

# Facilidad industrial para la recuperacion de tuberia utilizada para produccion en pozos petroleros.

## 1.-OBJETIVO

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Instalación y puesta en marcha de una planta automatizada para la inspección, reparación y certificación de tubería de producción (tubing) utilizada en la industria de gas y petróleo.

## 2.-ALCANCE

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En la planta se podrán ejecutar los servicios de:

- Inspección.
- Enderezado.
- Limpieza interna y externa.
- Pase de mandril.
- Verificación de peso y grado.
- Inspección de partículas magnéticas y esmerilado.
- Prueba de ultrasonido.
- Prueba hidrostática.
- Mecanizado.
- Corte y reparación de diferentes tipos de roscas API (EUE).
- Desmontaje y montaje de acople con registro electrónico.
- Marcaje de tubería y colocación de protector de rosca.

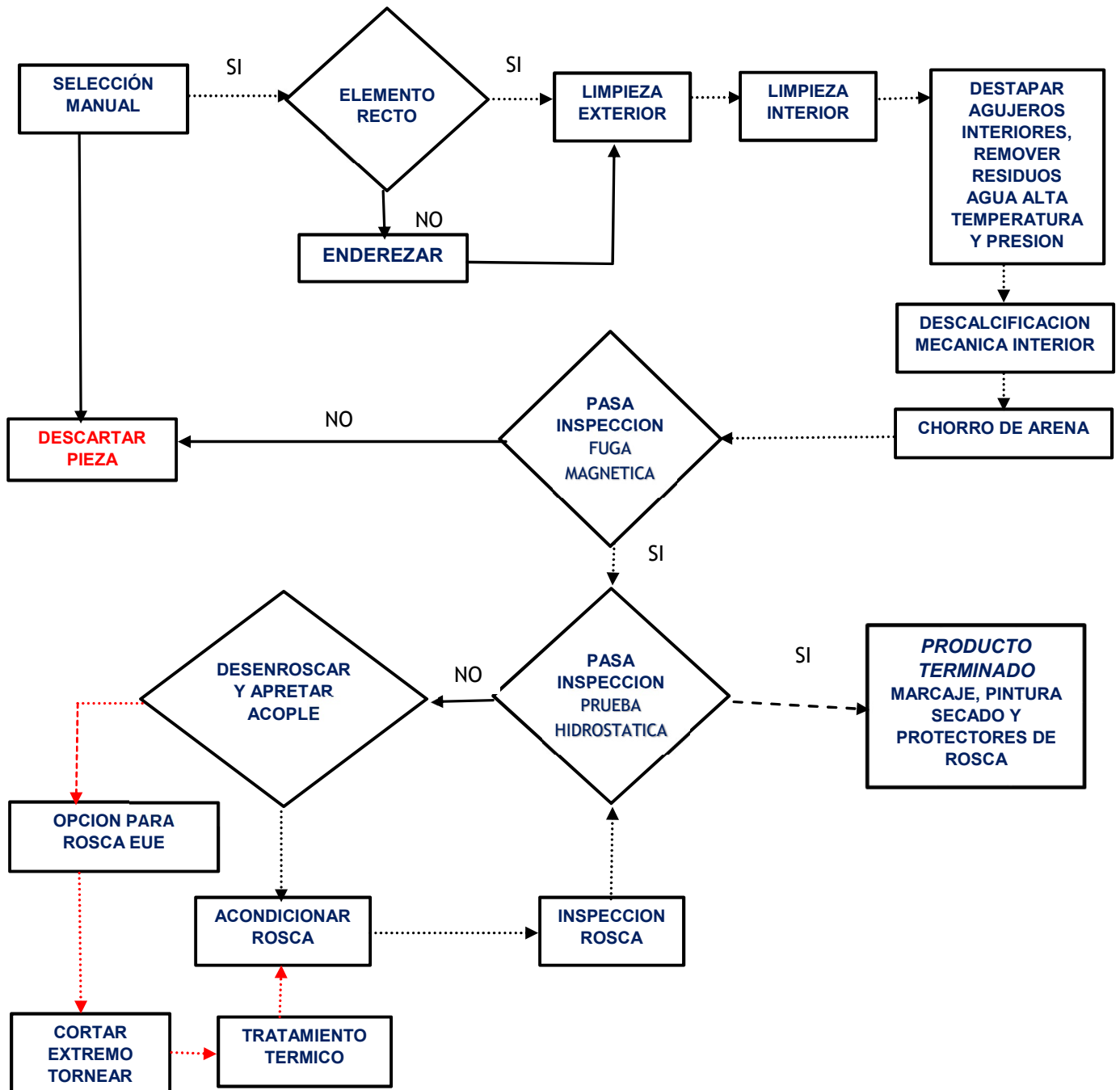
## 3.-ESPECIFICACIONES TECNICAS

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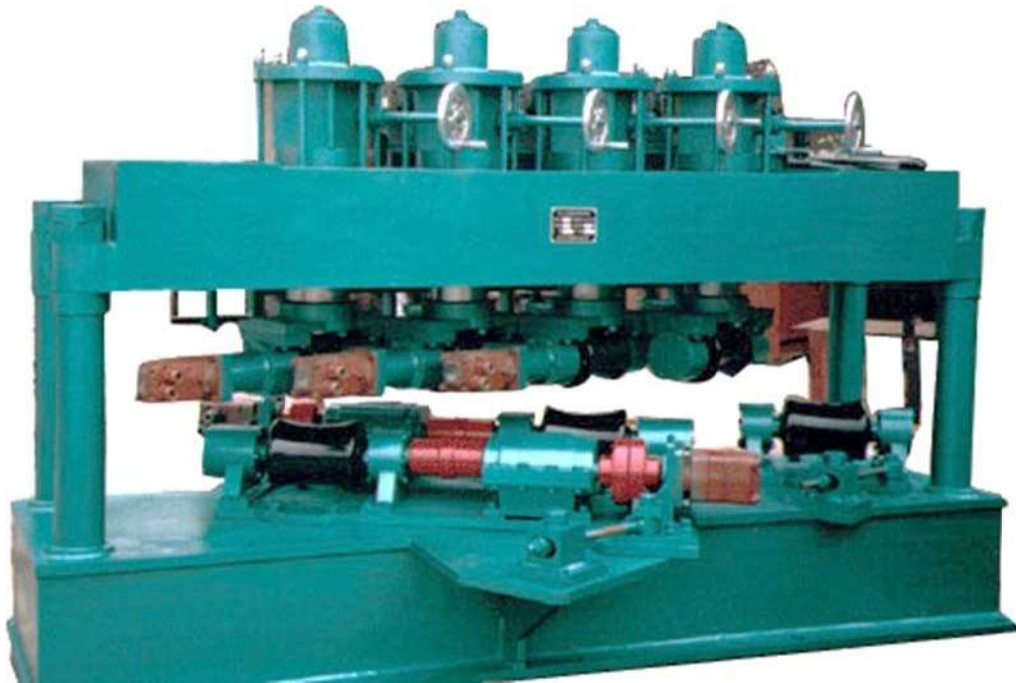


### 3.1) Flujograma de Proceso

Capacidad anual: 50.000 piezas un solo turno de trabajo



### 3.2) STRAIGHTENING MACHINE / EQUIPO PARA EL ENDERAZADO DE TUBING



- Model ..... JJZ1-140
- Description..... Used for fine straightening bended tubing.
- Pipe Range .....2-3/8" - 4-1/2" (ø60mm. - ø114mm.)
- Pipe Length.....5 - 20m.
- Pipe wall thickness.... ≤9mm.
- Curvature.....≤50mm./m.
- Accuracy..... ≤1.5mm./m.; ≤3mm. / overall length / ≤1.5mm in two ends 3mm. range.
- Power..... ≤30Kw. (380V±10%,50Hz.)
- AC Motor..... IP44, E
- Handling Capacity.....12-30 pcs/hour.
- Drive Mode..... Hydraulic drive, step less.
- Hydraulic pressure..... ≤16Mpa.
- Roller angle adjustable.....27° ~ 36°
- After straightening, no scratch & dent on the pipe surface
- C/W..... Main frame, straightening hydraulic cylinder, adjustable roller, hydraulic system, electrical control system, load and unload system, roller transferring system.

### 3.3) TUBING CLEANING EQUIPMENTS /EQUIPOS PARA LA LIMPIEZA DEL TUBING RANGO Ø2-3/8" - Ø4-1/2"

#### 3.3.1) EXTERNAL CLEANING SUPER AUDIO ELECTRIC HEATER/LIMPIEZA EXTERIOR MEDIANTE CALEFACTOR DE INDUCCION .

Heating tubing 1-3 seconds by super audio electric heating machine, wax, oil & dirt will be automatic spalling due the high temperature. Then the tubing across a composite wire brush equipment, then outside surface will be very clean and smooth.

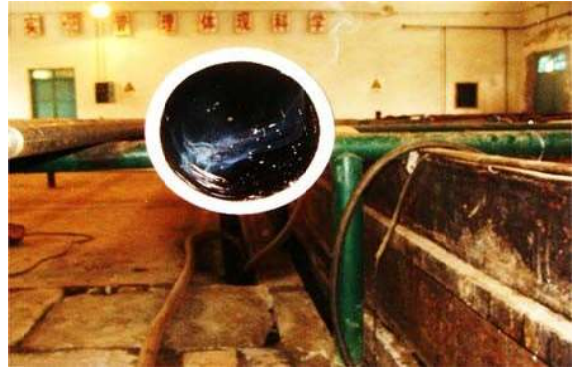




The perfect surface after external cleaning / Estado de la superficie del tubo una vez realizado la limpieza.



After heating, internal oil melted / Después de aplicarse el calor los residuos de crudo se derriten.



### 3.3.2) INTERNAL CLEANING / LIMPIEZA INTERNA

Unlock inner hole, remove oil & hot water inner jet



After external heating, inner oil & wax almost melted, then use this machine to rotate across inner of tubing, in order to unlock most inner oil, to keep min. oil & dirt inside, for next process. This machine is

including: unclog dolly, support roller, front and rear spray proof cover, clamp device, drill bit, water hose, cable tray, base etc.

### 3.3.3)DESCALING MECHANNICAL MACHINE / MAQUINA DE DESCALCIFICACION MECANICA



After high pressure hot water jet, if there are still some wall scale which could not remove, then transfer to this equipment. The internal mechanical descaling machine include a diamond scraper and Universal brush bundle, same as mechanical cutting to remove scale, then wash the wall. After across this machine, no more scales inside, and appear original metal surface color.



#### 3.3.4) NON POLLUTION SANDBLASTING / CHORRO DE ARENA NO CONTAMINANTE

Enclosed sand blasting system is in order to remove tiny rust & scale on the uneven surface. After sand blasting, the internal surface can be perfect.





- Power External Cleaning, ultrasonic Electric Heating: 286.5Kw.
- Power Internal Cleaning..... 80.0Kw.
- Clean Tubing Size.....2-3/8"-4-1/2".
- Length of Tubing .....8-12 m.
- Cleaning Capacity:
  - External .....50pcs/hour.
  - Inner.....40pcs/hour.
  - Mechanical .....40pcs/hour.
  - Sand Blasting.....100pcs/hour.
- Tubing Surface heating temperature.....50°C-200°C  
(adjustable and controllable)
- Operation Mode ... Manual + Automatic control (PC+PLC+VFD)
- Rated Air Pressure .....0.8MPa.



- Oversize of equipment:

External Cleaning 25m(L)X1.5m(W)X1.5m(H)

Inner Hot Water Jet 23m(L)X1.5m(W)X1.6m(H)

Mechanical Scaling 22m(L)X1.5m(W)X1.6m(H)

### 3.3.5) LEAKAGE MAGNETIC FIELD INSPECTION / EQUIPO DE INSPECCION DE FUGA MAGNETICO:



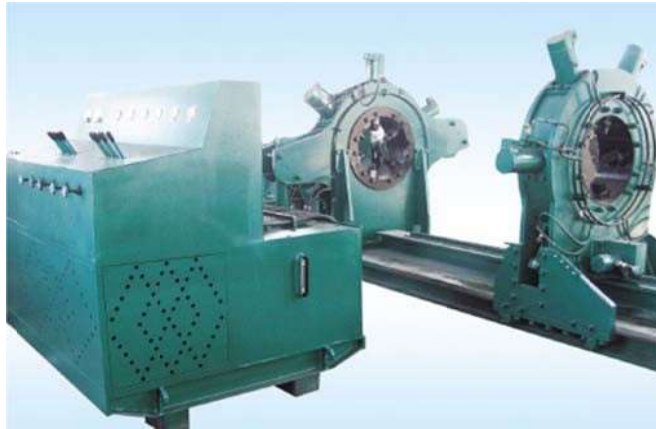
#### TECHNICAL DESCRIPTION:

- Tubing Size Range.....2-3/8" - 4-1/2"
- Tubing Length.....7.8m. - 9.8m.
- Surface Crack Resolution .....Min.0.3mm.(depth); Min.5mm.(length)
- Corrosion Pits and holes resolution ... $\varnothing$  1.5mm.(dia); 0.5mm.(depth)
- Wall Thickness Loss resolution .....2% of wall thickness
- Inspection Speed .... inner & outer coverage rate  $\geq 0 \sim 40$ m./min.
- Inspection Accuracy: (Adjustable) ,100% Inspection  
Wall thickness tolerance  $\pm 0.1$  mm.  
Misjudgment rate  $\leq 0.5\%$
- Two Ends of Tubing Measuring Blind area ..... $\leq 60$ mm.
- Remanence Rate After Demagnetization ..... $\leq 3$ Gs.

- Inspection Mode: Magnetic flux leakage testing, Probe Automatic Adaptive different size tubing probe no touch tubing, not be affected by water, oil & wax;
- Operation Mode: Automatic load, unload & inspection, computer control, auto + manual mode, real-time dynamic display, trouble diagnosis, can output report.
- Identification Mode: Automatic classification mark, client can set up standard.
- Power Supply: 380V $\pm$ 10%, 50Hz or 220V $\pm$ 15%, 50Hz
- Air Pressure:  $\leq$ 0.6MPa
- Power: 15 Kw.
- Noise Rate:  $\leq$ 80DB

### 3.3.6) COUPLING MAKE UP & BREAK OUT MACHINE / MONTAJE Y REMOCION DE ACOPLES





- Model: YNJ200/20
- Description:  
Hydraulic drive, steeples, master tong & back up tong action, torque adjustable, overload protection, torque control and monitor system.
- Tubing Size Range: 2-3/8" - 4-1/2"
- Rated Torque: 20Kn.m
- Max.Torque: 20Kn.m
- Low Gear Speed: 12rpm.
- High Gear Speed: 65rpm.
- System Rated Pressure: 16Mpa.
- Rated Flow Rate: 100L/min
- Power :22Kw.
- Center Height: 800mm.
- Weight :2800kg.
- C/W: Tubing Feed Device, Hydraulic System, Electric System.

### 3.3.7) CNC LATHE FOR PIPE THREAD / TORNO CONTROL NUMERICO PARA FABRICACION DE ROSCAS



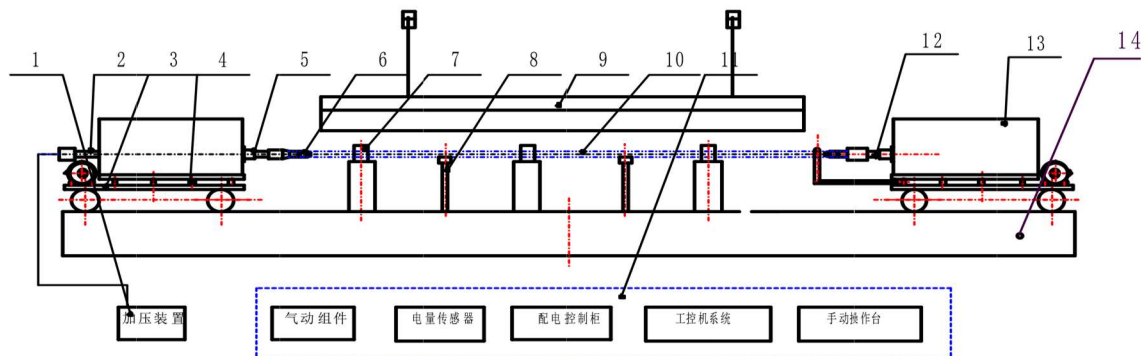
Parameter	Unit	Data
▪ Max. Turn Dia.	mm	φ600
▪ Main Spindle Speed Range	rpm	150-750
▪ Main Spindle Hole Dia.	mm	200
▪ Main Spindle Center Height	mm	1150
▪ Tool Bracket X Stroke	mm	680
▪ Tool Bracket Y Stroke	mm	280
▪ Tool No.	mm	4
▪ Feed rate and thread cutting range	mm	0.025-40
▪ Y Servo motor Max. torque	N.m	22
▪ X Servo motor Max. torque	N.m	22
▪ Main Motor Power	kw	30
▪ Oversize (L×W×H)	mm	3250×1510×2070
▪ Weight	kg	10000



### 3.3.8) HYDROSTATIC TESTING MACHINE / MAQUINA PARA REALIZAR PRUEBAS HIDROSTATICAS.



- Model.....GSJ-178/70
- Tubing size range.....2-3/8" - 4-1/2"
- Test pressure.....  $\leq 40\text{Mpa}$ .
- Pressure maintaining time.....0-60s.(adjustable)
- Testing liquid..... water.
- Make up speed..... Max.62rpm.
- Dolly speed (no inject side) .....0.42m/s.  
0.12m/s (approach pipe)
- Dolly speed (inject side) .....0.12m/s.
- Average testing time.....60-80 seconds.
- Make up torque.....600-2424N.m.
- Break out torque.....2424N.m.
- Power.....32Kw.
- Oversize.....15.8m.x1.6m.x1.36m.
- Tubing length.....7,8-9.8m.



### 3.3.9) TUBING TRANSFER DEVICE & FEED DEVICE / EQUIPO PARA TRANSEFERENCIA DE TUBING & ALIMENTACION.



### 3.3.10) CORROSION TREATMENT / TRATAMIENTO ANTICORROSIVO





### 3.3.11) LENGHT MEASURING & WEIGHTENING / MEDICION Y PESAJE



### 3.3.12) MARKING MACHINE / EQUIPO PARA EL MARCADO DEL TUBING





### 3.3.13) TUBING HYDRAULIC HORIZONTAL FORGING MACHINE / EQUIPO DE FUNDICION HIDRAULICO HORIZONTAL.



The YPD315 Tubing hydraulic horizontal forging machine is specially used for tubing & sucker rod, electric heating the end of tubing and end upsetting. The system equipment consists of:

- Electric heating device.
- Automatic loading and unloading device.
- Automatic feeding & exit device.
- Hydraulic power.
- PLC control.
- Force lubrication.

#### MAIN PARAMETERS:

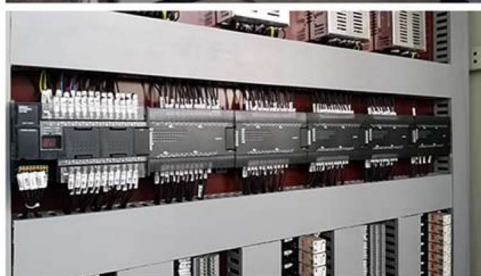
- Extruding force.....3150 Kn.
- Mold clamping force..... 6300 Kn.
- Max. hydraulic pressure.....25 Mpa.
- Clamping the slider return force.....430 Kn.
- Squeeze into cylinder draft force.....1300 Kn.
- Clamping block max. opening height.....980mm.
- Cylinder max. opening.....720mm.
- Clamping slider velocity:
  - Quick down speed.....200-300mm/s.
  - Working speed.....25-30mm/s.
  - Return speed.....250-300mm/s.
- Squeeze into cylinder speed
  - Push out speed.....55-65mm/s.
  - Return speed.....130-140mm/s.
- Clamping slider max. stroke.....500mm.
- Squeeze into cylinder max. speed .....600mm.
- Main motor power.....110Kw.
- Clamp module oversize (LXWXH).....1200X500X700mm.
- Squeeze into cylinder center height.....1140mm.

## MAIN COMPONENTS / COMPONENTES PRINCIPALES:

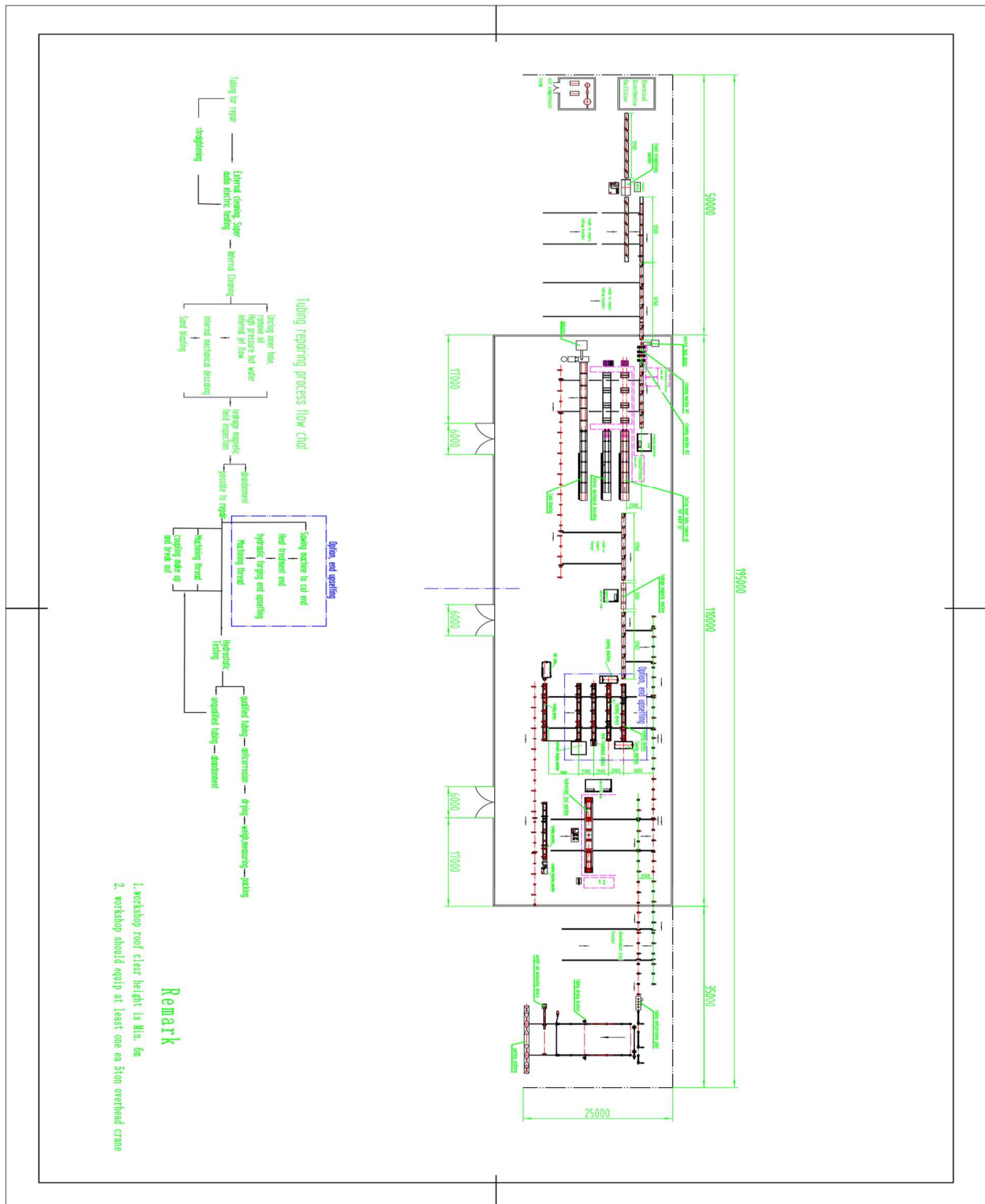
- Main body:**  
 Consist of: vertical type 3 beam and 4 column 630T clamping part, horizontal 315T Squeeze into parts.
- Hydraulic power system:**  
 Consist of hydraulic station and hydraulic cylinder.



- Electric control system:**  
 Consist of: power system & control system



## 4.-PLANT LAY OUT / PLANO DE PLANTA





## REQUERIMIENTOS DEL AREA INDUSTRIAL:

- Área mínima cubierta requerida: 200m. de largo x 40m. de ancho.
- Área de patio de almacenamiento: 6000 - 8000 m<sup>2</sup>
- Altura mínima del área cubierta :6m.
- Debe existir un puente grúa a lo largo del área cubierta Cap. Min 5 Ton.
- La disposición de los equipos puede cambiarse, para adaptarse al área disponible por el cliente en su taller si cumple con los mínimos parámetros requeridos.

## 4.-EN LA OFERTA SE INCLUIRA:

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- Diseño de la planta y de la distribución de equipos.
- Equipos de las (02) líneas de trabajo incluidas en esta propuesta CIF Puerto de destino.
- Repuestos para (03) años de operación de la planta CIF Puerto de destino.
- Entrenamiento del personal de operaciones.
- Puesta en marcha.

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