REPORT

ARABIC MISSION

- Flying Cut-Off DB8
- End Facing EF8
- Hydro test HT8
- Handling H8

TUBOTECH 2013
ADDAFER.IT

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For a prestigious tube manufacturer, who is located in Saudi Arabia, Adda Fer Meccanica has recently installed an important plant for the cutting, finishing and handling of pipes.

The supply, which has been taken in charge at the end of last year, will be used to complete what is already present and it concerns in particular, the design, construction and installation of a flying cut-off double blade for pipes up to 219 mm (8 inches), an end facing, a hydro test and a handling.

Twenty years of experience and the know-how accumulated over the years, has allowed AddaFer technicians to design solutions on precise customer specifications.

With this implementation, the Asian manufacturer will be able to increase his productivity

and, at the same time, the pipe quality.

Here below please find the details of the installed equipment.
Milling cut-off machine with chip conveyor:

• **Base:**
  - it is composed by an heavy structure in normalized welded sheet, in which, linear sliding guides are seated in the superior side, for the support of the cut carriage, there is a side lodging for the rack that allow the motion of the same carriage.
  - Shock absorbers and carriage block systems are mounted at the end of the base, for emergency, in order to avoid damages to the rack and pinion system.

• **Carriage:**
  - It is composed by a normalized welded steel structure on which all tables have been worked for the support and the lodging of units for the sliding of the cut heads, the vices and the control group dimensioned for the tracking.
  - The cut heads are two and work in opposite way both on longitudinal and transversal axe from the center of the tube. They are composed by a reduction gear properly dimensioned with “0” play gears which allow the rotation of the mandrel on which the blade is seated.
  - The vices are lodged in 2 portals of big dimensions positioned close to blades in order to give the max stiffness to the system. They are powered by 1 hydraulic cylinder.
  - The tracking group is manufactured with a rack and pinion control, manufactured with vertical axe.

• **Motorization:**
  - The unit is equipped with 7 brushless motors controlled by digital inverter of last generation.

• **Functioning:**
  - In the above scheme, it is shown the movement of the blades.
  - The profile of the tube is followed thanks to a dedicated software (round-square-rectangular).
  - In this way, the reduction of cutting time and the extraordinary grades of superficial finishing of the same tube are evidenced.
  - A double vice group both at inlet and outlet side arrange the blocking of the tube during the phase of cut in order to avoid dangerous vibrations.
End Facing \textit{EF8}

The machine is composed by:

- Transfer system between the different stations
- Two end facing and chamfering heads
- Tube aligning system
- Hydraulic equipment
- Electrical equipment

The plant has a productivity to guarantee the processing of a continuous production at a maximum speed of 60 m/min of pipe line with shortest pipes.

\textit{Time chart for End facing & Chamfering Machine (based on 12 m pipe)}

<table>
<thead>
<tr>
<th>Pipe size (mm)</th>
<th>Wall Thickness (mm)</th>
<th>Production capacity (pcs/hour)</th>
<th>Speed (m/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>219.1</td>
<td>8.18</td>
<td>220</td>
<td>22</td>
</tr>
<tr>
<td>114.3</td>
<td>6.02</td>
<td>330</td>
<td>33</td>
</tr>
<tr>
<td>101.6</td>
<td>5.70</td>
<td>350</td>
<td>35</td>
</tr>
<tr>
<td>88.9</td>
<td>5.49</td>
<td>370</td>
<td>37</td>
</tr>
<tr>
<td>73.0</td>
<td>5.16</td>
<td>400</td>
<td>40</td>
</tr>
</tbody>
</table>

N.B. Above Performances can be reached with the production of lots in which at least 95% of tested tubes have a length within the range of +/- 250 mm.

Each bevelling head is composed by a structure in which the mandrel with transmission through A.C. motor and inverter are seated. They are mounted on a system of guides with roll sliding blocks and the a-head movement for the bevelling operation is realized through a ball screw controlled by a servo motor.

Two groups of vices, driven through hydraulic cylinder, with self-centring system provides to the blocking of tube in an efficient way during the bevelling operation.

The alignment is obtained through two lines of rolls, V shaped, controlled by electrical motor which provide to the alignment of tube with different length against the stacking unit before the transfer to the bevelling station.

A transfer system moves tubes transversally step by step; it is composed by chasers, one set fixed and one set movable, provides to the transfer of tubes to different stations for the execution of the complete working cycle.
Hydro Test HT8

TUBE DIAMETER: 73 ÷ 219.1 mm.
TUBE LENGTH: 6 ÷ 13.5 m.
TUBE MAXIMUM THICKNESS: 8 mm.
MAXIMUM OPERATING PRESSURE: 250 bar

Machine can test No. 2 tubes simultaneously at 250 bar till a diameter of 168.3 mm. For larger diameters, it is possible to test only one tube at time at 250 bar or No. 2 tubes simultaneously at lower pressure.

For example:
- No 2 tubes with diameter 203.2 at the maximum test pressure of 173 bar.
- No 2 tubes with diameter 219.1 at the maximum test pressure of 148 bar.

The maximum test pressure must be set in function of the characteristics of the tube to be tested and in accordance with the regulations to use.

The maximum weight of the transportable tube is Kg. 575 which corresponds to a pipe with 219.1 diameter, 8.2 thickness and 13.5 m. length.

BATTERY COMPOSITION

- No. 2 proof tests;
- No. 2 tubes double locking vices on proof heads;
- No. 1 double station for inner tube washing with tube locking vice;
- No. 1 transport unit and tube support composed of:
  • centering tube unit on the heads central line;
  • tube alignment unit;
  • connecting roll table;
- No. 1 motor reducer group responsible for handling system rolls’ rotation;
- Translation unit of the discharge head;
- No. 2 central vices for the tube locking;
- No. 2 longitudinal translation units for intermediate boxes of the transport unit;
- No. 1 electrical control panel;
- No. 1 control pulpit;
- Hydraulic installation;
- No. 1 double station for low pressure water pumping;
- No. 1 double station for high pressure water pumping.
Handling H8

The line is composed by:

- **146 m. Roll outlet table:**
a roller table “V” shaped it’s able to run out the pipe on both side. The rollers are driven by electric motor with inverters and a series of tilting arms.

- **12 m. Roll outlet table:**
composed by a roller table “V” shaped, roller way is idle and control the pipe during the cooling in air after annealing.

- **5 pcs. Fix final stopper place:**
composed by a strong structure dimensioned and manufactured to stop the pipe and provide a short deceleration.

- **136 m. Gravity transfer:**
made in strong carpentry with pressure sensor that check input & output pipes.

- **136 m. Transfer Motorized:**
made in strong carpentry with a motorized chain that works with proximity sensors that always knows position of the pipe and able to transfer it in different field like end facing station, hydro test or packaging system. The PLC always know the position of the pipe, where is necessary to move it and which kind of the Tube mill. The roller are driven by electric motor with inverter and a series of tilting arms.

- **4 places collecting station:**
it consists of a ramp that connects two parallel bogies, running on both tracks drowned in the soil and allow the formation of tube bundles during the normal working of the line. Bundle can be formed with round or square shape and if requested content from protective wood sticks. Both carts allow the sliding of the strap attachment and allow the hoisting crane. Pipes positioning needs to be checked by the operator.
Adda Fer Meccanica will be present at the next edition of the brazilian fair from 01st to 03rd October 2013.

You will find us at STAND 747 and the occasion will be profitable to meet customers and visitors of the sector by showing them what has been done in recent years and future projects both in terms of investments and of new products.

Next event, at which Adda Fer has already confirmed its participation, it’s Metal Expo, from 12th to 15th November in Moscow (Russia).
Our website (www.addafer.it) has been recently implemented with the new Video section that will allow all visitors to watch the videos of some plants made by Adda Fer Meccanica.

The visualization is possible even on the most modern portable devices (smartphones, tablets, etc..) to ensure the connection at any time.

Click here to take a look!
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