Annex No. 1

**Technical specification of Update of the control system for the web offset press type DRENT VISION U 1133**

**Technical specification – part A**

**Update of the Control system Management of web offset press type DRENT VISION U 1133**

Replacement of current ink fountain control system, web viewing system, automatic register control system and second throughput of the web (insetter) system.

**Press operation desk**

* new press operation desk, switch-board and cableway (existing cable routes must be maintained, if possible)
* the operation desk equipped with touching monitors for:
1. Ink fountain control
2. Web viewing system
3. Automatic register control system

**Ink fountain control**

* Our request is the ink control of the existing 8 ink fountains with ink ductors by using 16 new servo-drives on each of 8 printing units in the machine DRENT VISION U1133 (altogether 128 pcs of ink keys + spares). The ink ductor speed has to be controlled on all printing units according to the DGpress interface;
* Centralized operating via 23” TFT touch monitor, placed in the press operation desk (see Press operation desk).

*Ink fountain control has to fulfill all following functions at least:*

* possibility to modify the curves of dynamic press start-up
* possibility to change the ink fountain settings and ink ductor setting (running speed) among all 8 printing units
* job memory module – save and load the ink fountain settings of recurrent jobs
* possibility to prepare new jobs also during the production
* possibility to control of ductor speed directly from each printing units
* power supply with UPS (Uninterruptible Power Supply)
* remote control for maintenance and diagnostic (VPN)

**Web viewing system**

* We require the system with 2 cameras installed on the existing frames, for displaying and operating all functions centrally through the 23” TFT multi-touch monitors with real-time viewing of colors. Placed in the operation desk (see Press operation desk).
* One 3-Chip digital Camera for monitoring **back side** is required, with the possibility to the control of the front side if needed. Camera will be installed behind the printing unit No. 8 and must contain:

illumination unit for viewing in UV spectrum

illumination unit for viewing of varnish layer

motorized power flash for monitoring of front to back register

16x optical zoom lens

max. viewing area 220x176 mm

resolution 3/1280/1024 pixel

* One 3-Chip digital Camera for monitoring **front side** is required. Camera will be installed behind the tooling units and must contain:

illumination units for viewing in UV spectrum

illumination unit for viewing of varnish layer

backing plate

16x optical zoom lens

max. viewing area 220x176 mm

resolution 3/1280/1024 pixel

*Web viewing system has to perform following functions at least:*

* cameras position memory with viewing of actual position
* selection of strobe light type and intensity (flash presetting)
* job memory with job preparation function, quick job setup
* possibility to save job set profiles
* possibility of positioning the camera during machine startup
* fully automatic camera operation
* power supply with UPS (Uninterruptible Power Supply)
* remote control for maintenance and diagnostic

**Automatic Register control system**

* we require DSP Camera unit with Xenon dual stroboscope flash to detect the offset register dots of the **front web side**.

Low contrast colors, metallic and reflecting colors and UV colors have to be detected on paper as well as on transparent substrates. The power flash unit to **control front/back register.**

* next DSP Camera unit with Xenon dual stroboscope flash to detect the offset register dots of the **back web side** is also required.

Low contrast colors, metallic and reflecting colors and UV colors have to be detected on paper as well as on transparent substrates.

* traverse of the cameras must be possible
* Register control motor outputs for 8 printing units, each providing signals for the control in lateral as well as in circumferential direction.

*Automatic register control system has to fulfill following functions at least:*

* troublefree and quick scan of pre-defined register marks on transparent substrates as well as on paper, printed with low contrast, metalized or reflecting inks in order to ensure a fast and precise control of the register for all printing units and control of the front/back register. Register marks can be placed lengthwise or crosswise to the web running direction
* displaying and operating all functions of the automatic register control system via 23” TFT touching monitor, integrated into the press operation desk (see Press operation desk)
* power supply with UPS (Uninterruptible Power Supply)
* remote control for maintenance and diagnostic.

**Insetter Control system – control of a pre-printed web during the press second throughput**

* minimal request to real-time insetter controller for the detection of the mark printed during first run, calculation of the deviation and control of the infeed using analogue signal of +/- 10 V.

*Control system for the insetter has to fulfill following functions at least:*

* visualization of the system with touching operate panel located on the machine
* capture of a register mark printed during the first run also for low contrast colors

**Technical specification – part B**

**Update of the Control system of web offset press type DRENT VISION U-1133**

Replacement of current automatization ABB system and ARCNET communication interface.

Replace or renew CS31-line communication interface.

Keep all machine function according to the drawing enclosed.

**PC**

* replacement of the current PC mounted in the press operation desk:
* visualization, data acquisition and supervisor control of technological process via HMI SCADA
* VPN for digital signal transmission
* power supply with UPS (Uninterruptible Power Supply)
* possibility of remote control for maintenance and diagnostic over internet (VPN)

**ABB automatization system**

* replacement of current intelligent decentralized modular system ABB Advant Controller 31with keeping all machine function according to the drawing enclosed
* secure process automatization in the real time (mechanical machine parts control). Currently is the system created from processor modules 07 KT P 97, processor modules 07 KT 94, binary I/O modules DC 91, control unit KT51 and binary processor module I/O ICMK 14 N1

**ARCNET communication interface**

* replacement of ARCNET communication interface, which is necessary mainly for communication between processor modules of all related machine parts
* communication is currently connected to the main panel HMI SCADA, where visualization, data acquisition and supervisor control of technological process is running
* ARCNET HUB provides communication between master PLC ABB KT97 and next subordinated PLC KT97, KT94. This interface arrange nonstop communication with master programmable controller

**CS31-line**

* Replace or renew of quick two-core bus mainly arranging communication with binary I/O modules 07DC91, communication with control unit KT51 and communication with binary I/O module ICMK 14 N1

*Electronic system description:*

Each under-mentioned machine parts are controlled by modular automatization system and connected by ARCNET and CS31-line interface:

1. Printing units 1.-8.

Processor module 07 KT 97 arranges communication with two Lenze frequency converter via serial Can Bus. Lenze converter controls ink motor (550W) and water motor (360W). Connection to the printing unit DISPLAY is required. Via Bus CS31-line we can connect binary I/O numbering module 1 and 2.

1. Stacker
2. Unwinder
3. Rewinder
4. Punching
5. Base 1
6. Side cut
7. Washing
8. ZIG/ZAG
9. Base 2
10. Base 3
11. Numbering in printing unit 7 and 8
12. Cooling cylinders 1
13. Cooling cylinders 2
14. Cylinder washing

Master unit 07 KT 97 is connected via ARCNET with PPC1 DIAX 04 unit, which is intelligent MOTION CONTROL, with SERCOS optical interface. This intelligent MOTION CONTROL communicates with HDS units, which then control machine servo-drives.

This system SYNAX200 from Bosch Rexroth allows control torque, speed, position and drive internal interpolation.

PPC1 unit is connected through the serial indramat interface RS232/RS485 to the main control panel HMI SCADA. For diagnostic purposes only

Attachment:
- schematic of current connection of Drent VISION U 1133 web printing machine.

**Schematic of current connection of Drent VISION U 1133 web printing machine**

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