |                             | Line B-1~8: 83~167dtex (75~150de)/36~96f<br>dpf range: 1.0~3.4 de/f                                                                           |
|       |                             | Line C-1~3: 83~167dtex (70~150de)/72~288f<br>dpf range: 0.35~1.0                                                                              |
|       |                             | Line D-1: 220~334dtex (150~300de)/36~136f<br>dpf range: 2.0~5.6 de/f                                                                          |
| 1.2   | Number of Position and Line | : 3pos./ SB x 12SB / Line = 36pos / Line<br>36pos. / Line x 16Line = 576pos.                                                                  |
| 1.3   | Number of End / Position    | : 10                                                                                                                                          |
| 1.4   | Position Gauge              | : Line A-1~4: 1250mm (4 lines)<br>Line B-1~8: 1250mm (8 lines)<br>Line C-1~3: 1350mm (3 lines)<br>Line D-1: 1400mm (1 line)                   |
| 1.5   | Spin Finish System          | : Nozzle Oiling System on Spinning part                                                                                                       |
| 1.6   | Take-Up System              |                                                                                                                                               |
| 1.6.1 | Take-Up Speed               | : 2500 ~ 4000m/min (Mechanical)                                                                                                               |
| 1.6.2 | Take-Up Frame               | : With Godet Rolls                                                                                                                            |
| 1.6.3 | Take-Up Winder              | : Spindle Drive Auto Winder : ATi415R/10<br><br>Package size: $\phi$ 440 x 120L (16.7dm <sup>3</sup> )<br>Tube size: I.D.110 x O.D.124 x 150L |

## 2. Utility

### 2.1 Electricity

- |          |   |                                             |
|----------|---|---------------------------------------------|
| 1) Power | : | AC 440V±10%, 60Hz±1Hz<br>3 phases, 3W+PE+TE |
|          | : | AC 110V±10%, 60Hz±1Hz<br>1 phase<br>UPS     |

### 2.2 For Spinning

- |                                                                          |   |                                 |
|--------------------------------------------------------------------------|---|---------------------------------|
| 1) Compressed air (General air)                                          |   | For Freezing Valve              |
| Pressure                                                                 | : | 0.6 MPa<br>(Inlet of machine)   |
| Dew point                                                                | : | Less than -17 deg.C without oil |
| 2) Industrial water for Local Head                                       |   |                                 |
| Pressure                                                                 | : | 0.3 MPa<br>(Inlet of machine)   |
| Temperature                                                              | : | Less than 20 deg.C              |
| Turbidity                                                                | : | Less than 1°                    |
| Hardness                                                                 | : | Less than 7 ppm                 |
| CL-                                                                      | : | Less than 10 ppm                |
| 3) Industrial water for Extruder (applicable for Extruder spinning only) |   |                                 |
| Pressure                                                                 | : | 0.3 MPa<br>(Inlet of machine)   |
| Temperature                                                              | : | 25~30 deg.C                     |
| Turbidity                                                                | : | Less than 1°                    |
| Hardness                                                                 | : | Less than 7 ppm                 |
| CL-                                                                      | : | Less than 10 ppm                |
| 4) N2 gas for Extruder (applicable for Extruder spinning only)           |   |                                 |
| Pressure                                                                 | : | 50 kPa                          |
| Purity                                                                   | : | 99.999%                         |

### 2.3 For Take-Up

- |                                      |                                                                        |
|--------------------------------------|------------------------------------------------------------------------|
| 1) Compressed air (General air)      | For Aspirator                                                          |
| Pressure                             | : 0.6 MPa<br>(Inlet of machine)                                        |
| Dew point                            | : Less than -17 deg.C without oil                                      |
| Max. residual dust content           | : Particle size : Less than 5µm<br>Particle density : Less than 5mg/m3 |
| 2) Compressed air (High general air) | For Suction Gun                                                        |
| Pressure                             | : 0.9 MPa<br>(Inlet of Suction Gun)                                    |
| Dew point                            | : Less than -17 deg.C without oil                                      |
| Max. residual dust content           | : Particle size : Less than 5µm<br>Particle density : Less than 5mg/m3 |
| 3) Compressed air (Instrumental air) | For Migration Nozzle, Interlacing Nozzle, Winder                       |
| Pressure                             | : 0.7 MPa<br>(Inlet of machine)                                        |
| Dew point                            | : Less than -30 deg.C without oil                                      |
| Max. residual dust content           | : Particle size : Less than 5µm<br>Particle density : Less than 5mg/m3 |
| 4) Nil                               |                                                                        |
- Rev.9
- |                           |                                                                                |
|---------------------------|--------------------------------------------------------------------------------|
| 5) Take-up room condition | : Recommended room temperture :<br>Less than 26 deg.C.<br>Moisture: RH 60~75 % |
|---------------------------|--------------------------------------------------------------------------------|

### 3. Standards and Regulations

The machinery shall be produced in accordance with a combination of following standards which are suitable.

|                           |                                                                                                                                                                         |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| JIS                       | Japanese Industrial Standards                                                                                                                                           |
| JEM                       | Japan Electrical Manufactures Standard                                                                                                                                  |
| JEC                       | Japan Electro Technical Committee                                                                                                                                       |
| Others standards or codes | such as National standards of P.R.China for steel pressure vessels GB-150, etc..                                                                                        |
| The producer's practices  | Unless otherwise specified, all seller's supply equipment mentioned in the equipment list should be designed and manufactured in accordance with the Seller's standard. |

#### 3.1 Painting

According to TMT machinery standards

### 4. Documents

- 1) Specifications
- 2) Machine Layout
- 3) Drawing for Piping Connections
- 4) Instrumentation Diagram
- 5) Installation Manual
- 6) Operation Manual
- 7) Maintenance Manual
- 8) Wiring Diagram
- 9) Parts List

All the documents listed above are to be written in English and six copies each are to be furnished to the buyer.

## 5. Excluded Items(Not supplied by seller)

The following items are not supplied  
by the Seller :

- 1) Any other items and equipment not stated in this specification.
- 2) Wiring design, work and its materials out of the machine.
- 3) Piping design, work and its materials out of the machine.
- 4) Each connecting design, work and its materials between each machine.
- 5) Installation, insulation and adjusting work at the Buyer's site.
- 6) General tools for installation and maintenance.(Hoist, Lifter etc.)
- 7) Construction and foundation work at the Buyer's site.
- 8) "Ba", "Bb" and "Bc" in the list of equipment.
- 9) Air conditioning system and utility equipment.
- 10) All other items except "S" marks in this equipment list.

## 6. Item Numbers List

| Item Numbers | Equipment Name                    |
|--------------|-----------------------------------|
| 1000         | Spinning Machine                  |
| 1100         | Mechanical Equipment              |
| 1200         | Piping                            |
| 1300         | Pick Up Sensor                    |
| 2000         | Take-Up Machine                   |
| 2100         | Take-Up Frame and Accessories     |
| 2200         | Roller                            |
| 2300         | Piping                            |
| 2400         | Air Control Unit                  |
| 2500         | Winder                            |
| 3000         | Auxiliary Equipment               |
| 4000         | Electric Equipment                |
| 5000         | Consumable                        |
| 6000         | Testing and Inspection Facilities |
| 7000         | Tools                             |
| 7100         | Tools for Spinning                |
| 7200         | Tools for Take-Up frame           |
| 7250         | Tools for Take-Up Winder          |
| 7300         | Tools for Electrical Equipment    |
| 8000         | Stand by                          |
| 8500         | Mterials for performance test     |
| 9000         | Spare Parts                       |

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## 7. Supply scope

S

The Seller's supply equipment

Ba to Bc

The Buyer's supply equipment

The Buyer's supply equipment should be designed and manufactured according to

Ba

The Seller's reference drawings

Bb

The Seller's reference documents (catalogs, schematic drawings, diagrams, standards, etc.)

Bc

The Buyer's own design

C

The equipment which would be commonness use to the same items of another proposed line

Option

The Seller's supply equipment under another contract between the Buyer and the Seller



## 8. Equipment List

| Item No. | Equipment | Quantity | Specifications | Supply |
|----------|-----------|----------|----------------|--------|
|----------|-----------|----------|----------------|--------|

1000 Spinning Machine

1100 Mechanical Equipment

1101 Nil

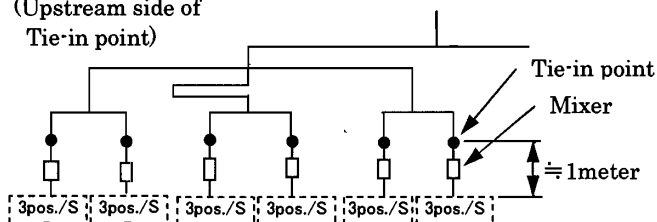
1102 Nil

1103 Polymer Pipe (PP)

1103-1 Polymer Pipe  
(Upstream side of  
Tie-in point)

16 sets a. 1 set for 1 line (36 positions)

Bc



b. Design basis

Temp. : 320 deg.C

Press. : 0.25 Mpa

24.5 Mpa for Process

c. Type : Jacket type

d. Heating : HTM vapor and/or liquid

1103-2 Polymer Pipe  
(from Tie-in point to Spinning  
beam)

192 sets

a. Type : Jacket type

S

b. Design basis

Temp. : 320 deg.C

Press. : 0.250 Mpa

24.5 Mpa for Process

c. to be assembled and welded at the  
plant site

1103-3 Insulation Cover

16 sets

a. Material : Calcium silicate

Bb

b. for the Item No. 1103-1, -2

1103-4 Nil

1103-5 Static Mixer

192 sets

a. Type : Kenics type (6 elements)

S

b. to be installed in

the Item No. 1103-2 by welding

c. for Line A: 25A08S x (48sets)

for Line B: 32A08S x (96sets)

for Line C: 32A08S x (36sets)

for Line D: 50A16S x (12sets)

## 8. Equipment List

| Item No. | Equipment                                     | Quantity | Specifications                                                                                                                                                                                                                                                                                                                                                                                                                          | Supply |
|----------|-----------------------------------------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 1104A    | Spinning Beam (SB) for Line type A            |          |                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |
| 1104A-1  | Spinning Beam<br>(For $\phi$ 85mm spinnerert) | 48 sets  | a. Type : Single side operation<br>b. Design basis<br>Temp. : 320 deg.C<br>Vessel press. : 0.250 MPa<br>Poly. pass(before GP) : 24.5 MPa<br>Poly. pass(after GP) : 34.5 MPa<br>c. No. of pos. / SB : 3pos. / SB<br>d. No. of end / pos. : 10end / pos.<br>e. Heating : HTM vapor<br>f. Poly. valve : Air freezing (1pc / pos.)<br>g. Pack loading : Bottom side<br>h. Pack fixation : Quick fitting<br>by special bayonet (90deg. turn) | S      |
| 1104A-2  | Insulation Cover                              | 48 sets  | a. Material : Glass wool<br>b. Finish : Carbon steel sheet<br>with silver paint                                                                                                                                                                                                                                                                                                                                                         | S      |
| 1104A-3  | Joint for Pack                                | 1440 pcs |                                                                                                                                                                                                                                                                                                                                                                                                                                         | S      |
| 1104B    | Spinning Beam (SB) for Line type B            |          |                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |
| 1104B-1  | Spinning Beam<br>(For $\phi$ 85mm spinnerert) | 96 sets  | a. Type : Single side operation<br>b. Design basis<br>Temp. : 320 deg.C<br>Vessel press. : 0.250MPa<br>Poly. pass(before GP) : 24.5 MPa<br>Poly. pass(after GP) : 34.5 MPa<br>c. No. of pos. / SB : 3pos. / SB<br>d. No. of end / pos. : 10end / pos.<br>e. Heating : HTM vapor<br>f. Poly. valve : Air freezing (1pc / pos.)<br>g. Pack loading : Bottom side<br>h. Pack fixation : Quick fitting<br>by special bayonet (90deg. turn)  | S      |
| 1104B-2  | Insulation Cover                              | 96 sets  | a. Material : Glass wool<br>b. Finish : Carbon steel sheet<br>with silver paint                                                                                                                                                                                                                                                                                                                                                         | S      |
| 1104B-3  | Joint for Pack                                | 2880 pcs |                                                                                                                                                                                                                                                                                                                                                                                                                                         | S      |

## 8. Equipment List

| Item No. | Equipment                                      | Quantity | Specifications                                                                                                                                                                                                                                                                                                                                                                                                                          | Supply |
|----------|------------------------------------------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 1104C    | Spinning Beam (SB) for Line type C             |          |                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |
| 1104C-1  | Spinning Beam<br>(For $\phi$ 85mm spinnerert)  | 36 sets  | a. Type : Single side operation<br>b. Design basis<br>Temp. : 320 deg.C<br>Vessel press. : 0.250 MPa<br>Poly. pass(before GP) : 24.5 MPa<br>Poly. pass(after GP) : 34.5 MPa<br>c. No. of pos. / SB : 3pos. / SB<br>d. No. of end / pos. : 10end / pos.<br>e. Heating : HTM vapor<br>f. Poly. valve : Air freezing (1pc / pos.)<br>g. Pack loading : Bottom side<br>h. Pack fixation : Quick fitting<br>by special bayonet (90deg. turn) | S      |
| 1104C-2  | Insulation Cover                               | 36 sets  | a. Material : Glass wool<br>b. Finish : Carbon steel sheet<br>with silver paint                                                                                                                                                                                                                                                                                                                                                         | S      |
| 1104C-3  | Joint for Pack                                 | 1080 pcs |                                                                                                                                                                                                                                                                                                                                                                                                                                         | S      |
| 1104D    | Spinning Beam (SB) for Line type D             |          |                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |
| 1104D-1  | Spinning Beam<br>(For $\phi$ 100mm spinnerert) | 12 sets  | a. Type : Single side operation<br>b. Design basis<br>Temp. : 320 deg.C<br>Vessel press. : 0.250 MPa<br>Poly. pass(before GP) : 24.5 MPa<br>Poly. pass(after GP) : 34.5 MPa<br>c. No. of pos. / SB : 3pos. / SB<br>d. No. of end / pos. : 10end / pos.<br>e. Heating : HTM vapor<br>f. Poly. valve : Air freezing (1pc / pos.)<br>g. Pack loading : Bottom side<br>h. Pack fixation : Quick fitting<br>by special bayonet (90deg. turn) | S      |
| 1104D-2  | Insulation Cover                               | 12 sets  | a. Material : Glass wool<br>b. Finish : Carbon steel sheet<br>with silver paint                                                                                                                                                                                                                                                                                                                                                         | S      |
| 1104D-3  | Joint for Pack                                 | 360 pcs  |                                                                                                                                                                                                                                                                                                                                                                                                                                         | S      |

## 8. Equipment List

| Item No. | Equipment                | Quantity        | Specifications                                                                                                                              | Supply |
|----------|--------------------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 1105A    | Gear Pump Driving System |                 |                                                                                                                                             |        |
| 1105A-1  | Spinning Gear Pump (GP)  | 144 sets        | a. Type : Double stage planetary<br>b. Displacement : 1.8cc / rev.<br>c. No. of inlet : 1<br>d. No. of outlet : 10                          | S      |
| 1105A-2  | GP Driving Motor         | 144 sets        | a. Kind of type : Synchronous motor<br>with cyclo reduction gear<br>b. Power and capacity : 440V / 1000<br>c. Reduction gear ratio : 1 / 59 | S      |
| 1105A-3  | GP Driving Unit          | 144 sets        | a. Type : Vertical type<br>c. Revolution : 7.7~30.5rpm<br>d. Accessory : Drive Shaft, Flex. Joint<br>Shear Pin, etc                         | S      |
| 1105B    | Gear Pump Driving System |                 |                                                                                                                                             |        |
| 1105B-1  | Spinning Gear Pump (GP)  | 72 sets         | For Line B-1,-3<br>a. Type : Double stage planetary<br>b. Displacement : 2.4 cc / rev.<br>c. No. of inlet : 1<br>d. No. of outlet : 10      | S      |
|          |                          | 216 sets        | For Line B-2,B-4~B-8<br>a. Type : Double stage planetary<br>b. Displacement : 3.0 cc / rev.<br>c. No. of inlet : 1<br>d. No. of outlet : 10 | S      |
| 1105B-2  | GP Driving Motor         | Rev.11 72 sets  | For Line B-1,-3<br>a. Kind of type : Synchronous motor<br>b. Power and capacity : 440V / 1200W<br>c. Reduction gear ratio : 1 / 59          | S      |
|          |                          | Rev.11 216 sets | For Line B-2,B-4~B-8<br>a. Kind of type : Synchronous motor<br>b. Power and capacity : 440V / 1600W<br>c. Reduction gear ratio : 1 / 59     | S      |
| 1105B-3  | GP Driving Unit          | 288 sets        | a. Type : Vertical type<br>c. Revolution : 7.7~30.5rpm<br>d. Accessory : Drive Shaft, Flex. Joint<br>Shear Pin, etc                         | S      |

## 8. Equipment List

| Item No. | Equipment                                | Quantity  | Specifications                                                                                                                                   | Supply |
|----------|------------------------------------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 1105C    | Gear Pump Driving System                 |           |                                                                                                                                                  |        |
| 1105C-1  | Spinning Gear Pump (GP)                  | 108 sets  | a. Type : Double stage planetary<br>b. Displacement : 2.4 cc / rev.<br>c. No. of inlet : 1<br>d. No. of outlet : 10                              | S      |
| 1105C-2  | GP Driving Motor                         | 108 sets  | a. Kind of type : Synchronous motor<br>with cyclo reduction gear<br>b. Power and capacity : 440V / 1200W<br>c. Reduction gear ratio : 1 / 59     | S      |
| 1105C-3  | GP Driving Unit                          | 108 sets  | a. Type : Vertical type<br>c. Revolution : 7.7~30.5rpm<br>d. Accessory : Drive Shaft, Flex. Joint<br>Shear Pin, etc                              | S      |
| 1105D    | Gear Pump Driving System                 |           |                                                                                                                                                  |        |
| 1105D-1  | Spinning Gear Pump (GP)                  | 36 sets   | a. Type : Double stage planetary<br>b. Displacement : 6.5 cc / rev.<br>c. No. of inlet : 1<br>d. No. of outlet : 10                              | S      |
| 1105D-2  | GP Driving Motor                         | 36 sets   | a. Kind of type : Synchronous motor<br>with cyclo reduction gear<br>b. Power and capacity : 440V / 2600W<br>c. Reduction gear ratio : 1 / 59     | S      |
| 1105D-3  | GP Driving Unit                          | 36 sets   | a. Type : Vertical type<br>c. Revolution : 7.7~30.5rpm<br>d. Accessory : Drive Shaft, Flex. Joint<br>Shear Pin, etc                              | S      |
| 1106A    | Spinning Pack<br>(for Line type A, B, C) | 5400 sets | a. Type : Round body, Forced seal<br>b. No. of spinneret / Pack : 1<br>c. Excluding Spinneret<br>d. Consumable parts : Mentioned<br>on 5000 Item | S      |
| 1106D    | Spinning Pack<br>(for Line type D)       | 360 sets  | a. Type : Round body, Forced seal<br>b. No. of spinneret / Pack : 1<br>c. Excluding Spinneret<br>d. Consumable parts : Mentioned<br>on 5000 Item | S      |
| 1107A    | Spinneret                                | 5400 pcs  | a. Type : Round type<br>b. Diameter : $\phi$ 85<br>c. Hole shape : Round<br>d. No. of holes : 24fil                                              | Ba     |

# 8. Equipment List

| Item No. | Equipment | Quantity | Specifications                                                                                        | Supply |
|----------|-----------|----------|-------------------------------------------------------------------------------------------------------|--------|
| 1107B    | Spinneret | 5400 pcs | a. Type : Round type<br>b. Diameter : $\phi 85$<br>c. Hole shape : Round<br>d. No. of holes : 144fil  | Ba     |
| 1107C    | Spinneret | 360 pcs  | a. Type : Round type<br>b. Diameter : $\phi 85$<br>c. Hole shape : Round<br>d. No. of holes : 48fil   | Ba     |
| 1107D    | Spinneret | 360 pcs  | a. Type : Round type<br>b. Diameter : $\phi 100$<br>c. Hole shape : Round<br>d. No. of holes : 288fil | Ba     |

## 8. Equipment List

| Item No. | Equipment                 | Quantity | Specifications                                                                                                                                                                            | Supply  |
|----------|---------------------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 1108     | HTM boiler re-boiler (HB) |          |                                                                                                                                                                                           | Rev.9   |
| 1108-1   | HTM re-boiler             | 32 sets  | a. Installation : On the spinning floor<br>b. Design basis<br>Temp. : 320 deg.C<br>Vessel press. : 0.250 MPa<br>c. Heating : Heating medium liquid<br>Rev.9 d. Heating capacity : (120)KW | S       |
|          |                           |          | e. Accessory : ①Rapture Disk, Safety Valve<br>Compound Gauge, etc<br>②Sight Glass,<br>f. 2 sets / line                                                                                    | Bb<br>S |
| 1108-2   | Insulation Cover          | 32 sets  | a. Material : Calcium silicate                                                                                                                                                            | Bb      |
| 1108-3   | Control valve             | 32 sets  | a.                                                                                                                                                                                        | S       |
| 1109A    | Hot-Zone (HZ)             | 144 sets | a. Adjustment : 2-steps<br>b. Accessory : Heat insulation plate, Shutter                                                                                                                  | S       |
| 1109A-1  | Quench Stage Heater       | 72 sets  | a. 1set / pos.<br>b. applicable for Machine type A-1, A-3 only                                                                                                                            | S       |
| 1109B    | Hot-Zone (HZ)             | 288 sets | a. Adjustment : 2-steps<br>b. Accessory : Heat insulation plate, Shutter                                                                                                                  | S       |
| 1109B-1  | Quench Stage Heater       | 108 sets | a. 1set / pos.<br>b. applicable for Machine type B-1, B-4, B-5 only                                                                                                                       | S       |
| 1109C    | Hot-Zone (HZ)             | 108 sets | a. Adjustment : 2-steps<br>b. Accessory : Heat insulation plate, Shutter                                                                                                                  | S       |
| 1109C-1  | Quench Stage Heater       | 108 sets | a. 1set / pos.                                                                                                                                                                            | S       |
| 1109D    | Hot-Zone (HZ)             | 36 sets  | a. Adjustment : 2-steps<br>b. Accessory : Heat insulation plate, Shutter                                                                                                                  | S       |
| 1109D-1  | Quench Stage Heater       | Nil      |                                                                                                                                                                                           |         |

## 8. Equipment List

| Item No. | Equipment                                  | Quantity | Specifications                                                                                                                                                              | Supply |
|----------|--------------------------------------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 1110A    | Quenching Stack (QS) for Line type A and B |          |                                                                                                                                                                             |        |
| 1110A-1  | Quenching Stack                            | 432 sets | a. Type : Cross flow<br>b. Blowing area :<br>Width : (1150)mm<br>Length : 1200mm<br>c. Major material : Carbon steel<br>d. Front door : Detachable type,<br>swing open door | S      |
| 1110A-2  | Interfloor Tube                            | 432 sets | a. Major material : AL<br>b. Shutter : Slide open type                                                                                                                      | Ba     |
| 1110A-3  | Flow Control Valve                         | 432 sets | a. Manual operation<br>b. 1set/pos.                                                                                                                                         | S      |
| 1110A-4  | Bellows                                    | 432 sets | a. 1set/pos.                                                                                                                                                                | S      |
| 1110C    | Quenching Stack (QS) for Line type C       |          |                                                                                                                                                                             |        |
| 1110C-1  | Quenching Stack                            | 108 sets | a. Type : Circular Inner Quench<br>b. 10 Spinnerets/chamber<br>c. Major material : Stainless steel<br>d. With up-down device<br>by pneumatic cylinder                       | S      |
| 1110C-2  | Interfloor Tube                            | 108 sets | a. Major material : AL<br>b. Shutter : Slide open type                                                                                                                      | Ba     |
| 1110C-3  | Flow Control Valve                         | 108 sets | a. Manual operation<br>b. 1set/pos.                                                                                                                                         | S      |
| 1110C-4  | Bellows                                    | 108 sets | a. 1set/pos.                                                                                                                                                                | S      |
| 1110D    | Quenching Stack (QS) for Line type D       |          |                                                                                                                                                                             |        |
| 1110D-1  | Quenching Stack                            | 36 sets  | a. Type : Cross flow<br>b. Blowing area :<br>Width : (1300)mm<br>Length : 1200mm<br>c. Major material : Carbon steel<br>d. Front door : Detachable type,<br>swing open door | S      |
| 1110D-2  | Interfloor Tube                            | 36 sets  | a. Major material : AL<br>b. Shutter : Slide open type                                                                                                                      | Ba     |
| 1110D-3  | Flow Control Valve                         | 36 sets  | a. Manual operation<br>b. 1set/pos.                                                                                                                                         | S      |
| 1110D-4  | Bellows                                    | 36 sets  | a. 1set/pos.                                                                                                                                                                | S      |



## 8. Equipment List

| Item No. | Equipment                                  | Quantity | Specifications                                                                                                                                                                                                                                | Supply |
|----------|--------------------------------------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 1111A    | Branch Air Duct<br>(for Line type A and B) | 432 sets | a. Material : Galvanized steel sheet<br>b. 1set/pos.                                                                                                                                                                                          | Ba     |
| 1111C    | Branch Air Duct<br>(for Line type C)       | 108 sets | a. Material : Galvanized steel sheet<br>b. 1set/pos.                                                                                                                                                                                          | Ba     |
| 1111D    | Branch Air Duct<br>(for Line type D)       | 36 sets  | a. Material : Galvanized steel sheet<br>b. 1set/pos.                                                                                                                                                                                          | Ba     |
| 1112A    | Spin Finish System (for Line type A)       |          |                                                                                                                                                                                                                                               |        |
| 1112A-1  | Nozzle Oiling Unit                         | 144 sets | a. Location : Inside of QS<br>b. No. of nozzles : 10 Nozzles / set<br>c. Adjustable range : 700 ~ 1400mm<br>from Spinneret surface<br>d. Piping : NO-GP~Oiling Nozzle~<br>Drain tube (Soft nylon tube)<br>e. Accessory : Bracket, Tray, Cover | S      |
| 1112A-2  | Nozzle Oiling Gear Pump<br>(NO-GP)         | 144 sets | a. Displacement : 0.05cc / rev.<br>b. No. of inlet : 1<br>c. No. of outlet : 10<br>d. Revolution : up to 40rpm                                                                                                                                | S      |
| 1112A-3  | NO-GP Driving Unit                         | 144 sets | a. Kind of type : Geared induction<br>motor<br>b. Power and capacity : 440V / 100W<br>c. Reduction gear ratio : 1 / 30<br>d. Accessory : Coupling, Base Plate<br>and Pump Holder                                                              | S      |
| 1112B    | Spin Finish System (for Line type B)       |          |                                                                                                                                                                                                                                               |        |
| 1112B-1  | Nozzle Oiling Unit                         | 288 sets | a. Location : Inside of QS<br>b. No. of nozzles : 10 Nozzles / set<br>c. Adjustable range : 700 ~ 1400mm<br>from Spinneret surface<br>d. Piping : NO-GP~Oiling Nozzle~<br>Drain tube (Soft nylon tube)<br>e. Accessory : Bracket, Tray, Cover | S      |
| 1112B-2  | Nozzle Oiling Gear Pump<br>(NO-GP)         | 72 sets  | For Line B-1,-3<br>a. Displacement : 0.08 cc / rev.<br>b. No. of inlet : 1<br>c. No. of outlet : 10<br>d. Revolution : up to 40rpm                                                                                                            | S      |
|          |                                            | 216 sets | For Line B-2,B-4~B-8<br>a. Displacement : 0.12 cc / rev.<br>b. No. of inlet : 1<br>c. No. of outlet : 10<br>d. Revolution : up to 40rpm                                                                                                       | S      |

# 8. Equipment List

| Item No. | Equipment          | Quantity | Specifications                                                                                                                                                             | Supply |
|----------|--------------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 1112B-3  | NO-GP Driving Unit | 288 sets | a. Kind of type : Geared induction motor<br>b. Power and capacity : 440V / 100W<br>c. Reduction gear ratio : 1 / 30<br>d. Accessory : Coupling, Base Plate and Pump Holder | S      |

## 8. Equipment List

| Item No. | Equipment                            | Quantity | Specifications                                                                                                                                                                                                                                 | Supply |
|----------|--------------------------------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 1112C    | Spin Finish System (for Line type C) |          |                                                                                                                                                                                                                                                |        |
| 1112C-1  | Nozzle Oiling Unit                   | 108 sets | a. Location : Inside of QS<br>b. No. of nozzles : 10 Nozzles / set<br>c. Adjustable range : 700 ~ 1400mm<br>from Spinneret surface<br>d. Piping : NO-GP~Oiling Nozzle~<br>Drain tube (Soft nylon tube)<br>e. Accessory : Bracket, Tray, Cover  | S      |
| 1112C-2  | Nozzle Oiling Gear Pump<br>(NO-GP)   | 36 sets  | For Line C-1<br>a. Displacement : 0.12 cc / rev.<br>b. No. of inlet : 1<br>c. No. of outlet : 10<br>d. Revolution : up to 40rpm                                                                                                                | S      |
|          |                                      | 72 sets  | For Line C-2,-3<br>a. Displacement : 0.08 cc / rev.<br>b. No. of inlet : 1<br>c. No. of outlet : 10<br>d. Revolution : up to 40rpm                                                                                                             |        |
| 1112C-3  | NO-GP Driving Unit                   | 108 sets | a. Kind of type : Geared induction<br>motor<br>b. Power and capacity : 440V / 100W<br>c. Reduction gear ratio : 1 / 30<br>d. Accessory : Coupling, Base Plate<br>and Pump Holder                                                               | S      |
| 1112D    | Spin Finish System (for Line type D) |          |                                                                                                                                                                                                                                                |        |
| 1112D-1  | Nozzle Oiling Unit                   | 36 sets  | a. Location : Inside of QS<br>b. No. of nozzles : 10 Nozzles / set<br>c. Adjustable range : 1000 ~ 1600mm<br>from Spinneret surface<br>d. Piping : NO-GP~Oiling Nozzle~<br>Drain tube (Soft nylon tube)<br>e. Accessory : Bracket, Tray, Cover | S      |
| 1112D-2  | Nozzle Oiling Gear Pump<br>(NO-GP)   | 36 sets  | a. Displacement : 0.16 cc / rev.<br>b. No. of inlet : 1<br>c. No. of outlet : 10<br>d. Revolution : up to 40rpm                                                                                                                                | S      |
| 1112D-3  | NO-GP Driving Unit                   | 36 sets  | a. Kind of type : Geared induction<br>motor<br>b. Power and capacity : 440V / 100W<br>c. Reduction gear ratio : 1 / 30<br>d. Accessory : Coupling, Base Plate<br>and Pump Holder                                                               | S      |
| 1113     | Vent Box                             | 32 sets  |                                                                                                                                                                                                                                                | Bb     |
| 1114     | Local Head Tank (HT)                 | 32 sets  | a. Cooling : Coil of cooling water                                                                                                                                                                                                             | Bb     |

# 8. Equipment List

| Item No. | Equipment                              | Quantity | Specifications                                                                               | Supply |
|----------|----------------------------------------|----------|----------------------------------------------------------------------------------------------|--------|
| 1115     | Spinning Machine Frame                 |          |                                                                                              |        |
| 1115-1   | SB Supporting Frame                    | 16 sets  | a. Major material : Carbon steel                                                             | Ba     |
| 1115-2   | GP Driving Unit Supporting Frame       | 16 sets  | a. Major material : Carbon steel                                                             | Ba     |
| 1115-3   | Spinning Floor Opening Frame and Plate | 16 sets  | a. Major material : Carbon steel                                                             | Ba     |
| 1115-4   | Nil                                    |          |                                                                                              |        |
| 1115-5   | Nil                                    |          |                                                                                              |        |
| 1200     | Piping                                 |          |                                                                                              |        |
| 1201     | Piping for Outside Machine             |          |                                                                                              |        |
| 1201-1   | Utility Piping                         | 16 lots  | a. For Water, Compressed air                                                                 | Bb     |
| 1201-2   | HTM Vapor Piping                       | 32 lots  | a. For HTM supply, Drain, Venting                                                            | Bb     |
| 1201-3   | Special Parts for HTM Piping           | 32 lots  | a. Valves, Compound gauge, Joint, expansion                                                  | Bb     |
| 1201-4   | Spin Finish Oil Piping                 | 32 lots  | a. Oil preparation facilities<br>~ Local Head Tank                                           | Bc     |
|          |                                        | 32 sets  | b. Local Head Tank outlet ~ NO-GP inlet and Oil cock for GP<br>Material : SUS and Nylon tube | Bb     |
|          |                                        | 32 lots  | c. Drain piping                                                                              | Bc     |

## 8. Equipment List

| Item No. | Equipment                                    | Quantity | Specifications                                                                                       | Supply |
|----------|----------------------------------------------|----------|------------------------------------------------------------------------------------------------------|--------|
| 1300     | Pick Up Sensor                               |          |                                                                                                      |        |
| 1301     | Nil                                          |          |                                                                                                      |        |
| 1302     | For SB and Polymer Pipe                      |          |                                                                                                      |        |
| 1302-1   | Temp. Sensor for Polymer                     | 32 sets  | a. For monitoring,<br>Pt100Ω Double Element<br>(after GP)                                            | S      |
| 1302-2   | Temp. Sensor for HTM Vapor<br>of SB          | 192 sets | a. For monitoring,<br>Pt100Ω Single Element                                                          | S      |
| 1302-3   | Temp. Sensor for Quench<br>Stage Heater      | 288 sets | a. For control<br>Pt100Ω Double Element                                                              | S      |
| 1302-4   | Pressure Transmitter<br>for polymer          | 16 sets  | a. For monitoring<br>b. 1set for 1line<br>c. to be installed on the Polymer pipe<br>Item No. 1103-1. | Bb     |
| 1302-5   | Pressure Tansmitter for<br>Polymer           | 32 sets  | a. For monitoring (after GP)                                                                         | S      |
| 1302-6   | Temp. Sensor for Vent box                    | 32 sets  |                                                                                                      | Bb     |
| 1302-7   | Pressure Tansmitter for<br>Polymer           | 32 sets  | a. For monitoring (Before GP)                                                                        | S      |
| 1303     | Nil                                          |          |                                                                                                      |        |
| 1305     | Terminal box                                 | 1 lot    |                                                                                                      | Bb     |
| 1340     | Temp. and Pressure sensors for HTM Re-boiler |          |                                                                                                      |        |
| 1341     | Temp. sensor for HTM vapor                   | 32 pcs   | a. for control,<br>Pt100Ω double elements                                                            | S      |
| 1342     | Nil                                          |          |                                                                                                      |        |
| 1343     | Nil                                          |          |                                                                                                      |        |
| 1344     | Compound gauge                               | 32 sets  | a. for monitoring and alarming<br>b. with pressure switch, (H) and (HT)                              | Bb     |
| 1345     | Compound gauge                               | 32 sets  | a. for monitoring of RD condition<br>b. with pressure switch (H)                                     | Bb     |
| 1346     | Level transmitter                            | 32 sets  | a. for monitoring and alarming                                                                       | S      |
| 1347     | Nil                                          |          |                                                                                                      |        |
| 1348     | Nil                                          |          |                                                                                                      |        |
| 1349     | Nil                                          |          |                                                                                                      |        |

## 8. Equipment List

| Item No. | Equipment                     | Quantity | Specifications                                                                                                                   | Supply |
|----------|-------------------------------|----------|----------------------------------------------------------------------------------------------------------------------------------|--------|
| 2000     | Take-Up Machine               |          |                                                                                                                                  |        |
| 2100     | Take-Up Frame and Accessories |          |                                                                                                                                  |        |
| 2101     | Take-Up Frame                 |          |                                                                                                                                  |        |
| 2101-1   | Frame                         | 96 sets  | a. 1set/6pos. , 10 ends/pos.                                                                                                     | S      |
| 2101-2   | Safety Guard on Platform      | 96 sets  | a. 1set/6pos                                                                                                                     | S      |
| 2101-3   | Ladder (or Stairs)            | 1 lot    | a. 2sets/1line                                                                                                                   | S      |
| 2102     | Yarn Guide Set                |          |                                                                                                                                  |        |
| 2102-1   | Yarn Guide Bracket            | 576 sets | a. For 10 thread lines/pos.<br>without Yarn Guide                                                                                | S      |
| 2102-2   | Yarn Guide                    | 576 sets | a. 10 guides/set<br>b. 1set/pos.                                                                                                 | S      |
| 2103     | Nil                           |          |                                                                                                                                  |        |
| 2104     | Aspirator and Cutter          | 576 sets | a. With gathering guides for threads                                                                                             | S      |
| 2105     | Migration Nozzle              |          |                                                                                                                                  |        |
| 2105-1   | Casing and Bracket            | 576 sets | a. Location: Up side of GR1<br>b. With drain port and fume port                                                                  | S      |
| 2105-2   | Nozzle                        | 576 sets | a. 10 nozzles/set<br>b. Nozzle model: Japanese Maker<br>Line-A,B,C: $\phi 1.4 \times 1$ Hole<br>Line-D: $\phi 1.8 \times 1$ Hole | S      |
| 2105-3   | Guide                         | 576 sets | a. 20 pcs/set<br>b. Dog tail guide                                                                                               | S      |
| 2105-4   | Regulator                     | 96 sets  | a. For Migration Nozzle<br>b. 1set/6pos                                                                                          | S      |
| 2105-5   | Solenoid Valve                | 576 sets |                                                                                                                                  | S      |

## 8. Equipment List

| Item No. | Equipment          | Quantity | Specifications                                                                                                                    | Supply |
|----------|--------------------|----------|-----------------------------------------------------------------------------------------------------------------------------------|--------|
| 2106     | Interlacing Nozzle |          |                                                                                                                                   |        |
| 2106-1   | Casing and Bracket | 576 sets | a. Location :<br>Downstream side of GR2<br>b. With drain port and fume port                                                       | S      |
| 2106-2   | Nozzle             | 576 sets | a. 10 nozzles/set<br>b. Nozzle model : Japanese Maker<br>Line-A,B,C: $\phi 1.2 \times 2$ Hole<br>Line-D: $\phi 1.3 \times 2$ Hole | S      |
| 2106-3   | Guide              | 576 sets | a. 20 pcs/set<br>b. Dog tail guide                                                                                                | S      |
| 2106-4   | Solenoid Valve     | 576 sets |                                                                                                                                   | S      |
| 2106-5   | Regulator          | 96 sets  | a. For Interlacing Nozzle<br>b. 1set/6pos                                                                                         | S      |
| 2107     | Nil                |          |                                                                                                                                   |        |
| 2108     | Nil                |          |                                                                                                                                   |        |
| 2109     | Nil                |          |                                                                                                                                   |        |
| 2110     | Nil                |          |                                                                                                                                   |        |
| 2111     | Main Switch        |          |                                                                                                                                   |        |
| 2111-1   | Casing             | 576 sets | a. Installed on the front end of the winder                                                                                       | S      |
| 2111-2   | Switches           | 576 sets | a. Operation switches for<br>•GR drives<br>•Nil<br>•Doffing time indicator<br>•ASP & cutter<br>•Spinning room call                | S      |
| 2112     | Sub Switch         |          |                                                                                                                                   |        |
| 2112-1   | Casing             | 576 sets | a. Installed on the front panel of upper frame, below GR2                                                                         | S      |
| 2112-2   | Switches           | 576 sets | a. Operation switches for<br>•GR drives<br>•ASP & cutter ASP<br>•Spinning room call<br>•Position stop<br>•Full Package Lamp       | S      |
| 2113     | Nil                |          |                                                                                                                                   |        |
| 2114     | Foundation         |          |                                                                                                                                   |        |
| 2114-1   | Foundation Rail    | 96 sets  | a. 1set/6pos.                                                                                                                     | Ba     |
| 2114-2   | Base Plate         | 96 sets  | a. 1set/6pos.                                                                                                                     | Ba     |

## 8. Equipment List

| Item No. | Equipment           | Quantity | Specifications                                                                                                                                                                                                                                                                                                                  | Supply |
|----------|---------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 2201     | Godet Roll-1 (GR-1) | 576 sets | a. Single roll arrangement<br>b. Cold roll with driving motor<br>c. Model : TGR-41614<br>d. Drive :<br>3 phase permanent type induction<br>start synchronous motor (900W)<br>e. Feeding speed : 1000~4000m/min.<br>f. Roll dimension : $\phi$ 160×140L<br>g. Surface : Ceramic coating , mat<br>h. Bearing lubrication : Grease | S      |
| 2202     | Nil                 |          |                                                                                                                                                                                                                                                                                                                                 |        |
| 2203     | Godet Roll-2 (GR-2) | 576 sets | a. Single roll arrangement<br>b. Cold roll with driving motor<br>c. Model : TGR-41614<br>d. Drive :<br>3 phase permanent type induction<br>start synchronous motor (900W)<br>e. Feeding speed : 1000~4000m/min.<br>f. Roll dimension : $\phi$ 160×140L<br>g. Surface : Ceramic coating , mat<br>h. Bearing lubrication : Grease | S      |
| 2204     | Nil                 |          |                                                                                                                                                                                                                                                                                                                                 |        |



## 8. Equipment List

| Item No. | Equipment                  | Quantity | Specifications                                                                                                                                                                                               | Supply |
|----------|----------------------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 2301     | Piping for Inside Machine  |          |                                                                                                                                                                                                              |        |
| 2301-1   | Compressed Air Piping      | 16 sets  | a. 1set/1line<br>For<br>•Migration Nozzle<br>•Interlacing Nozzle<br>•Aspirator<br>•Winder actuation                                                                                                          | S      |
| 2301-2   | Nil                        |          |                                                                                                                                                                                                              |        |
| 2301-3   | Nil                        |          |                                                                                                                                                                                                              |        |
| 2301-4   | Nil                        |          |                                                                                                                                                                                                              |        |
| 2301-5   | Fume Exhaust Hose          | 1 lot    | a. Between fume port of MN case and main fume duct (including hose clamp, excluding main fume duct)<br><br>b. Between fume port of IL case and main fume duct (include hose clamp, excluding main fume duct) | Bb     |
| 2302     | Piping for Outside Machine |          |                                                                                                                                                                                                              |        |
| 2302-1   | Utility Piping             | 1 lot    | a. For outside machine<br><br>b. For water and compressed air such as piping materials including supports, fittings, valves, accessories, insulation, etc.                                                   | Bc     |
| 2302-2   | Fume Exhaust Duct          | 1 lot    | a. For outside machine                                                                                                                                                                                       | Bc     |
| 2302-3   | Exhaust Header and Branch  | 1 lot    | a. Behind the Take-Up Frame                                                                                                                                                                                  | Bb     |
| 2302-4   | Compressed Air Piping      | 1 lot    | a. Between Air Control Unit and each compressed air headers of the Take-Up Frame<br><br>b. Nil<br>c. Nil                                                                                                     | Bb     |
| 2302-5   | Nil                        |          |                                                                                                                                                                                                              |        |
| 2302-6   | Waste Yarn Pipe            | 1 lot    | a. Stainless pipe (4m) 2pcs/pos.                                                                                                                                                                             | Bb     |

# 8. Equipment List

| Item No. | Equipment        | Quantity | Specifications                                                                                                                                                                                                                                                                                                                                               | Supply |
|----------|------------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 2401     | Air Control Unit | 16 sets  | <p>a. 1set/1line</p> <p>b. Compressed air distribution function for Winders</p> <p>c. With pressure gauges, air filters and air regulators for distribution line</p> <p>d. Regulators and air filters for MN and IL are mounted on the back side of each line</p> <p>e. Regulator and air filter for Aspirator are mounted on the back side of each line</p> | S      |
| 2402     | Nil              |          |                                                                                                                                                                                                                                                                                                                                                              |        |
| 2403     | Nil              |          |                                                                                                                                                                                                                                                                                                                                                              |        |
| 2404     | Nil              |          |                                                                                                                                                                                                                                                                                                                                                              |        |

## 8. Equipment List

| Item No. | Equipment | Quantity | Specifications | Supply |
|----------|-----------|----------|----------------|--------|
|----------|-----------|----------|----------------|--------|

2501 Winder

576 sets

a. Type : ATi415R/10

S

b. Speed range : 2500-4000m/min

c. Winding method

: Spindle drive

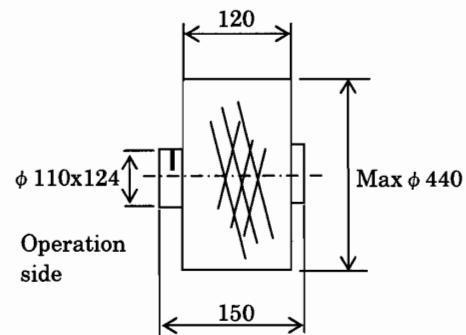
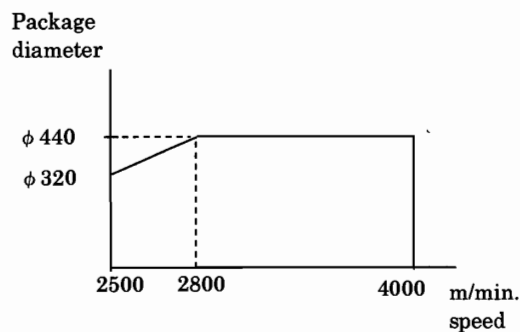
: Speed control

: Traverse control

d. Package size

: O.D.440mm, 120mm stroke

: 10 cops, 16.7dm<sup>3</sup>/cop



The above figure represents theoretical and ideal shape. The shape and dimensions of the package including winding width may rather vary depending on the winding conditions.

e. Tube size

: I.D. 110mm, 150mm length

f. Traverse system

: Rotary traverse system

g. Lubrication for bearings

Bobbin holder : Grease

Contact roll : Grease

Traverse : Grease

h. Accessories

: Threading up device

: Pushing off device for packages

: Wrap detector for contact roll

: Pivot guides for yarn traverse

: Yarn break sensors

(Optical, Non contact type)

## 8. Equipment List

| Item No. | Equipment                      | Quantity | Specifications                                                                                   | Supply |
|----------|--------------------------------|----------|--------------------------------------------------------------------------------------------------|--------|
| 3000     | Auxiliary Equipment            |          |                                                                                                  |        |
| 3101     | Air Conditioner for QS         | 1 set    | a. Capacity : ***Nm <sup>3</sup> / min                                                           | Bc     |
| 3102     | Main Air Duct for QS           | 16 set   |                                                                                                  | Bc     |
| 3201     | Suction Gun Unit               |          |                                                                                                  |        |
| 3201-1   | Suction Gun                    | 96 sets  | a. Consists of<br>Model: Heberlein Lufan HS/7-2'<br>Air supply hose: 10m<br>Waste yarn hose: 10m | S      |
| 3201-2   | Air Coupler Unit               | 96 sets  | a. Coupler and Valve                                                                             | S      |
| 3201-3   | Waste Yarn Box for Suction Gun | 96 sets  | a. Installation location :<br>Front of the Take-Up Frame                                         | Bc     |
| 3202     | Waste Yarn Box for Aspirator   | 96 sets  | a. 1set/6pos.<br><br>b. Installation location :<br>Behind the Take-Up Frame                      | Bc     |
| 3203     | Fume Extraction Blower         | 1 lot    |                                                                                                  | Bb     |

# 8. Equipment List

| Item No. | Equipment                           | Quantity           | Specifications                                                                                                                                | Supply |
|----------|-------------------------------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 4000     | Electric Component                  |                    |                                                                                                                                               |        |
| 4100     | Spinning(Elec. & Instrument)        |                    |                                                                                                                                               |        |
| 4101     | Nil<br>Instrument Cabinet           | 16 sets            | a. Type:Self-standing                                                                                                                         | S      |
| 4101-1   | Nil<br>PLC<br>(CPU,COM,AI/AO,DI/DO) | 16 sets            | a. Function<br>:SB temperature monitor<br>:Vent box temperature alarm<br>:Pack bottom heater control<br>:GP polymer pressure monitor<br>:     |        |
| 4102     | Nil                                 |                    |                                                                                                                                               |        |
| 4103A    | Nil<br>Remote IO Box                | 32 sets            | a. Type:Wall mount<br>b. Input sensor<br>:Temperature sensor from<br>—SB,Vent, QS, etc.<br>:Pressure sensor from GP, etc.                     | S      |
| 4104A    | Heater Control Cabinet              | 8 sets             | a. Type:Self-standing<br>b. Heater power control device<br>: For Quench Stage Heater                                                          | S      |
| 4104B    | Nil<br>Heater Control Cabinet       | Rev.9<br>16-5 sets | a. Type:Self-standing<br>b. Heater power control device<br>: For HTM reboiler<br>c. 1 controller / 1 reboiler<br>d. 8 reboiler controll / set | S      |

## 8. Equipment List

| Item No. | Equipment                                          | Quantity | Specifications                                                                                                                                               | Supply |
|----------|----------------------------------------------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 4105     | Nil<br>Setting & Monitoring Unit for Spinning      | 4 sets   | a. Type: Desk-top<br><br>b. Function<br>:- Parameter setting & monitoring<br>:- Process value monitoring<br>:- Trend graph<br>:- Historical alarm monitoring |        |
| 4105-1   | Nil Personal Computer                              | 4 sets   | a. Hardware<br>b. License Software                                                                                                                           | S      |
| 4105-2   | Nil LCD Display                                    | 4 sets   |                                                                                                                                                              | S      |
| 4105-3   | Nil Printer                                        | 4 sets   |                                                                                                                                                              | Bb     |
| 4105-4   | Nil Desk                                           | 4 sets   |                                                                                                                                                              | Be     |
| 4106     | Nil<br><del>Inverter Cabinet for GP &amp; NO</del> | Nil      | Installed Take-up cabinet                                                                                                                                    |        |
| 4106-1   | Nil Cabinet                                        | Nil      |                                                                                                                                                              |        |
| 4106-2   | Nil Inverter for GP                                | Nil      |                                                                                                                                                              |        |
| 4106-3   | Nil <del>Inverter for NO</del>                     | Nil      |                                                                                                                                                              |        |
| 4107     | Nil                                                |          |                                                                                                                                                              |        |
| 4108     | Switch Box for Spinning                            | 576 sets | a. Type: Wall mount<br><br>b. Spinning GP on/off switch & lamp<br>Nozzle Oiling on/off switch & lamp<br>Take-Up room call switch & lamp                      | S      |

# 8. Equipment List

| Item No.        | Equipment                                      | Quantity          | Specifications                                                                                                                                  | Supply |
|-----------------|------------------------------------------------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 4109            | Wiring and Wiring Materials                    | 1 lot             | a. Wiring from power station to each cabinets<br>b. Wiring from control cabinet to each equipment<br>c. Wiring and wiring materials except 4110 | Bb     |
| 4110            | Special Wiring Materials                       | 1 lot             | a. Communication cable<br>b. Material supply only, wire cutting and assembling work should be required at site                                  | S      |
| <del>4111</del> | <del>Nil</del><br>Monitoring Unit for Spinning | <del>1 sets</del> | <del>a. Type-Desk-top</del><br><del>b. Function</del><br><del>-Process value monitoring</del>                                                   |        |
| 4111-1          | <del>Nil</del> Personal Computer               | <del>1 sets</del> | <del>a. Hardware</del><br><del>b. License Software</del>                                                                                        | S      |
| 4111-2          | <del>Nil</del><br>LCD Display                  | <del>1 sets</del> |                                                                                                                                                 | S      |
| 4111-3          | <del>Nil</del><br>Printer                      | <del>1 sets</del> |                                                                                                                                                 | Bb     |
| 4111-4          | <del>Nil</del> Desk                            | <del>1 sets</del> |                                                                                                                                                 | Be     |

## 8. Equipment List

| Item No. | Equipment                            | Quantity  | Specifications                                                                                                                                            | Supply |
|----------|--------------------------------------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 4200     | Take-Up & Winder(Elec. & Instrument) |           |                                                                                                                                                           |        |
| 4201     | Nil                                  |           |                                                                                                                                                           |        |
| 4202     | Nil                                  |           |                                                                                                                                                           |        |
| 4203     | Winder Control Box(mount)            | 576 sets  | a. Type:Winder mount<br>b. Function:Winder control                                                                                                        | S      |
| 4203-1   | Inverter for Winder                  | 576 sets  |                                                                                                                                                           |        |
| 4203-2   | Servo Driver for Winder              | 576 sets  |                                                                                                                                                           |        |
| 4204     | Take-Up Control Cabinet              | 576 sets  | a. Type:mount at take-up frame<br>b. 1 panel / 1 pos.<br>c. Function<br>: Spinning GP & NO speed control<br>: GR speed control<br>: Auto doffer interface | S      |
| 4204-1   | Nil                                  |           |                                                                                                                                                           |        |
| 4204-2   | Inverter for GR                      | 1152 sets |                                                                                                                                                           | S      |
| 4204-3   | Nil                                  |           |                                                                                                                                                           |        |
| 4204-4   | Nil                                  |           |                                                                                                                                                           |        |
| 4204-5   | Inverter for Spinning GP             | 576 sets  | 1set for 1pos                                                                                                                                             | S      |
| 4204-6   | Inverter for NO GP                   | 576 sets  | 1set for 1pos                                                                                                                                             | S      |
| Rev.9    |                                      |           |                                                                                                                                                           |        |
| 4204-7   | Remote IO for Auto doffer interface  | 576 sets  | 1set for 1pos                                                                                                                                             | S      |



## 8. Equipment List

| Item No. | Equipment                             | Quantity  | Specifications                                                                                                                                                                                                       | Supply |
|----------|---------------------------------------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 4205     | Setting & Monitoring Unit for Take-Up | 16+1 sets | a. Type:Self-standing<br>b. 1set for 36 pos.<br>c. Function<br>: Parameter setting and monitoring<br>: Alarm monitoring & printing<br>: Event data logging<br>: Trend recording<br>: Short production data reporting | S      |
| 4205-1   | Personal Computer with LCD            | 16+1 sets | a. For Main SMU                                                                                                                                                                                                      | S      |
| 4205-2   | Nil                                   |           |                                                                                                                                                                                                                      |        |
| 4205-3   | Printer                               | 16+1 sets |                                                                                                                                                                                                                      | Bb     |
| 4205-4   | Cabinet                               | 16 sets   |                                                                                                                                                                                                                      | S      |
| 4206     | Auxiliary Cabinet                     | 16 sets   | a. Type:Self-standing<br>b. 1set/line(36pos. )<br>c. Function : Air pressure alarm                                                                                                                                   | S      |
| 4206-1   | Nil                                   |           |                                                                                                                                                                                                                      |        |
| 4206-2   | Communication HUB                     | 1 lot     |                                                                                                                                                                                                                      | S      |
| 4207     | Nil                                   |           |                                                                                                                                                                                                                      |        |
| 4208     | Distribution Cabinet                  | 1 lot     | Distribution for 4203,4204,4206                                                                                                                                                                                      | Bb     |
| 4209     | Nil                                   |           |                                                                                                                                                                                                                      |        |
| 4210     | UPS for SMU                           | 1 lot     |                                                                                                                                                                                                                      | Bb     |

## 8. Equipment List

| Item No. | Equipment                          | Quantity | Specifications                                                                                                                                   | Supply |
|----------|------------------------------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 4211     | Nil                                |          |                                                                                                                                                  |        |
| 4212     | Wiring and Wiring Materials        | 1 lot    | a. Wiring from each control cabinet to machine<br>b. Wiring from control cabinet to each equipment<br>c. Wiring and wiring materials except 4213 | Bb     |
| 4213     | Special Wiring Materials           | 1 lot    | a. Special wire supply only, wire cutting and assembling work should be required at site                                                         | S      |
| 4213-1   | Communication Cable                | 1 lot    | a. Wiring from 4206 to 4203 and to 4205                                                                                                          | S      |
| 4213-2   | Nil                                |          |                                                                                                                                                  |        |
| 4213-3   | Wiring for Winder                  | 1 lot    | a. Wiring from 4204 to Winder                                                                                                                    | S      |
| 4214     | Signalization for Take-up room     |          |                                                                                                                                                  |        |
| 4214-1   | Siren with light for communication | 16 sets  | a. 2sound and 2color system<br>b. 1set for 1line                                                                                                 | S      |
| 4215     | Emergency stop switch              | 32 sets  | a. 2set for 1line                                                                                                                                | S      |
| 4216     | Gate way for Auto doffer interface | 16 sets  | 1set for 36pos                                                                                                                                   | S      |
| 4217     | Doffer Switch                      |          |                                                                                                                                                  |        |
| 4217-1   | Casing                             | 576 sets | a.                                                                                                                                               | Bb     |
| 4217-2   | Switches                           | 576 sets | a.                                                                                                                                               | Bb     |

## 8. Equipment List

| Item No. | Equipment                          | Quantity        | Specifications                                    | Supply |
|----------|------------------------------------|-----------------|---------------------------------------------------|--------|
| 5000     | Consumable                         |                 |                                                   |        |
| 5101     | Heat Medium Liquid                 | 1 lot           |                                                   | Bc     |
| 5102     | Consumable Parts for Spinning Pack | 1 lot           | a. Filters, Sand and Gaskets for 34560 Spinnerets | S      |
| 5201     | Lubricant Oil and Grease           | 1 lot           | a. For Spinning and Take-Up Machine               | Bb     |
| 5202     | Paper Tube                         | 1 lot           |                                                   | Ba     |
| 5203     | Finish Oil                         | 1 lot           |                                                   | Bc     |
| 5204     | Nil                                |                 |                                                   |        |
| 6000     | Testing and Inspection Facilities  |                 |                                                   |        |
| 6101     | Surface Thermometer                | Rev.9           |                                                   |        |
| 6101-1   | Digital Surface Thermometer        | 3 sets          | MODEL: HA-200E                                    | S      |
| 6101-2   | Nil                                |                 |                                                   |        |
| 6101-3   | N type Sensor                      | Rev.9<br>2 sets | MODEL: N-231E-00 for Spinneret surface            | S      |
| 6102-A   | Anemometer                         | Rev.9<br>2 sets | MODEL: 6004                                       | S      |
| 6102-B   | Flow speed meter                   | 1 sets          | MODEL: tesco for CIQ (Line-C)                     | S      |
| 6103     | Pressure gauge                     | 1 set           | MODEL: GC63 for CIQ (Line-C)                      | S      |
| 6201     | Tension Meter                      | Rev.9<br>4 sets | MODEL: ETPB-200                                   | S      |
| 6202     | Digital Stroboscope                | Rev.9<br>4 sets | MODEL: DT-311N                                    | S      |
| 6203     | Vibration Meter                    | Rev.9<br>2 sets | MODEL: 1332                                       | S      |
| 6501     | Nil                                |                 |                                                   |        |

# 8. Equipment List

| Item No. | Equipment                      | Quantity        | Specifications                                                                                                                     | Supply |
|----------|--------------------------------|-----------------|------------------------------------------------------------------------------------------------------------------------------------|--------|
| 7000     | Tools                          |                 |                                                                                                                                    |        |
| 7001     | General Tools                  | 1 set           |                                                                                                                                    | Bc     |
| 7100     | Tools for Spinning Machine     | Rev.9           |                                                                                                                                    |        |
| 7101     | Special Tools for Installation | 3 sets          |                                                                                                                                    | S      |
| 7102     | Special Tools for Maintenance  | Rev.9<br>3 sets |                                                                                                                                    | S      |
| 7103     | Pack Mounting Tool             | 32 sets         | a. Manual operation                                                                                                                | S      |
| 7104     | Pack Assembling Device         | 2 sets          | a. Hydraulic pressure cylinder<br>b. 1set each for 85mm spinneret pack<br>and 100mm spinneret pack                                 | Ba     |
| 7105     | Pack Disassembling Device      | 2 sets          | a. Manual operation assistance<br>table for pack disassembling<br>b. 1set each for 85mm spinneret pack<br>and 100mm spinneret pack | Ba     |
| 7106     | Pack transporting cart         | 1 set           | a. with electric heater type                                                                                                       | Bb     |
| 7200     | Tools for Take-Up Frame        |                 |                                                                                                                                    |        |
| 7201     | Special Tools for Installation | Rev.9<br>3 sets |                                                                                                                                    | S      |
| 7202     | Special Tools for Maintenance  | Rev.9<br>3 sets | a. With balance jig                                                                                                                | S      |
| 7203     | Balancing Machine              | 1 set           | a. Manufactured by Schencl<br>(Type: HS 3 B/Tex)                                                                                   | Bb     |
| 7204     | Nil                            |                 |                                                                                                                                    |        |
| 7205     | Yarn Threading Cart            | 1 lot           |                                                                                                                                    | Bc     |

# 8. Equipment List

| Item No. | Equipment                      | Quantity | Specifications                | Supply     |
|----------|--------------------------------|----------|-------------------------------|------------|
| 7250     | Tools for Take-Up Winder       | Rev.9    |                               |            |
| 7251     | Special Tools for Installation | 3 sets   |                               | S          |
| 7252     | Special Tools for Maintenance  | 3 sets   | a. With balance jig           | S          |
| 7253     | Nil                            |          |                               |            |
| 7254     | Transporter for Winder         | 8 sets   |                               | S          |
| 7255     | Hand Press                     | 1 set    |                               | Bc         |
| 7256     | Bobbin Holder Heater           | 1 set    | a. Band heater and switch box | S          |
| 7257     | Nil                            |          |                               |            |
| 7258     | Bearing Press                  | 1 set    | a. Oil press device           | S          |
| 7259     | Bobbin Holder Working Stand    | 1 set    | a. Working Stand              | Rev.9<br>S |
|          |                                |          | b. Pressure Intensifier       | S          |
| 7261     | Apparatus for CR Mounting      | 1 set    |                               | S          |
| 7262     | Doffing Cart                   | 1 lot    | a. Manual type                | Bc         |

## 8. Equipment List

| Item No. | Equipment                                         | Quantity        | Specifications                                          | Supply |
|----------|---------------------------------------------------|-----------------|---------------------------------------------------------|--------|
| 7400     | Tools for Electrical Equipment                    |                 |                                                         |        |
| 7401     | Maintenance Cabinet for Winder                    | 1 set           |                                                         | S      |
| 7401-1   | Cabinet                                           | 1 set           | a. Type:Self-standing<br>b. Function:<br>Winder control | S      |
| 7401-2   | Maintenance Cable for Winder                      | 1 set           |                                                         | S      |
| 7402     | Setting & Monitoring Unit for Maintenance Cabinet | 1 set           | a. Type:Desk-top<br>b. for Take-up                      | S      |
| 7402-1   | Personal Computer                                 | 1 set           |                                                         | S      |
| 7402-2   | LCD Display                                       | 1 set           |                                                         | S      |
| 7402-3   | PC Desk                                           | 1 set           |                                                         | Bc     |
| 7403     | Nil                                               |                 |                                                         |        |
| 7404     | Nil                                               |                 |                                                         |        |
| 7405     | Special Tool for Wiring                           | Rev.9           |                                                         |        |
| 7405-1   | For Communication Line                            | 3 sets          | a. Modular connector                                    | S      |
| 7405-2   | For Winder Internal Wiring                        | Rev.9<br>3 sets |                                                         | S      |
| 7405-3   | For Winder Cable                                  | Rev.9<br>3 sets |                                                         | S      |

# 8. Equipment List

| Item No. | Equipment                     | Quantity  | Specifications                                   | Supply |
|----------|-------------------------------|-----------|--------------------------------------------------|--------|
| 8000     | Stand by                      |           |                                                  |        |
| 8100     | Stand by for Spinning Machine |           |                                                  |        |
| 8101A    | Spinning Pack                 | 6480 sets | a. Same Item No.1106A                            | S      |
| 8101B    | Spinning Pack                 | 540 sets  | a. Same Item No.1106D                            | S      |
| 8102A    | Spinneret A                   | 6480 pcs  | a. Same Item No.1107A                            | Ba     |
| 8102B    | Spinneret B                   | 6480 pcs  | a. Same Item No.1107B                            | Ba     |
| 8102C    | Spinneret C                   | 540 pcs   | a. Same Item No.1107C                            | Ba     |
| 8102D    | Spinneret D                   | 540 pcs   | a. Same Item No.1107D                            | Ba     |
| 8103     |                               |           |                                                  |        |
| 8104     | Gear Pump Driving system      |           |                                                  |        |
| 8104A-1  | Spinning Gear Pump            | 8 sets    | a. Same Item No.1105A-1                          | S      |
| 8104B-1  | Spinning Gear Pump            | 15 sets   | a. Same Item No.110B5-1<br>2.4cc:4un 3.0cc:11un  | S      |
| 8104C-1  | Spinning Gear Pump            | 6 sets    | a. Same Item No.1105C-1                          | S      |
| 8104D-1  | Spinning Gear Pump            | 2 sets    | a. Same Item No.1105D-1                          | S      |
| 8104A-2  | GP Driving Motor              | 4 sets    | a. Same Item No.1105A-2                          | S      |
| 8104B-2  | GP Driving Motor              | 8 sets    | a. Same Item No.1105B-2<br>1200W:2un 1600W:6un   | S      |
| 8104C-2  | GP Driving Motor              | 3 sets    | a. Same Item No.1105C-2                          | S      |
| 8104D-2  | GP Driving Motor              | 1 set     | a. Same Item No.1105D-2                          | S      |
| 8104A-3  | GP Driving Unit               | 4 sets    | a. Same Item No.1105A-3                          | S      |
| 8104A-3  | GP Driving Unit               | 8 sets    | a. Same Item No.1105B-3                          | S      |
| 8104A-3  | GP Driving Unit               | 3 sets    | a. Same Item No.1105C-3                          | S      |
| 8104A-3  | GP Driving Unit               | 1 set     | a. Same Item No.1105D-3                          | S      |
| 8105     | Spin Finish System            |           |                                                  |        |
| 8105-1   | Spin finish guide             | 360 pcs   | a. Only oiling guide                             | S      |
| 8105-2A  | Nozzle Oiling Gear Pump       | 4 sets    | a. Same Item No.1112A-2                          | S      |
| 8105-2B  | Nozzle Oiling Gear Pump       | 6 sets    | a. Same Item No.1112B-2<br>0.12cc:2un 0.08cc:4un | S      |
| 8105-2C  | Nozzle Oiling Gear Pump       | 3 sets    | a. Same Item No.1112C-2<br>0.12cc:1un 0.08cc:2un | S      |
| 8105-2D  | Nozzle Oiling Gear Pump       | 1 set     | a. Same Item No.1112D-2                          | S      |
| 8105-3   | NO-GP Driving Unit            | 8 sets    | a. Same Item No.1112-3                           | S      |

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# 8. Equipment List

| Item No. | Equipment                        | Quantity | Specifications                               | Supply |
|----------|----------------------------------|----------|----------------------------------------------|--------|
| 8107     | Pick Up Sensor                   |          |                                              |        |
| 8107-1   | Temp. Sensor for Polymer         | 16 sets  | Same Item No.1302-1                          | S      |
| 8107-2   | Pressure Transmitter for Polymer | 16 sets  | Same Item No.1302-5                          | S      |
| 8200     | Stand by for Take-Up Machine     |          |                                              |        |
| 8201     | GR1                              | 16 sets  | a. Same Item No.2201                         | S      |
| 8202     | Nil                              |          |                                              |        |
| 8203     | GR2                              | 16 sets  | a. Same Item No.2203                         | S      |
| 8204     | Nil                              |          |                                              |        |
| 8250     | Winder Unit                      | 5 sets   | a. Type : ATi415R/10                         | S      |
| Rev.9    |                                  |          |                                              |        |
| 8500     | Materials for performance test   |          |                                              |        |
| 8501     | Spinneret                        | 1 lot    |                                              | S      |
| 8502     | Paper tube                       | 1 lot    |                                              | S      |
| 8503     | Spin finish oil                  | 1 lot    |                                              | S      |
| 9000     | Spare parts                      |          |                                              |        |
| 9000     | Spare parts                      |          | 3% of contract price of Spinning and Take-Up |        |
| 9100     | Spare parts                      | 1 lot    | a. For Spinning Machine                      | S      |
| 9200     | Spare parts                      | 1 lot    | a. For Take-Up Machine                       | S      |
| 9300     | Spare parts                      | 1 lot    | a. For Take-Up Winder                        | S      |
| 9400     | Spare parts                      | 1 lot    | a. For Electrical Equipment                  | S      |