**Document Revision Chart**

|  |  |  |  |
| --- | --- | --- | --- |
| # | Section Modified and Revision Description | Date | Author |
| 1 | New SOI | 18-Oct-18 | PT |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **PPE Requirements as per Risk Assessment.**  **If you are unable to complete the task as it is written in this SOI – stop work immediately and inform your Supervisor**. | | | | |
| *This SOI covers:*  *Overview of equipment.*  *Overview of the dancer / light curtain.*  *Rim drive set up via programmable control panel.*  *Functions of various buttons and controls on the manual control panels at the front of the rim drive.* | | | | |
| **PAPERWORK NEEDED** | | *FLK-N-RA-055* | **EQUIPMENT NEEDED** | *None* |
| **Section 1:**  *Equipment Overview* | | | | |
| **REELS**  A reel is a method of storing pipe during the various stages of the manufacturing process.  There are several different types of reel and various flange and hub diameters.  The required hub diameter for each process layer is specified in the MWO for each pipe. | | | | |
| **RIM DRIVES**  The rim drives on the pipe production side of the factory are identical in most respects, although some have been modified to suit the requirements of a particular process line, this includes differences in the control panels.  This SOI describes the current operational set up for the Flexlok Line  The Flexlok Line has two similar rim drives which are positioned at approximately 98m apart. Under normal running conditions the roadside rim drive acts as pipe “Pay-Off” and the riverside rim drive acts as pipe “Take-Up”, but this can be reversed.  Both rim drives can also be operated “In-Line”, ie electronically linked together via the Flexlok line control panel and PLC, or can run independently from one another in “Solo” mode. When “In-Line” they will increase/decrease their rotational speed and start/stop as dictated by the line speed.  DSC06007  Fig 1  Rim drive ladder and walkway used to access flange side of reel & rigging. | | | | |
| **DANCER / LIGHT CURTAIN**  The Dancer or Light Curtain controls the rotational speed of the rim drive by sensing the height at which the pipe passes through it. It compares this to a percentage value that is programmed in by the operator and automatically speeds up of slows down the rim drive to maintain the pipe height through the light curtain.  DSC05837 DSC06015  Fig 3  Fig 2  The Fig 2 shows the pipe positioned through the dancer / light curtain and resting on the in the y-rollers of the arch roller structure.  Fig 3 shows the light curtain sensor. | | | | |
| **Section 2:**  *Front Control Stations* | | | | |
| **1.1** | The two control stations located at the front of each rim drive control the left/right traverse of the rim drive and its rotational speed and direction (See Fig 4). They also feature an HMI that is used to input all the operating parameters, this replaces the programmable controller previously located on the back panel. Note pay off rim drive only.    Fig 4  Front Control Stations  There are subtle differences in each panel, details are provided in the following sections. | | | |
| * 1. 1.2 | Close-up photos of the manual control panels on the rim drives are shown in Figs 5 to 7 below:  **Pay Off Front Control Station**  Right Hand Side  Fig 5  **A**  **B**  **C**  **D**  **E**  **HMI**  **M**  **L**  **K**  **G**  **F**  **H**  **I**  **J**  **Pay Off Front Control Station**  Left Hand Side  Fig 6  **A**  **B**  **C**  **J**  **E**  **F**  **G**  **H**  **L**  **K**  **M**  Fig 6 | | | |
|  | **Pay Off Front Control Station**  right Hand Side  Fig 7  **HMI**  **A**  **B**  **D**  **J**  **E**  **F**  **G**  **K**  **I**  **M** | | | |
|  | There is a yellow beacon positioned on top of each manual control station which flashes to indicate a fault is present.  An audible alarm is also emitted from the control panel whilst the beacon is flashing.  With reference to Figs 5 to 7   |  |  |  | | --- | --- | --- | | **CONTROL FUNCTION** | **OPERATION MODE** | | | **IN-LINE MODE** | **SOLO MODE** | | A – SOLO START | Will do nothing | Will start rotation at a preset nominal speed when pressed once. Press SOLO STOP to cease rotation | | B – INCH FORWARD | Will rotate the rim drive in the direction programmed into the control panel for as long as the button is depressed. Will stop rotating as soon as the button is released | | | C – RAISE | Will increase the dancer percentage / raise the height of the dancer setting control reference point. | Will increase the nominal speed of rotation while running in SOLO START | | D – TAKE UP / PAY OFF SWITCH | Switches between take up and pay off mode. | | | E – FAULT RESET | Press once to silence the audible alarm. The fault will be displayed on the HMI. When the fault has been corrected press the FAULT RESET to cancel the beacon. | | | F - SOLO STOP | Will do nothing | Will stop rotation from SOLO START | | G – INCH REVERSE | Will rotate the rim drive in the reverse of the direction programmed into the control panel for as long as the button is depressed. Will stop rotating as soon as the button is released | | | H - LOWER | Will decrease the dancer percentage / lower the height of the dancer setting control reference point. | Will decrease the nominal speed of rotation while running in SOLO START | | I – LINE / SOLO SWITCH | Switches between line (where the rotational reel speed is controlled by the production line) and solo mode where the manual controls are activated. | | | J – CHANGE TRAVERSE DIRECTION | Will change direction of traverse when depressed | | | K – TRAVERSE  joystick | Will traverse the rim drive either left or right depending on the direction selected. Push and hold to traverse. The joystick is spring loaded and will return to neutral unless activated. The speed of traverse is in two stages: the first 2 seconds are at 5% and then the speed increases to 100%. An audible alarm will sound while the rim drive is moving. The rim drive will cease to traverse if it reaches its limit of travel or the bump strip (see Fig 7) sensor is activated by a collision/obstacle.  Remove the obstacle and allow the bump strip a few seconds to reset before using the rim drive to traverse in the opposite direction. | | | L – TRAVERSE RIGHT / TRAVERSE LEFT | Lamp lit indicates direction of traverse | Lamp lit indicates direction of traverse  DSC05811  Fig 6  Depicting Rim Drive Traversing Right | | M – EMERGENCY STOP | Will stop all line equipment immediately. An audible alarm will be emitted. | Will stop all line equipment immediately. An audible alarm will be emitted. | |  |  |  | | | | |
|  | DSC06008  Fig 7  Bump Strip highlighted black/yellow  **Note:** If the rim drive is set to take-up, rotation can be stopped or restarted by using “SOLO STOP” and “SOLO START”. But if the rim drive is set to be an in-line pay-off it can only be stopped by pressing the “LINE STOP” button on the Armour Line Control Panel. | | | |
|  | **Pay Off Front Control Panel HMI Screen Layout**  **All screens have a Header, Main Body and Footer areas.**    The Header displays the Date, Screen Title, time and fault active message (only visible when fault active)  The Main Body is for user interaction and display of operating conditions.  Footer contains the navigation buttons to switch between HMI pages. | | | |
|  | **Main Screen**     |  |  | | --- | --- | | **Item** | **Comments** | | **Reel Size (feet)** | **26,28,30, 35 ft.** | | **Product Size (Inches)** | **2 to 24 “ (0.5” increments)** | | **Winding Gap (%)** | **5 to 25% (1% increments)** | | **Left Limit Trim (Inches)** | **-10 to 10” (0.5” increments)** | | **Right Limit Trim (Inches)** | **-10 to 10” (0.5” increments)** | | **Dancer Height Sensor Pre-set (%)** | **0 to 100% (5% increments)** | | **Machine operation status** | **Current active status conditions highlighted Green** |   To enter the Reel Size, select from the menu that allows the operator to select 26, 28 or 30 35 ft.    For the remaining fields select a Numeric Data Entry field and enter the desired value using the pop-up keypad.    If the entered value is out of range, an error message is displayed. | | | |
|  | **Alarms**  The Alarm screen shows the status of any active alarms.    Alarm Manager Console  To acknowledge an alarm, touch the alarm window, select the alarm and press ‘Acknowledge’. Exit by pressing the door icon on the lower right-hand side.  **The alarms displayed are:**   |  | | --- | | Details: | | Emergency Stop Active | | Fault Active | | Horizontal Product Detector Fault | | Left Crash Bar Fault | | Left Over Travel Fault | | Main Drive Blower Fault | | Master Rim Drive Fault | | Primary Fault | | Right Crash Bar Fault | | Right Over Travel Fault | | REVCON Fault | | Secondary Fault | | Slave Rim Drive Fault | | Slave Rim Drive Blower Fault | | Traverse Blower Overload Fault | | Traverse Drive Fault | | Traverse Position Sensor Fault | | Traverse Time Excessive | | | | |
|  | **Status**  **The Status screen shows the health status of key process conditions and the selected mode.** | | | |
| 1. **MAIN CONTROL PANEL – PAY OFF** | | | | |
| **2.1** | The main control station is located at the rear of the rim drive – see Fig 8  DSC05840  Fig 9  Fig 8  Ensure that the control panel is protected with either a plywood cover or a tarpaulin (as shown in Fig 9 above) to prevent water ingress before staging or rotating a reel which has been brought into the factory after being stored in the yard. | | | |