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Automation.Drives.Tomorrow.

Lebbing sees itself as a partner to both mechanical engineers and machine operators. The core competence lies in the field of electrical and automation engineering.

Services: Project planning and construction of switchgears, automation, visualization of production processes, In2Lutions (Innovative Industrial Solutions), modernization/retrofit of machines and plants.

Number of employees: 100

Year of foundation: 1998

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Case Study

Retrofit Gravure Printing Press (USA)

The typical gravure printing presses (manufacturer: Kochsiek) analyzed here consists mainly of the following components:

- Non-stop unwinder
- Infeed station
- Relevant number (3-5) print units
- Visual inspection
- Outfeed station
- Non-stop rewinder

INITIAL SITUATION

The SIMANTIC S5 (later S7-400) were usually used as the main controls. Drive control was handled via SIMADYN in conjunction with SIMODRIVE or MASTERDRIVE drive controllers. Register control was done external with systems of established manufacturers (e.g. Eltromat, Bobst, or similar).

The SIMATIC S5 including ET200U/B peripherals, as well as SIMADYN and SIMODRIVE/MASTERDRIVE and the older servo motors (1FT5...) are obsolete since many years, which makes replacement availability currently a critical issue and manufacturer support has been largely suspended.

For these reasons and because of much stricter safety requirements today, these systems, which were mostly constructed in the years 1980-2010, are now being retrofitted by our team in many locations around the world.

As the mechanical components – with the exception of those subject to wear – have changed only negligibly over time, they will mostly remain unaffected by the retrofits. The financial burden and time needed for a retrofit is significantly lower in comparison with the investment needed for an entirely new machine.

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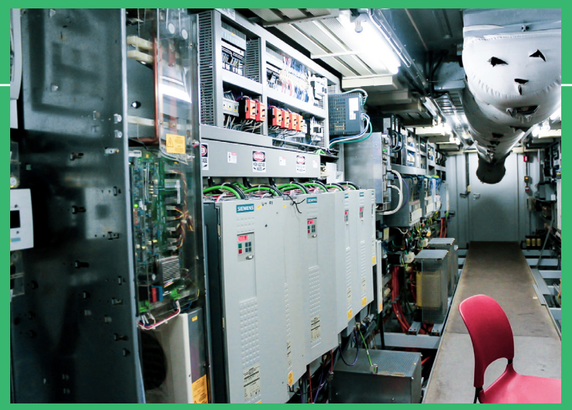
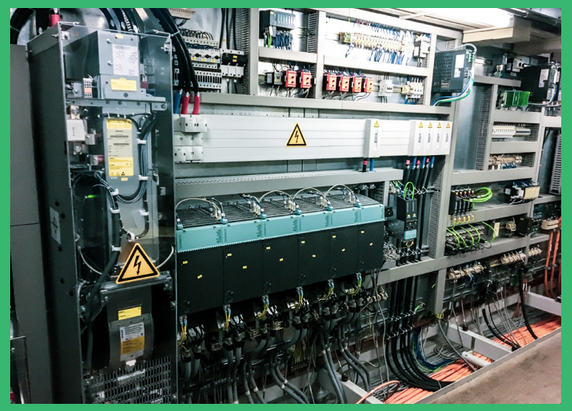
Retrofit Gravure Printing Press (USA)

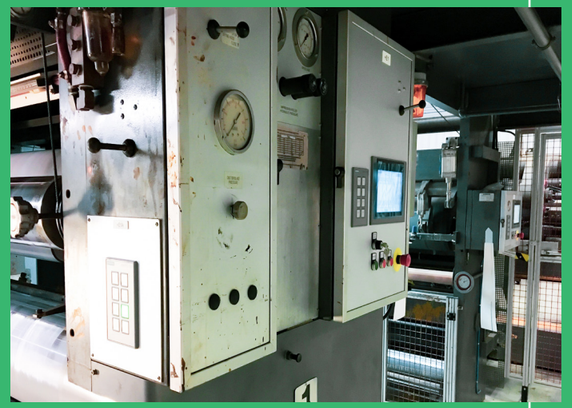
Case Study



Line drive converter before and after the retrofit



Print works operating panel before and after the retrofit



PROCEDURE

The retrofit described in this document comprised a simple replacement of critical components against those that are now readily available. Our main focus in this project was on the replacement of the old SIMODRIVE/MASTERDRIVE converter, including SIMADYN components, 1FT5 synchronous motors and the main control SIMATIC S5. Additionally, the operator panels were replaced in their entirety as some of the components in the existing system were no longer available.

This retrofit was completed at our customer facility in the US within just 3 weeks after a 6-month preparation phase. The drive controllers and converters were assembled and pre-wired on special mounting plates beforehand, so that these could be integrated very quickly into the existing control system on-site. All components (converters, I/O stations, controls, etc.) were electrified and pre-commissioned beforehand in our workshop. The new operator controls were also implemented in operating panels matching the machine specifications and pre-wired. After extensive testing in our workshop, they were easily built into the existing operating panels on site. Also, we delivered a complete new main operating stand with integrated screens for visualization of the complete line. The electro-technical and mechanical retrofit took all together about a week to complete and the commissioning of all components around two weeks.

REBUILDING IN STEPS

A retrofit of this kind could also be completed in stages. Such a step-by-step method could look as follows:

STEP 1:
Replacement SIMADYN (a new main CPU (S7 1518F-4PN/DP) will also be installed, but the „old“ CPU will also remain.
STEP 2:
Replacement of the S5 and the controls (PP17, TD17)
STEP 3:
Replacement of the drive system (SIMODRIVEs, MASTERDRIVEs and the „old“ servos (1FT5xxx)
STEP 4:
Replacement of ET200B-I/Os
Step 5
Replacement of the frequency converters in the fans

OUR RECOMMENDATION

We would like to consult with you to find the best and safest procedure for your system. We are looking forward to handling your projects and are available to you with all our experience from many successful retrofits we have completed in the past.

THE FOLLOWING COMPONENTS SHOULD BE REPLACED:

Simatic S5-135U	→	Simatic S7-15xx
Simatic ET200B	→	Simatic ET200SP or MP
Servo motors on 1FT5-basis	→	Simotics S (1FT/1FK or 1PH8)
Drive controllers SIMOVERT Masterdrives	→	Sinamics S120 for linear actuators
	→	Sinamics G120 for fans
Drive controller SIMODRIVE	→	Sinamics S120
Drive control system SIMADYN	→	Simotion D4xx
FU Micromaster	→	Sinamics G120
Simatic TD17	→	Simatic touch panel (e.g. KTP700)
Simatic PP17	→	Simatic KP8 oder KP32
Visualization WinCC	→	Simatic WinCC TIA Advanced