



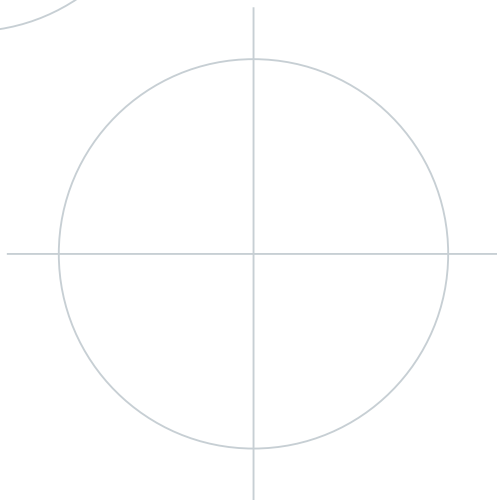
Profitability by Design.

Component

A background image showing a close-up of a printing press control panel. The panel is white and features several buttons, a small screen, and a keyboard. The image is slightly blurred and has an orange tint. A horizontal orange bar is positioned below the image, separating it from the text below.

PECOM.

Networking in
commercial web offset printing.



PECOM is heading for success.

High print quality, excellent colour reproduction, fast make-ready, small waste volumes – these are the central demands facing printing companies specialising in commercial web offset printing. Those who fulfill these demands can be optimistic about the future. The prospects are good if productivity and profitability are good. The comprehensive automation and integration of the entire production process plays a decisive role. The buzz-word is MAN Roland's PECOM. This refined and powerful automation and data management system for commercial web offset printing provides every opportunity to exploit potential and increase efficiency.

PECOM encompasses process control and press presetting, and production planning and monitoring, as well as storing and evaluating production data. Prepress steps and production planning are integrated in just the same way as materials logistics and commercial order management, via data links and interfaces. PECOM thus establishes the prerequisites for highly automated commercial web offset printing production processes, combined with forward-looking profitability and quality of the highest level.

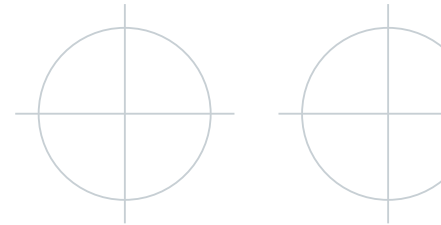
MAN Roland's market leading PECOM system has a modular structure, and can be expanded to various levels, to meet perfectly the requirements of any print house. For more profitability by design.

PECOM for everyone.

As the pioneer of modern electronics in the graphic arts industry, MAN Roland developed the PECOM concept for the entire field of application of offset printing. The digital process electronics system not only opens up prospects for commercial web offset which point the way ahead, but is also used just as effectively in newspaper printing and the many areas of sheet-fed offset printing. The hardware and software of each solution is specifically selected to meet the different requirements.

PECOM – the benefits at a glance.

- ❑ Customized solutions in an open system architecture
- ❑ Optimization of processes via system integration
- ❑ Optimum production planning and presetting
- ❑ Increased efficiency via automation
- ❑ Security of investment through compatible software
- ❑ Full process control and transparency of processes
- ❑ High availability resulting from reliable systems engineering
- ❑ Simple and quickly learnable operation
- ❑ Integrated machine and automation technology solution from one source
- ❑ 24 hour total service



The PECOM concept: PECOM, the automation and data management system for all MAN Roland commercial

web offset series, comprises three integrated levels, in which PE stands for Process Electronic, C for Control,

O for Organisation, and M for Management.

PECOM Process Control: control, regulate, supervise.

The PECOM control console is the control centre for all machine functions, as well as for important operations throughout the process.

PECOM Process Control. The Process Control level comprises the control system for the drive and printing units, the measuring and regulating equipment for quality control, and the most important element, the central control console for operation and remote adjustment of all the machine components, as well as presetting, monitoring and quality assurance. It guarantees complete process control and regulation, which incorporates the many different functions.

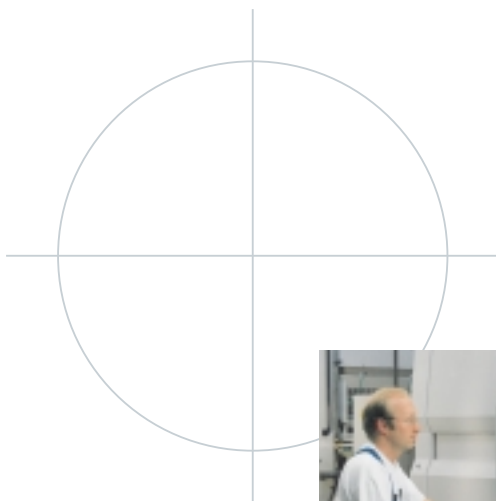
The PECOM concept of central control.

The central control console controls the entire system, monitors the printing process, and optimises print quality. This heavy duty device, which is equipped with a stand-by battery power supply, and is based around the robust, future proofed LINUX operating system, performs server functions on the central level of the system. These include the coordination of the various machines, as well as process visualisation and machine operation.

The production process is displayed on a full format colour console and a high resolution graphics monitor: the information from all the inking units is displayed in an easy to understand manner, via an LED display. Adjustments to inking

zones, colour registration, ink and damping rollers, or areas with no ink feed, can be made via the colour console. The individual printing units are also controlled from the control console, which also issues system and printing commands. In addition, drive technology, and measurement and regulation sensors for ink/damping and registration, are integrated in the PECOM central control console.

An additional control console next to the delivery facilitates remote adjustment of the folder superstructure and the folder without having to move or suffer a time delay.



The PECOM central control console, control and monitoring of the entire printing process.

(Right-hand monitor is optional for the PECOM Video System.)

Linking with interfaces.

The various additional units in the PECOM system can be linked by interfaces, e.g. dampening solution processing, blanket washing device, colour register regulation, cut-off register, dampening solution processing, dryer, gluing and softening device, conveyor belt. TeleLink 1, which establishes a direct link with the MAN Roland Tele-Support-Center, diagnoses online malfunctions.

Directly reducing waste.

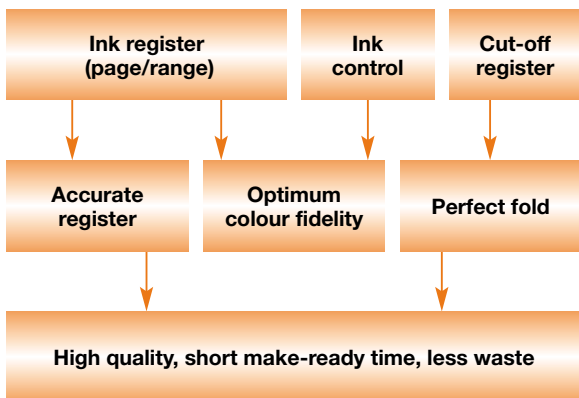
QuickStart 1 contributes to the reduction in start-up waste, by automatically preinking according to light, medium or heavy mean values, in conjunction with an optimum start up sequence. QuickStart 2, in conjunction with the Preset-Manager, shortens the ink control time and reduces start up waste to a minimum.

The waste copy control separates out waste copies which are generated during reel change. The exact position of each waste copy is calculated depending on the web paths, and then automatically ejected by the waste copy control. This makes it possible to reduce the number of waste copies in each order.

The most important functions of the central control console.

- Activating machines and printing
- Display and operation of inking zones, dampening and ink fountain rollers
- Display and operation of web tension devices, turner bars, cutt-off registers, draw rollers
- Display and operation of folding units e.g. folding jaws, collecting cylinders, pre-folding, transverse perforation, former blower
- Automatic dampening and inking unit tracking control
- Automatic activation and assignment of web break protection and web severing devices
- Incident and malfunction notification, with detailed location information
- System's operating condition
- Production speed
- Copy counting
- Separate operating hours and revolution counters for each part of the system

The PECOM central control console comprises simple, safe operation of the entire press, from reel splicer to delivery.



Three process regulations for the best quality.

PECOM Process Control.

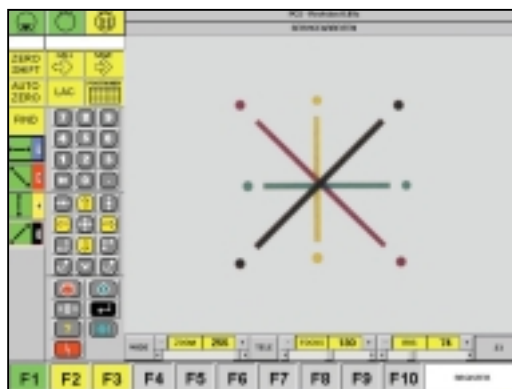
Precise register, high quality, less waste – these are the advantages of the PECOM Video System, which quickly pays for itself.

The PECOM Video System. The video system, with its colour register control and integrated web monitoring, is an important automation module for increasing print quality. The colour register control, with automatic mark search according to a default position, allows mark, error control and continuous contrast adaptations to be changed at any time. The additional, visual check of the colour register control quality enhances the quality assurance. The colour register control system is operated by the video keyboard, or with the mouse.

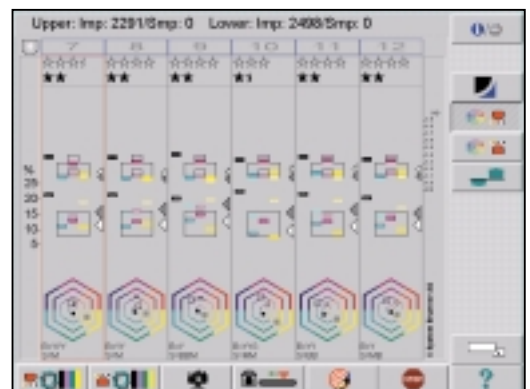
Integrated web monitoring provides automatic scans of all the areas, shows the registration mark on the monitor, and allows evaluation of the diagonal registration and direct register correction. 99 master pictures can be stored for each web side. In addition, it is possible to compare pictures for long-term quality control.

The ColorLoop System. The ColorLoop system for inline colour control according to density values or the grey balance ensures the highest print quality via optimum colour fidelity, and reduces once more the waste generated during start-up and running on. The ColorLoop system comprises the aviator component for the colour value (hexagon) display, with setting recommendations and Instrument Flight for the regulation of grey balance values, with process diagnosis according to the Brunner system.

Quality control is shown by the chronological variation of the colour values with the integrated measuring data recorder, in which either individual, or all measured values are plotted in the form of a histogram. This means that it is possible to call up for the customer a comprehensive quality record complete with measurement fields, periods of time, and data.



Register on the monitor and registration mark for high print quality.



Hexagon for colour value display and for setting recommendations.

Plan, organise and automate.

PECOM Process Organisation.

The PECOM Production-Manager™ (PPM) is the central focus for automated production planning, presetting and analysis. The spectrum of PPM functions ranges from perfect order planning, to system and ink presetting using Prepress-Link, through to PressMonitor – a display of current machine status, and the saving of processing data in an electronic logbook, using web technology.

The PECOM-Production-Manager™.

The PECOM Production-Manager™ was developed to facilitate optimum planning, presetting and analysis of print jobs. It prepares the production data for one or more presses centrally. Like the PECOM central control console, the server, which is equipped with a stand-by battery power supply, uses the LINUX operating system. A ProductionManager workstation consists of a colour-X-terminal for input and displaying functions, and a networkable post-script laser printer.

Plan better, print more profitably.

The PECOM Production-Manager™ generates all data relevant to production. This includes e.g. automatic establishment of web guides, with the automatic activation of all monitoring devices and presetting of folding diagrams.

During the automatic generation of presetting data, the system learns to recognise wear and changes in settings due to dirt, and automatically includes them in the calculation of the ink preset values. After a small number of production cycles, the presetting is so precise that practically no further correction is needed. The optimization of presetting data is achieved through a required-actual comparison, including materials data such as paper quality and ink grade.

The most important PECOM-ProductionManager™ functions.

- Automatic generation of presetting data
- Optimization of presetting data
- Display and management of production schedules
- Generation of a production task (job)
- Management of production libraries
- Supervision of the different types of production
- Importing data from planning systems
- Exporting data to evaluation systems

Technical order

preparation and

production

planning using

the PECOM

Production-

Manager™

leads to improved

efficiency and

profitability.



Separate monitor workstation for work on PECOM-ProductionManager™.



Plan, organise, automate.

**Putting order data
online using the
PresetManager
saves time and
avoids errors.**

The PresetManager.

This module facilitates automatic ink presetting using data from the plate scanner. Alternatively the data is transferred online by PrepressLink from the prepress stage in CIP3 format or as RIP. Mixed operation using the scanner and PrepressLink is also possible. The presetting values established are transferred directly to the central control console. PresetAnalyzer, software which graphically compares the required/actual values and ink presetting against one another, is used for presetting analysis.

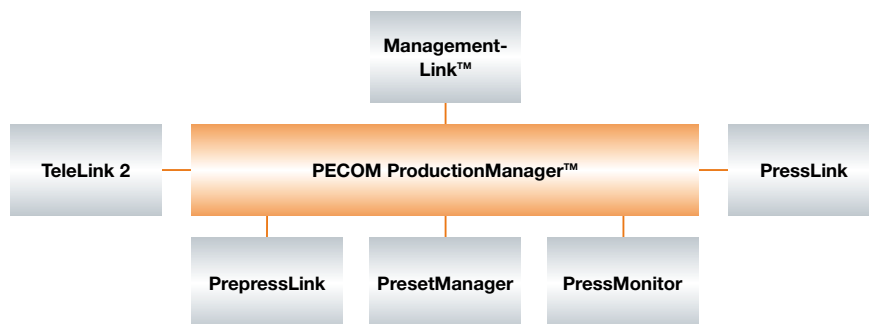
The ink zone openings and the number of ink rollers are calculated by optional ink preset and optimization software, taking account of ink and paper quality. The adjustment values are calculated via a transformation function which produces a relationship between area coverage and adjustment values. This optimization software ensures that this transformation function is consistently adapted to the machine-specification conditions.

The PressLink.

PressLink interlinks individual presses (machines) via a central PECOM ProductionManager™.



PECOM-Online-Scanner.



PECOM ProductionManager™ functions.

The PressMonitor.

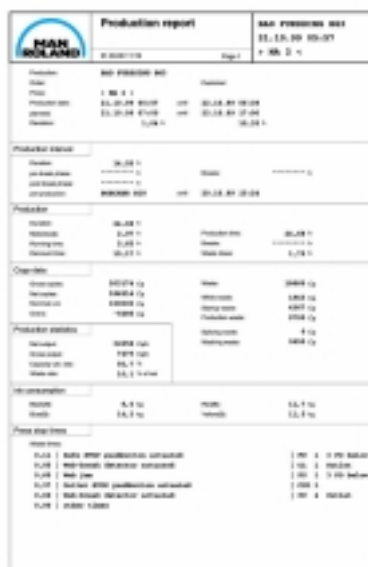
PECOM PressMonitor allows management to be in control at all times. It supplies all production data and shows the current production status. Recording and storage in the logbook of all states and events relevant to production, and the output of chronological logs complete the range of functions.

The following functions are supplied by the module for recording and storing all relevant production, machine and consumption data:

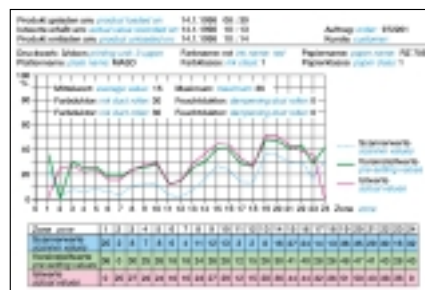
- The logbook – an electronic database for the automatic or manual recording of all changes in the condition of the system, and individual events. The data is permanently recorded second by second. The logbook uses web technology, the data can be analysed in a browser.

- The production report – this clearly displays the most important details, such as when the job was started, its duration, set up and running on time, amount of waste, ink consumption, down times and production events such as, for example, web breaks.
- TeleLink 2 – facilitates the online transfer of details to the Tele-Support-Center, where MAN Roland experts carry out competent process analysis and optimization.

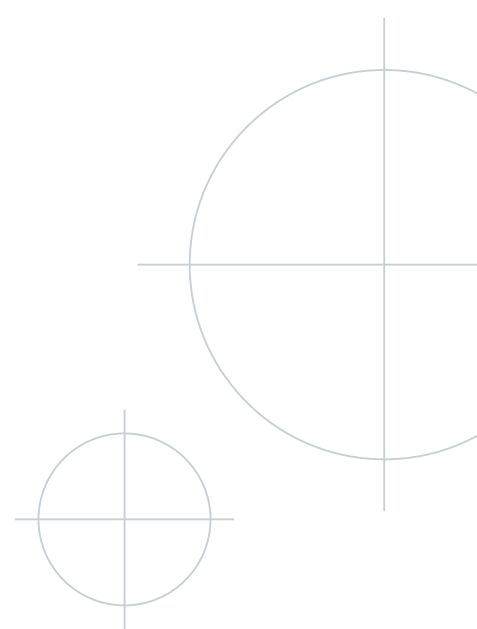
PressMonitor makes important management information available via the logbook and the production report.



The production report provides a condensed evaluation and analysis.



Preset analysis log.



PECOM Process Management.

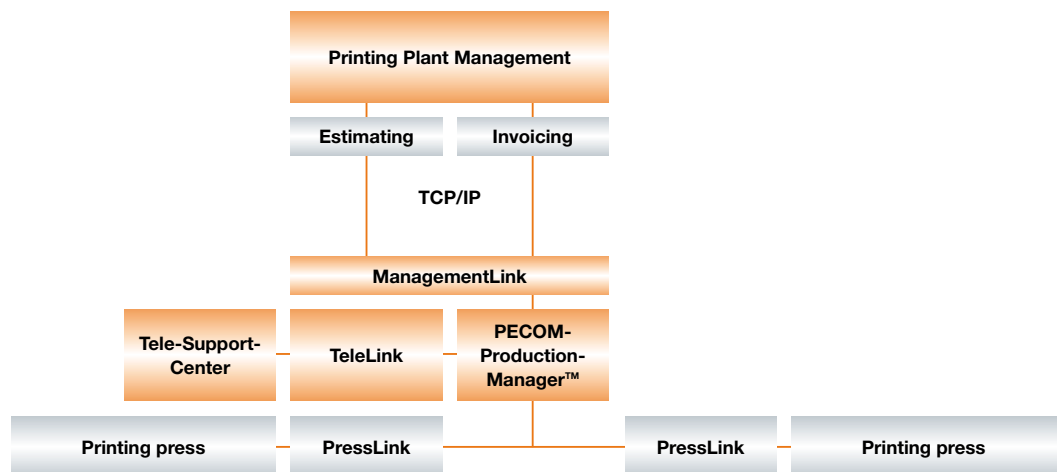
PECOM guarantees data flow, not only between prepress and printing, but between management and production.

Analyse, optimise, manage. Important elements such as ManagementLink with its Logbook Interface (LBI) and Production Definition Interface (PDI) components, are part of the Process Management level. They provide comprehensive operation and report data for evaluation. With this basis, the ProductionAnalyzer can prepare statistics and trend analyses for the presses and for production, with connection to the Tele Support Center for data analysis and process optimization also being possible.

The ManagementLink. The Logbook Interface (LBI) and the Production Definition Interface (PDI) ensure full monitoring and transparency of the production process. The complete logbook can be transferred fully automatically to the customer's IT system for operating data recording and evaluation, via the LBI interface. The logbook filter function allows the definition of criteria for searches in the logbook. Several entries are normally compiled into a single search filter. Just like the operating events recorded in the logbook, production report data can either be downloaded into the customer's own IT system, or transferred to a customer PC under interactive control, and called up from there.

The PECOM ProductionManager™ production report function is used to evaluate production processes on the basis of data concerning production time, set up time, failure data, waste, performance and, for example, paper and ink consumption. Further possibilities for evaluation are offered by sector software solutions from, for example, Optimus, SAP and others.

Data concerning production preparation and job planning is transferred to PECOM ProductionManager™ via the Product Definition Interface (PDI). In addition, the workflow for all systems in the print house can be optimized. The necessary data for this, for example about print runs, planned production periods, number of pages, and colours comes from the production planning system.



PECOM system configuration.

ProductionAnalyzer.

Statistical performance values are calculated from the stored data from events of individual production or a production group, and displayed in a production report. Continuous analysis of logbook data in conjunction with the logbook filter expert system can be used in the ProductionAnalyzer for long-term trend analysis. It provides statistics and trend developments for press, and production on the basis of the report data and the logbook.

MAINSYS maintenance system.

The MAINSYS software package allows MAN Roland to provide an automated planning system for programmed maintenance and service of complete printing systems. MAINSYS is installed in the Production-Manager as a PECOM component. In this way, the system can also take over the maintenance planning for several production systems in different locations. Furthermore, components and units manufactured by other manufacturers can be incorporated.

AUROSYS Material Logistics System.

PECOM can be linked with the AUROSYS automatic reel and material handling system via an interface. The REEL DATA MANAGEMENT function thus allows particularly efficient material planning.

Management

Information

Systems for

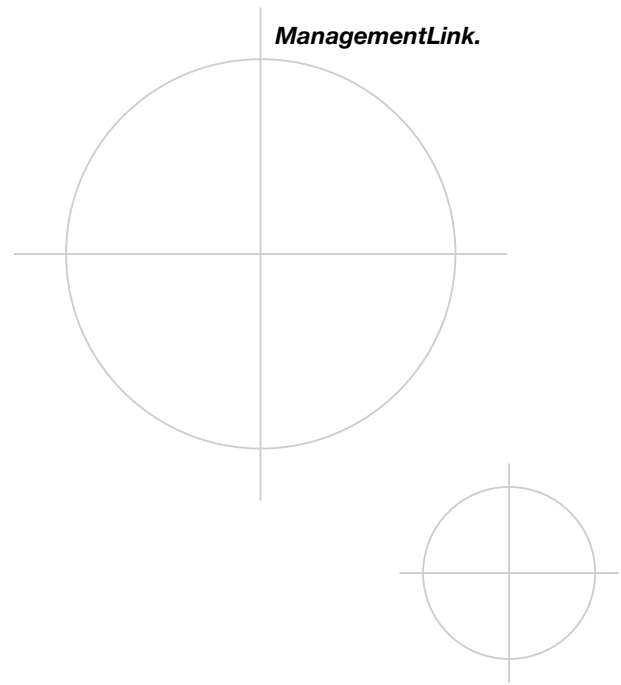
estimating and

invoicing and job

tracking can be

interlinked via

ManagementLink.



PECOM – the comprehensive system for production planning, monitoring and the evaluation of all information.

For more profitability by design.

	For shorter make-ready times	For less waste	For better print quality	For more efficient planning	For more profitable processes	For better production security	For optimum investment security
Control level							
LINUX operating system						X	X
PECOM Video system		X	X		X	X	
ColorLoop		X	X		X	X	
TeleLink 1	X	X		X	X	X	X
Folding control console at delivery unit	X	X			X	X	
Organisation level							
PECOM- ProductionManager™	X	X	X	X	X	X	X
PrepressLink	X	X	X	X	X	X	X
PressLink	X			X	X	X	X
PressMonitor				X	X		
PresetAnalyzer	X	X	X				
Management level							
Logbook Interface (LBI)				X	X		
Product Definition Interface (PDI)	X	X		X	X	X	X
ProductionAnalyzer		X		X	X		X
TeleLink 2	X	X	X	X	X		X



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The PECOM system is subject to continuous enhancement and altered according to the results of research and development gained through practical experience. Therefore we reserve the right to modify design features and technical data. Only the Confirmation of Order will be binding.