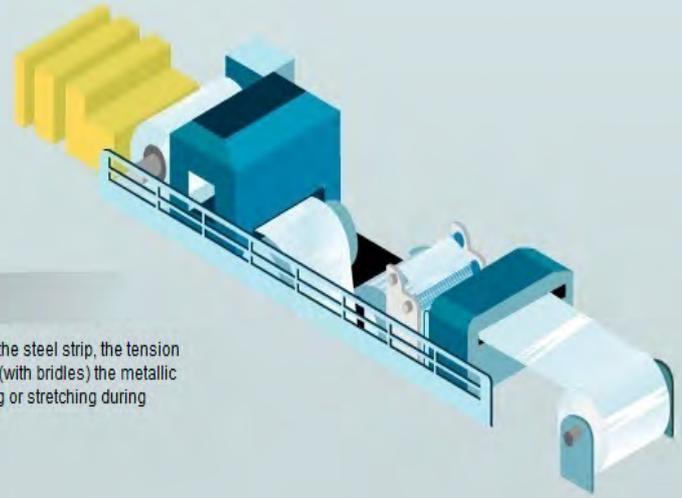


CASE

STUDY

ALTOS HORNOS DE MÉXICO -
AHMSA (México)



TENSION LEVELLING

Designed to provide maximum flatness to the steel strip, the tension levelling flexes (with rollers) and stretches (with bridles) the metallic fibers that have been deformed by pressing or stretching during tempering.

In the second half of 2014, Altos Hornos de México (AHMSA) awarded a contract to Ingeteam, to undertake the electrical revamping (strip transport equipment and control / visualization system's) of the Tension Levelling Line in Monclova - Coahuila (México).

The project was based on the replacement of PLC's "Sisteam M" for Rockwell's state of the art "ControlLogix" PLCs; new HMI systems "Factory Talk" (Rockwell) and replacement of DC drives "Motocon DC" for new equipment "PowerFlex DC" (Rockwell).

The mounting plates were replaced (while maintaining existing metal enclosures), containing the AC/DC drives and reusing the existing low voltage switchgears (circuit breakers, field transformers, reactances, contactors, fuses, etc...). This solution allowed us to reuse: the input electrical cables and the output cables for motors (power and control).

The communication between AC/DC drives and the PLC was carried out using a new Ethernet /IP network.

The automation mounting plates included the PLC chassis and the interfaces to collect existing input/outputs. With the ControlLogix cards the pre-wired interfaces were provided to maintain the original location of the peripherals wiring, thus reducing the time needed to adapt the control and measuring cabling during the stoppage of the line.

The scope of supply consisted of definition of engineering, design, manufacturing, commissioning and documentation of the following equipment:

- AC/DC drives related to the strip transport.
- Hardware and software of the control PLC, ControlLogix family (Rockwell manufacturer).
- Field remotes, Flex I/O family (Rockwell manufacturer).
- Control desk and control panels (new manufacturer).
- HMI, Factory Talk family (Rockwell manufacturer).
- Engineering station including development software.
- SW development licences for PLC and HMI's.
- Detailed engineering, basic erection engineering and other related documentation.
- Factory acceptance test at our premises in Bilbao (F.A.T.), prior to transport the equipment.
- Erection supervision, commissioning and training (on-site training) at the factory in Monclova- (México).

Electrical Revamping Tension Levelling

General

Ingeteam Línea Tensionvelado

Bobina 7182010x Longitud Remanente 371.0 m
 HIDRÁULICO OK Tiempo Pendiente 0.0 min
 ACUSE ALARMAS Longitud Enrollada 0.0 m

PARADO CON TENSION ENT.
 PARADO CON TENSION SAL.

Velocidad Línea 0.0 m/min Tiro Pre Entr. ABT 5380 kg Tiro Post Sal. ABT 5206 kg
 Tiro Entrada 1921 kg Tiro Entrada ABT 11859 kg Tiro Salida 3712 kg
 Tiro Desengrasado 2680 kg Tiro Salida ABT 14861 kg AV Tiro ABT 1073 kg

Ancho 37.00 in DC DRV 0.10400 in 04/28/2015
 Expositor 0.10400 in 17:08:54
 Elongación 0.00%

Alarm Date	Alarm Time	Tag Description	Tagname	Alarm Label
28/04/2015	05:37:01 p.m.	FALLO LINEA PRESSION BAJA UNIDAD SOPORTE SINA	11_GEN_ENTIGEN_ALVAL_042	GEN.AL
28/04/2015	04:35:52 p.m.	FALLO TEMPERATURA MOTOR BRIDA 1 RODILLO 2 ENTRADA	11_GEN_ENTIGEN_ALVAL_042	DC.DRV
28/04/2015	03:33:19 p.m.	PRESSION BAJA HIDRÁULICO UNIDAD CENTRADO DESENRROLLADOR	11_GEN_ENTIGEN_ALVAL_042	GEN.AL

Zona Entrada

Presencia Bobina, Cortes y Pos. Soldad., Pos. Cola, Soldadura en Tijera Bordes, Posición Cuchillas

Unidad de Centrado Banda =3215A +19NA03
 AUTO, MANUAL, CENTRO, IZQUIERDA, DERECHA, LISTO, TIRA CENTRADA

Detalle Tijera Corte Lateral
 Separación Cabezas: INTERMEDIA
 Cuchilla Lado Operador: ABIERTA
 Cuchilla Lado Motor: ABIERTA
 Rodillo Soporte Tira: ANCHO GRANDE

Detalle Enrollador de Desperdicios
 Mandril: ADELANTE
 Ejector: ATRÁS
 Snubber: ABAJO
 Puerta: CERRADA

Temperatura Muy Alta, Temperatura Alta, Presión Baja, Filtro Sucio, Nivel 1 Bajo, Nivel 2 Muy Bajo

Vista General	Consignas Rollos	Consignas Proceso	Consignas Aplanadora	Accionamientos CC	Accionamientos CA Entrada	Accionamientos CA Salida	Sistema Hidráulico	Servicios Auxiliares	Desengrasado	Condiciones	Secuencias Entrada	Secuencias Salida	Historicos	Alarmas Activas	Login
Carga Rollos	Entrada	Aplanadora	Salida	Descarga Rollos	Diagrama Comunicaciones	Media Tensión	EV Entrada 1 / 4	EV Entrada 2 / 4	EV Salida 3 / 4	EV Salida 4 / 4	Encoders	Emergencias		Alarmas Historicas	

Communication Diagram

Ingeteam Línea Tensionvelado

Bobina 7182010x Longitud Remanente 344.4 m
 HIDRÁULICO OK Tiempo Pendiente 0.0 min
 ACUSE ALARMAS Longitud Enrollada 10.0 m

NEUTRO ENT.
 SECUENCIA POSICIONAMIENTO COLA.

Velocidad Línea 0.0 m/min Tiro Pre Entr. ABT 5380 kg Tiro Post Sal. ABT 5206 kg
 Tiro Entrada 1921 kg Tiro Entrada ABT 11859 kg Tiro Salida 3712 kg
 Tiro Desengrasado 2680 kg Tiro Salida ABT 14861 kg AV Tiro ABT 1073 kg

Ancho 37.00 in DC DRV 0.10400 in 04/28/2015
 Expositor 0.10400 in 17:13:21
 Elongación 0.02%

Alarm Date	Alarm Time	Tag Description	Tagname	Alarm Label
28/04/2015	04:35:52 p.m.	FALLO TEMPERATURA MOTOR BRIDA 1 RODILLO 2 ENTRADA	11_GEN_ENTIGEN_ALVAL_042	DC.DRV
28/04/2015	03:33:19 p.m.	PRESSION BAJA HIDRÁULICO UNIDAD CENTRADO DESENRROLLADOR	11_GEN_ENTIGEN_ALVAL_042	GEN.AL
28/04/2015	03:33:19 p.m.	DISPARO MAGN.ELECV.F500/F527 ENTRADA	11_GEN_ENTIGEN_ALVAL_066	GEN.AL

Diagrama de Comunicaciones

Pupitre Entrada, Pupitre Principal, Pupitre Salida

PLC Línea ControlLogix, COM. SERIE, COM. ETHERNET, PLC Entrada ControlLogix, PLC Soldadura, PLC Salida ControlLogix, PLC ABT ControlLogix

CCM DC Entrada - Drives PowerFlex DC, CCM DC Salida - Drives PowerFlex DC

Legenda: RMS, Serie, Cableado, Error

Vista General	Consignas Rollos	Consignas Proceso	Consignas Aplanadora	Accionamientos CC	Accionamientos CA Entrada	Accionamientos CA Salida	Sistema Hidráulico	Servicios Auxiliares	Desengrasado	Condiciones	Secuencias Entrada	Secuencias Salida	Historicos	Alarmas Activas	Login
Carga Rollos	Entrada	Aplanadora	Salida	Descarga Rollos	Diagrama Comunicaciones	Media Tensión	EV Entrada 1 / 4	EV Entrada 2 / 4	EV Salida 3 / 4	EV Salida 4 / 4	Encoders	Emergencias		Alarmas Historicas	