PC-Topp

The Experienced Scheduling System

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About Us

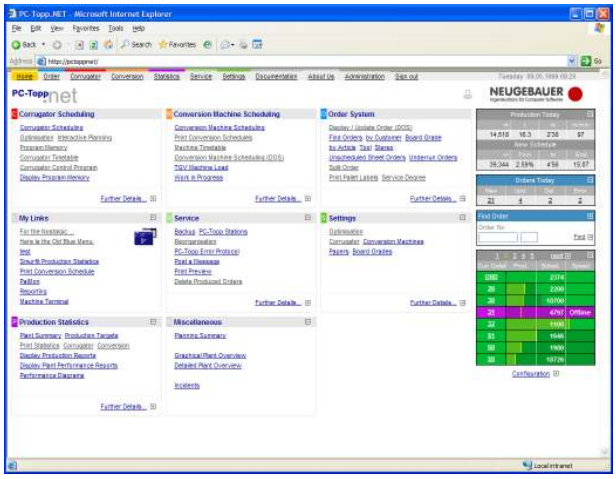
The Company | PC-Topp – The Experienced Scheduling System

More than 30 years of development and the experience from over 250 plants stand behind PC-Topp.NET, the latest, web server based version of Europe's leading integrated solution for scheduling production on the corrugator and conversion machines.

"When I first came into a corrugated box plant in 1974, still as a student of computer science, I had no idea that I would still be working for this fascinating industry over 30 years later," says Rainer Neugebauer, head of a team of specialized software developers. "Today, industry leaders everywhere use our production scheduling system. We started on then-modern Wang systems – today we're using Internet technology to meet the needs of our customers."

PC-Topp was designed to bridge the gap between commercial data processing and production. It integrates seamlessly into any pre-existing IT environment, bringing together a proven solution for Planning and Production that fulfills all their requirements.

PC-Topp, the expert solution, is within easy reach: No need to abandon the commercial software currently in use, no need for a complex new hardware system.



PC-Topp: System Overview

A Complete Integrated System | Planning, Data Collection, Information

Seamless Integration with Customer's ERP or Other Commercial IT System:
PC-Topp takes orders and other data from the host, and delivers production data – in real time. Designed for networked PCs running under Windows, PC-Topp is easy to implement in any environment.

Corrugator Scheduling:
Automatic Optimisation calculates excellent alternatives within seconds, Interactive Planning allows the planner to draw on his experience.

Conversion Machine Scheduling:
Schedules are created interactively, with a simple and natural user interface, allowing flexible reactions to rush orders or to problems in production.

The Tight Integration of Conversion Scheduling and Corrugator Planning makes Pull Planning a reality – from Shipping through Conversion all the way to the corrugator schedule.

Two Ways of Planning:
Modern: Conversion first, the corrugator last – highest precision in scheduling, best control over work-in-progress.
Classical: Schedule the corrugator first, then distribute the orders on the conversion machines – the way most people plan by hand.

Perfect Integration:
PC-Topp combines integrated corrugator and conversion machine scheduling with on-line links to the corrugator and to the conversion machines.

Direct Corrugator link:
Available for corrugators from all major manufacturers. On-line production monitor; transfer of schedules to the machine, upload of production data in real time.

Machine Terminals in conversion:
They show the conversion machine schedules, order details, even CAD drawings right at the machine. Automatic capture of quantities, downtimes, quality checks.

Pallet Labels:
Laser-printed labels, fully personalized design including barcodes, specific layouts for selected customers.

Windows Labeling System:
Graphical design module, logos, complex barcodes (SSCC).

PC-Topp.NET:
PC-Topp.NET unites all the strengths of our expert solution with the advantages of a web server application - high speed, improved performance, more independence: PC-Topp.NET can be used on any PC on the customer's network, or even across the Internet.

With the Internet Explorer as its primary user interface, it is as easy to learn as it is to use in everyday work. And because PC-Topp is based on an application framework that has been proven over many years in dozens of plants, the system offers the reliable and stable operation that your plant requires.

PC-Topp.NET – the Latest PC-Topp Generation

PC-Topp.net

Web Server Application | **Performance, Speed, Flexibility**

PC-Topp.NET is the latest version of our Scheduling System, replacing PC-Topp 2000 and earlier versions. It represents one further migration step in PC-Topp's development from a DOS application to a full Intranet and Internet solution.

PC-Topp.NET is based on Microsoft's .NET technology, designed to develop secure, robust and high performing Web applications using techniques like Ajax or XHTML/CSS and industry standards like XML and Web Services, facilitating integration by sharing data and functionality over the network.

The Service PC: The Heart of PC-Topp.NET

The central component of PC-Topp.NET is the Service PC, an application server combining a web server that generates all PC-Topp Intranet pages and an NT service that allows the web server to interact with the PC-Topp database. The PC-Topp service accesses the PC-Topp database in parallel with any PC-Topp programs running on the client PCs, and presents the data structures in XML format. It also provides all functionality required to operate PC-Topp, from corrugator scheduling to conversion machine planning and all the rest of PC-Topp's many functions.

Web Server Operation

A Windows IIS web server that also runs on the Service PC presents the data in clearly organized pages that offer easy ways to interact with PC-Topp. Thus, users can do their work using an Internet-like environment everybody is instantly familiar with.

Using a web server makes PC-Topp a real Internet application, whose use is not limited to the local area network: PC-Topp.NET works well on a WAN environment, or even across the actual Internet. Because the operational speed depends mostly on the Service PC, even slower client PCs let the user work with PC-Topp in a reasonable way.

The web server and its underlying software process information proactively: Data is collected and made available by a central service, thus increasing the speed with which they can be displayed throughout the system. For example, the Plant Overview visualizes the production process practically in real time, and the Machine Load reflects the latest planning changes.

Classical PC-Topp Components

While more and more PC-Topp functionality is provided in HTML pages, the migration process is not complete as yet: Certain core functions are still provided by classical components that run in a separate character mode window. Like all PC-Topp functions, they are accessed by clicking on a link in a PC-Topp.NET page.

Because the foundation of those classical components goes back many years, they form a solid groundwork for PC-Topp. They offer the same efficient user interface as the original DOS application, making the transition easy for users with a long experience with PC-Topp. And because these modules have been proven for years, they are the basis for the high reliability that the application has maintained throughout the migration process.

However, PC-Topp.NET is DOS-free now: The classical programs have been converted to real Windows programs that make use internally of the full Windows API. They support mouse operation, and impose no special rules on the users.

Use PC-Topp Anywhere You Like

PC-Topp gives users flexibility, as it can be used at any workstation on the plant's LAN. Thus, a planner can access PC-Topp from any PC, no need to go back to his own workstation. On top of that, all of PC-Topp.NET's Intranet pages can also be used in the following ways:

- The system is usable across a plant's WAN: Remote parts of a plant can be fully integrated into the site.
- A group of plants connected in a WAN can access order progress and production results from any of the sites anywhere on the WAN.
- PC-Topp.NET can even be used via the public Internet: A planner can resolve an emergency from home, management can access the latest production figures, or salespersons can check order progress and capacity from on the road.

PC-Topp.NET meets all the technical requirements for multi-site planning. Thus, it is of course also easy to show, print and actively modify schedules in a separate production building or at a subcontractor, connected via LAN or over the Internet.

Fully Automatic Updates, Easy Installation

PC-Topp.NET keeps itself up to date on the client PCs: Whenever an update is available on the server, it gets automatically installed on any client PC the next time a user logs on. And even a new or replacement PC can be installed remotely without needing to be on site.

At a Glance

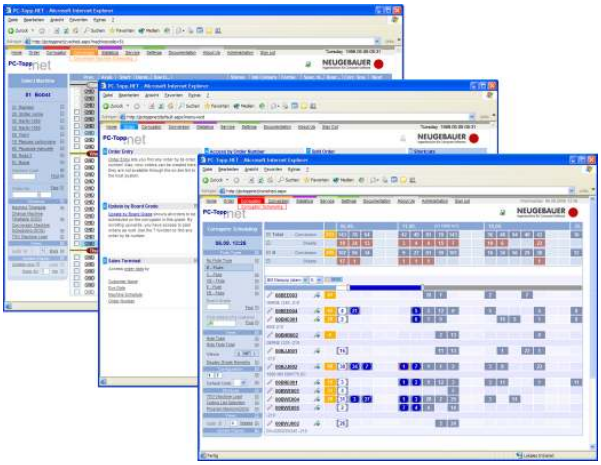
PC-Topp.NET Is a Web Server Based Application
High performance, full user flexibility: Use PC-Topp in LANs, WANs and even via Internet.

No Local PC-Topp Installation on Most Client PCs
Only workstations with full planning functionality require locally installed classical programs.

Custom-Tailored Access to PC-Topp
Each user gets the functionality he needs, in his own environment, on any PC.

Modern User Interface for Easy Operation
Economic page layout, good usability, mouse and keyboard navigation.

Advantages and Improvements | Benefit from the new PC-Topp



Fresh and User-Friendly Design, Ease of Use

The PC-Topp.NET user interface was designed to make the system easy to operate and immediately understandable: A lean, uniform page layout leaves ample space for the data and presents it clearly and attractively. Shortcuts and functions relevant to the contents of the page are bundled in toolboxes which present all important page functions in a unified, well organized way. The color coded menu structure helps you to find your way in the system and shortcut letters on the menu pages allow you to use your keyboard to navigate the page - no need to use the mouse.

Perfect Integration of Job Cards and CAD Drawings

Users can access job cards and CAD drawings on any PC in the corporate network. When an order is shown on a PC-Topp.NET Intranet page, a simple click on a link can open a spec sheet complete with drawings, a graphic of the printing dies, or the die-cut forme. And the user is sure to always have the latest, up-to date version, while paper can get old unnoticed and quickly. The most frequently used file type is Adobe Acrobat PDF, any other file type, any Windows document or application can be linked to any of the fields of an order.

Access All PC-Topp Data in a SQL Server Database

When this optional feature is installed, all live PC-Topp data as well as production history data is made available in a SQL Server database. With just minimal delay the data is at hand for further processing according to the wishes and necessities on site and can be used for production reporting, statistics or any other kind of production figure overview. The database also stores production data in archives that make it easy to look up production data even years after it has been accumulated.

Test PC-Topp.NET Online Now

We offer a free on-line trial version of PC-Topp.NET. No download necessary - just get a user account and test the PC-Topp.NET look and feel live to see what our product has to offer! Please visit our demonstration site on http://demo.pctopp.com

PC-Topp.NET's functionality is enhanced by many features that make the daily work of planners, management and machine operators easier.

- The **Plant Summary** shows the last produced order, the current job and the next one, complete with real-time count and machine status. In addition, it shows the totals of the current shift in real-time as well as the previous two shifts, and offers on-click access to shop floor production data and performance graphics.
- **Optimise This!** This feature helps the planner by automatically putting the orders in the best possible sequence, making sure that all orders are on time, similar jobs are together, minimizing the number of ink changes, etc.
- **Flop Ten Customers:** Just one example of how PC-Topp is made to suit the planner's real-life needs: Each plant has difficult clients; PC-Topp highlights them and indicates what to watch out for.
- The **Planning Summary** is a glimpse of things to come, it will radically change the way the system is used today: Instead of repeatedly going through the schedules checking for new problems or ways to improve, planners will leave it to PC-Topp to alert them when it spots such a situation, often offering the right tool to take care of it automatically, with just one click.
- **PC-Topp.NET Monitor Screens** like the Corrugator Monitor and the Palletizer Monitor are designed to provide constantly updated production information on the shop floor which is readable even from a distance.
- **PC-Topp.NET Plant Terminals** are designed for use with touch screens but can just as well be used with mouse and keyboard. They display permanently up to date production data in a clear, intuitive design.

  The Machine Terminal guarantees an up-to-date schedule and provides data for comprehensive production statistics. It offers the machine schedule, current order details, a graphical machine view, a system-wide messaging module, quality checks after a variety of events and more.

  The Waste Terminal is used at the end of the corrugator. It shows the last runs produced on the corrugator, the current job, and the next scheduled jobs. The operator can enter the number of waste sheets for each run of an order and print pallet labels with it.

  The **Corrugator Control Page** shows the situation at the corrugator, transfers schedule changes to the machine and allows modifying the run sequence to authorized users. It allows printing labels and production documents at the corrugator.

At a Glance

All PC-Topp Data Available in a SQL Database
Produce your own customized production reports and statistics.

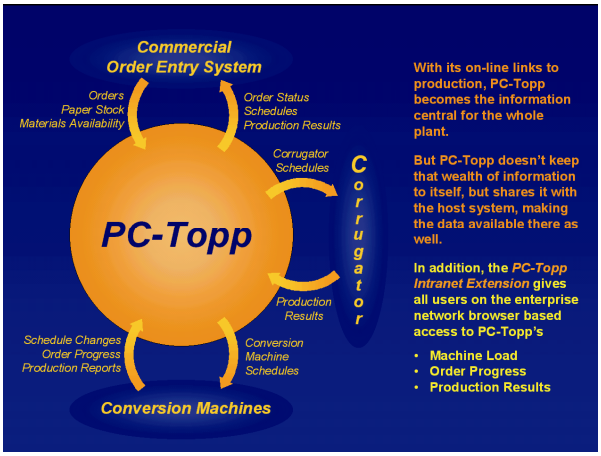
Perfect Integration of Graphics or Other Applications
Access to production documents and drawings on any PC in the network.

Easy Installation, Maintenance and Use
No more DOS, easy backup and reorganization.

Lots of Powerful Functionality
Plant Summary, "Optimise This!" in machine scheduling, PC-Topp.NET Monitors & Terminals, Work in Progress, Planning Summary etc.

Communication | Data Exchange With the Commercial IT System

PC-Topp integrates seamlessly with any ERP or order entry system a customer may be using. Ideally, a new order is available in PC-Topp within seconds after it has arrived, and right after each order change, the commercial system knows which orders have been completed on the corrugator.



PC-Topp uses a standard interface for the data exchange with each host system. The solution is so simple that its requirements can be met by any host system, yet at the same time it is so powerful that the border between PC-Topp and the surrounding software becomes invisible.

Order Data Transfer

PC-Topp has its own separate order data base that is kept updated by frequently repeated order data transfers. The result is an independent but perfectly synchronized data base, ready for use by Planning at any time.

Each transfer includes all new orders as well as modifications and cancellations that occurred on the commercial system since the previous transfer. These same transactions are then performed on PC-Topp's order base.

PC-Topp checks for errors or potential problems: A warning message appears when the sales department tries to modify an order that is already scheduled. PC-Topp also warns if the due date of a new order is too near and puts it in danger of being late.

On the planner's desktop, in the "My PC-Topp" area, the number of transferred new orders, any modifications of orders or errors in the transfer are shown, and a click on the numbers opens a list of those new orders, or the error protocol.

Transfer of Corrugator and Conversion Machine Schedules

Whenever an order is scheduled for the corrugator or a conversion machine, PC-Topp informs the commercial system. Any change in the schedules is reported as well. That enables the host system to show in its own software at what date and time an order is expected to be finished on the corrugator, or when it should be ready for delivery.

Or else, the host system might use that information to reject a modification to an order that has already been produced on the corrugator.

Production Actuals

Its on-line links to the corrugator and to the conversion machines enable PC-Topp to deliver production actuals in (almost) real time. Order progress information is available on-line, all manual data entry is eliminated.

Paper Stock, Availability of Printing and Cutting Dies

If available, PC-Topp can make good use of that information as well as other data, but the system contains functionality that allows it to address those points without the need for data from the host.

Permanent Data Exchange

PC-Topp and the host system exchange data using a shared directory somewhere on the network; alternatively, PC-Topp can use the host system's file transfer software. Transfers are executed instantly: For example, when a new order has been entered by Sales, it appears instantly in PC-Topp – the boundary between the two systems disappears.

PC-Topp on Every Desk

While PC-Topp is well prepared to share information with any host, not all host systems are ready to use the information offered. PC-Topp can be installed on any PC in the plant, using custom-tailored solutions like the PC-Topp Sales Terminal, or the Free Terminal. Thus, users can view directly in PC-Topp any information the host is unable to show.

At a Glance

Permanent Data Exchange
Perfect Integration with the commercial IT system

Independent, Synchronized Order Data Base
Planning and Production have access at any time.

Connects to Any ERP System
SAP, RTS, Volume Software, or customer's own order entry system

Shipping, Conversion, Corrugator | **Two Ways of Planning - Classic or Modern**

PC-Topp is a tool for the entire planning department, for corrugator scheduling, conversion machine planning, and even shipping. And it approaches those tasks the same way planners have been working manually, allowing the planner to build upon his experience.

Corrugator and conversion machine scheduling are perfectly integrated in PC-Topp, they both work off the same shared data base. Any change to the schedule is instantly visible in Production, each order end message from the plant immediately updates PC-Topp.

The Classic Approach to Scheduling

The planner can use PC-Topp to create a well thought-out corrugator program, and then line up the orders for production on the conversion machines in the best possible sequence. PC-Topp then tells him which orders will become available for shipping (and at what time), and even allows him to group these orders into truckloads.

Modern Pull Planning

Modern Pull Planning has many advantages over traditional methods: Rather than "pushing" from the corrugator to the conversion area, the planner can start with a refined conversion machine program for the day (and beyond), and then "pull" exactly the required orders from the corrugator.

PC-Topp helps him to create a lean corrugator schedule, with no adverse effects on corrugator production. This modern approach can drastically reduce work-in-progress, it increases the ability to react flexibly to last-minute orders, and makes the order progress transparent at a much earlier stage.

Advantages of Pull Planning

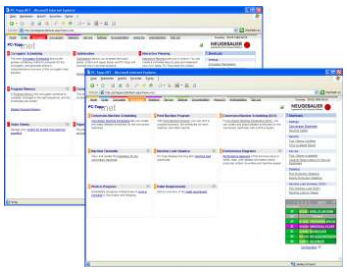
That approach has some remarkable advantages:

- **No more downtime for lack of orders:** Pre-planning lets the planner identify bottlenecks at an early stage, giving him time to adapt his schedules.
- **Reduced work-in-progress:** Only those orders are scheduled for the corrugator that will be converted promptly. This reduces work-in-progress to a level that is close to the required minimum.
- **Improved corrugator production:** Contrary to some popular beliefs, corrugator productivity doesn't suffer, but is often greatly increased. Clearly, it cannot hurt to know in advance which orders will really be required. And the reduced level of work-in-progress allows Planning to add optional orders to further improve the result of Optimisation.

Pull-Planning in Detail

And this is how modern Pull Planning with the integrated scheduling system PC-Topp works:

- The order that is currently running on a machine (as well as those that follow) has obviously been finished on the preceding operation and is ready, waiting in front of the machine. The subsequent orders are firmly scheduled on preceding machines, but haven't been run there yet.
- Further down the schedule, orders are just pre-scheduled in a preliminary sequence.
- Those pre-scheduled orders automatically appear on the preceding operations on a suitable production day. The planner then fine tunes the sequence to further optimize productivity.
- In Corrugator Scheduling, the system automatically identifies the orders that are required in conversion. As soon as the next set of corrugator schedules is ready, PC-Topp helps to determine the optimum production sequence that ensures that all orders are delivered on time to conversion.
- New orders that are urgent are integrated into the existing conversion machine schedule, other, less urgent ones, are added at the end of the lineup. Thus, Planning has a consistent schedule for the next few days ready at all times.
- In the event of a last minute order, a sudden breakdown or other mishaps, PC-Topp helps to identify and eliminate the resulting conflicts before they become production problems.



At a Glance

PC-Topp Implements Modern Pull Planning
Perfect conversion schedules with no trade-off at the corrugator

Pull Planning Has Significant Advantages
No more downtime for lack of work
Reduction of work-in-progress
Increased corrugator productivity
Flexible reaction to last minute orders or incidents in production

PC-Topp Knows "Classic" Scheduling as Well

Corrugator Scheduling

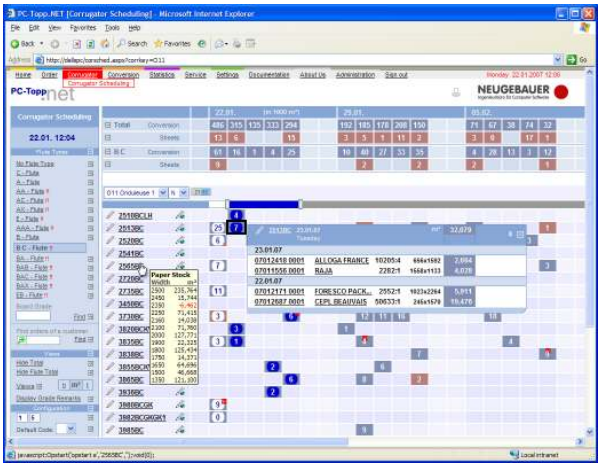
PC-Topp.net

Corrugator | Perfect Scheduling – Automatic or Interactive

PC-Topp offers two ways of scheduling: Automatic Optimisation and Interactive Planning. In both modes, PC-Topp knows the tricks of the trade: It can work for one, two or three cut-off knives (even the dreaded Simon Triple Split knife), it knows "pinching", when to upgrade (and when not), it knows about scoring limitations, special scores, tear tapes, and it knows which order in a setup should go to the top or bottom stacker, which one on the operator or drive side.

The **Corrugator Scheduling page** gives an overview of the quantities to schedule in each grade (separate by flute type) for the next two or three weeks in a TGV-like manner. Days with sheets orders only (no orders for conversion) are highlighted by a separate color. One mouse click starts Optimisation or Interactive Planning with the right orders to schedule already highlighted: A slider control allows the planner to pre-select how many days ahead he wants to go, and how far into the future the system can go looking for optional orders.

Additional indicators show the scope of Program Memory, and remind the planner for which grades there already are schedules waiting to be produced.



In the automatic **Optimisation**, PC-Topp suggests which orders in a particular grade should be scheduled, its recommendation based on conversion machine planning. It identifies "Must Orders" that are due to be converted shortly, and optional orders that are available to improve the optimisation result. After checking the available stock, it also suggests the paper sizes that can be used. Just a few seconds later, the program will suggest several alternatives: The result with the lowest production cost can often be compared to a solution on just one roll size, or to the alternative with the best trim percentage. The planner then chooses one of the options offered, or calculates alternatives with a varied selection of orders or on different paper sizes. In each phase, it is possible to further modify the results suggested by Optimisation.

Interactive Planning does not choose runs automatically, but lets the planner make his own selection in a process that closely resembles manual scheduling, yet without the number crunching. It allows the planner to bring in the wealth of his experience and his own ideas, without any automatic features getting in the way. Step by step, he creates a cutting list that is fully consistent with his requirements. The program guides him through the decision process, and helps him with new ideas.

Cost Factors control the planning process in both modes. PC-Topp doesn't just do trim optimisation, but optimizes corrugator productivity at the same time. Upgrade costs are reduced, roll size changes are eliminated, the average length of a run increases. Management can influence the decisions taken in Planning by varying those cost factors, in order to adapt to changes in the economic situation or the characteristics of new equipment.

Program Memory lets the planner put the corrugator runs into the desired sequence. An automatic pre-sort can be refined manually, with control over the minutest detail. When the right sequence is established, PC-Topp computes the starting time for each run and thus knows the time at which each order comes off the corrugator. Step by step, the ongoing production slowly replaces these theoretical times by actual times (and fills in the actual meters). If the corrugator loses time (or runs faster than expected), then the predicted starting times for the rest of the schedule are adapted automatically, informing Planning as well as Production in real time.

Full integration with conversion machine planning helps to choose the right orders that are required in conversion, but has no negative influence whatsoever on the resulting corrugator schedules: The entire planning process is targeted on optimum production on the corrugator. Of course, there will always be conflicts between the corrugator schedules and conversion. PC-Topp identifies and reports them, and helps the planner to eliminate them. This fine-tuning between the corrugator and conversion machine schedules is the final step of the planning process.

And the full power of PC-Topp, the integrated planning system, is demonstrated when a major breakdown on the corrugator forces a complete rescheduling of the production program.

Single Knife Scheduling is targeted towards plants that run a single knife corrugator. Rather than scheduling grade by grade, this module allows the planner to work with orders from all grades at the same time. It automatically suggests the best roll size for each order and proposes suitable alternatives, checks the available paper stock, and lets the planner line up the runs in any desired sequence.

At a Glance

Automatic Optimisation
Choice of results - best trim, best cost, one roll size only, etc.

Interactive Planning
Lets the planner implement his own ideas.

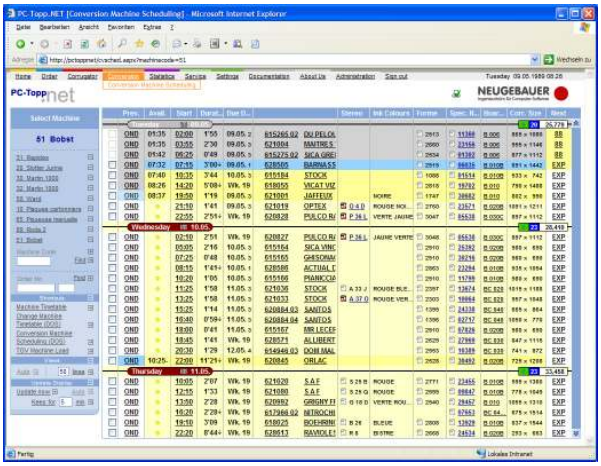
Optimum Results Controlled by Cost Factors
Improved productivity, trim, production cost

Full Integration with Conversion Machine Planning
"Smart" order selection reduces work-in-progress.
Flexible reaction to changes in the production process.

Conversion Machine Scheduling

Conversion | Computer-Aided Detailed Planning

At the time PC-Topp receives an order, it automatically puts each of that order's operations onto a suitable day, taking into account its processing time under normal conditions. But after that, in fine planning, the planner has full control over every detail: He has the final decision over the best possible sequence, without any bothersome automatic re-scheduling getting in the way.



Fine Planning

In a simple and natural process, like on a planning board, the orders for each machine are put into the final production sequence. All relevant information is readily available on-screen, and the system calculates the starting and ending times on all operations effortlessly, making sure that the order is off the preceding machine in time for production to start. Thus, a detailed and precise short term schedule is created for the next few hours, followed by a more and more preliminary schedule for the next three to five days. New orders, or orders for the more distant future, are automatically pre-scheduled onto suitable production dates.

Optimise This!

When new orders must be integrated into the schedule, or when the planner wants to revise the schedules from scratch, "Optimize This!" establishes the optimum sequence automatically, with just one click: The planner indicates up to which point the schedule must stay as it is, and PC-Topp puts the following orders in a sequence that will be hard to beat manually, making sure all orders are on time, identical or similar jobs run together, unnecessary ink changes avoided. Still, the planner maintains full control; he can of course add finishing touches to take into consideration things the system doesn't know about.

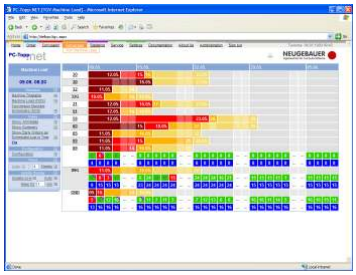
Permanent Updates

As production progresses, these schedules are constantly updated: Orders that are done appear along with their actual times and quantities, and the starting times of the subsequent jobs are adapted automatically. Production data is best collected by PC-Topp's Machine Terminals or on a central Supervisor Terminal on the shop floor. But it is also possible to work with just occasional manual input of the orders that have been produced, without entering all the details.

Problems Recognized Early

While downtime or other events can render any elaborate planning useless, PC-Topp makes it easy to contain the damage and to come up with alternatives instantly. PC-Topp's precise detail planning uncovers bottlenecks much earlier than anything possible with manual scheduling. The system then helps to eliminate them – early on, thus providing sufficient time to react. Integrating new orders into the existing schedule is easy, and when yet another rush order must be squeezed in, then all consequences are clearly shown, allowing planners to reduce the damage.

Machine Load



PC-Topp displays the long term Machine Load graphically, and can even take into account reserved capacities for regular customers that are known to place their final orders at the last moment. The graphic shows capacity bottle-necks before they occur, and prompts the planner to open - or close - machines for extra shifts. PC-Topp analyzes the load and capacity figures for each day, anticipates peak loads, and shows the first date a machine has available capacity on. The comprehensive plan-ning information available within PC-Topp provides reliable information to the sales department and finally to the customer. This information is available without interrupting the planners at their work, and easily accessible to authorized persons in every department and even outside the plant, via Internet.

Shipping Scheduling

Even Shipping can benefit from the planning information available in PC-Topp, even start the planning process. The PC-Topp Shipping Terminal shows all orders that are ready to ship, plus those that will become ready shortly according to schedule. Shipping can compile those orders on truck loading lists, setting target times for Planning. But it is also possible to add a future order, one that hasn't been scheduled yet for production, to a loading list. This starts the Pull Planning process at the "right" end: In the shipping department.

At a Glance

Automatic Pre-Planning
Immediate view on the status of the load on all machines

Computer-Aided Fine Planning
The intelligent planning board on screen

"Optimize This!" automatically puts orders in best possible sequence (factors considered: All orders on time, similar jobs together, minimize ink color changes, etc.)

Pull Planning: Shipping - Conversion - Corrugator
Recognize and avoid bottlenecks early, before it is too late.
"Smart" order selection for corrugator scheduling
Minimized work-in-progress with no downtime for lack of work

On-line Link to the Corrugator

Corrugator On-line | **PC-Topp: Excellent Connections to Modern Corrugators**

While PC-Topp is a valuable planning tool in a plant where the corrugator allows no on-line connection (or where order progress in conversion is being entered manually), it reaches its highest level of efficiency with direct links to production. Through these links, PC-Topp keeps up-to-date with order progress, thus becoming the information center for the entire plant.

And planning gets more precise, because the schedules are based on recent and reliable production actuals. The on-line return of production actuals allows for comprehensive statistics, available instantly, without need for manual data entry.

An added benefit is the on-line availability of schedules and order data at the machine, and the transfer of slitter-scorer and knife settings to the corrugator's dry-end controller.

Corrugator Control Program

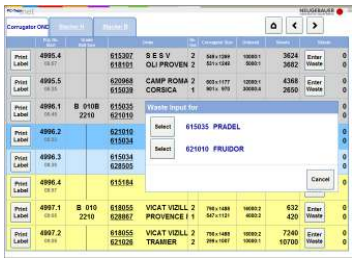
PC-Topp's Corrugator Control Program serves three purposes concurrently: It permanently displays the **Situation at the Machine**, including the current order, the current and average speeds, the last produced run, and the queue of runs waiting to be produced.

It is also the source of real-time information shown throughout PC-Topp, and gets **Production Actuals** from the machine and uses them to update order progress and Program Memory. The production actuals are made available almost in real time to the host system, no more need for manual production data entry there.

The **Transfer of Schedules** transmits all required data to the corrugator's dry-end controller, including order data, slitter-scorer and knife settings, and the scheduled linear meters.

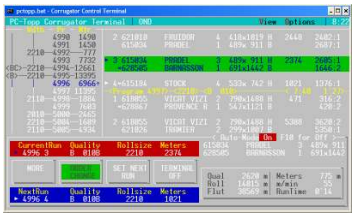
The Corrugator Control Program knows the protocols of the leading brands of modern corrugators from Agnati, BHS (also with Witron controllers), Copar, Fosber, Marquip, MHI/Mitsubishi, Peters, SHS/Simon as well as many others.

The **Corrugator Control Page** lets the machine operator (and not the planning office) control the transfer of schedules. He can pull up urgent runs or do other sequence changes right here instead of on the dry-end controller, which makes Program Memory aware of the change. Also, he can print schedules or the paper program where they are needed.



The **Waste Terminal** is used on a PC at the end of the corrugator. It permits entering the number of waste sheets directly at the stacker which ensures correct quantities in conversion. Furthermore, with the help of the Waste Terminal the system can calculate the exact number of good sheets (and pallets) when producing sheet orders.

Corrugator Terminal



Where the corrugator doesn't allow a direct connection, the Corrugator Terminal shows the schedules right at the machine. Even more importantly, it assures instant feedback of production progress data. With the help of a counter, the Corrugator Terminal can keep track of the produced meters and use the order change signal for semiautomatic production recording. In more limited environments, the production can also be recorded manually. In both modes, PC-Topp is kept permanently up to date with a minimum of effort.

All settings for slits, scores and tear tapes are shown on-screen, and special instructions for production appear as well. Just as well as the on-line link, the corrugator terminal makes sure that Program Memory stays updated at all times. And all production data, even though manually entered, are recorded in the Production Statistics and are available to the host system. Apart from that, the corrugator terminal can also be used to print pallet labels in the corrugator control room, or right at the stackers.

The **Corrugator Monitor Intranet page** shows the corrugator crew the target speed for each run as well as the current actual speed in large figures and in a "speedometer". It also displays the current shift's cumulative performance and compares it to the production targets. A graphical performance diagram shows the machine speed and target speeds over the last four hours.

At a Glance

Slitter-Scorer Settings Transferred Effortlessly
No more laborious error-prone keying in of data at the machine

On-line Production Data
Stay informed on production progress at all times.

Communicates with Corrugators from All Major Brands
Agnati, BHS, Copar, Fosber, Marquip, MHI/Mitsubishi, Peters, SHS/Simon etc.

Corrugator Terminal
Semi-automatic production recording (or manual input of production data) where no on-line link possible
Permanent feedback with a minimum of effort
Pallet labels at the touch of a button

PC-Topp Machine Terminals | On-line Feedback from Every Machine

PC-Topp's Machine Terminals extend the PC-Topp system to the shop floor. Mounted right next to the machine, they display the schedule of the next orders to be run as well as the current order and production history. The schedule is constantly kept up-to-date - any changes occurring in Planning, or anywhere else in the plant, are instantly reflected.

On-Line Access to Schedules, Order Data, Drawings

The terminals permit on-line access to the order data right at the machine, including details like printing and cutting dies, ink colors or glue style. They show at all times which of the next orders is actually off the corrugator – just one of the advantages of the permanently up-to-date database that PC-Topp maintains.

The screens are organized by tabs that give direct access to all information and functions. A graphical display realistically shows the order information in relation to the machine. With a finger tap on the terminal's touch screen (optional) the view can be switched to job card, printing instructions etc. In the Order tab, the CAD drawing for the current order pops up automatically, other graphics like the printing instructions are available as well.

Ease of Operation

Everybody at the machine is quickly familiar with the PC-Topp Machine Terminal: Built-in intelligence suggests the right next action automatically, making the terminal very easy to use. The use of a touch sensitive terminal screen makes the interaction even easier and more intuitive.

The terminal suggests the next scheduled order to be run, and the operator either confirms or selects another one by simple point-and-shoot. No more incorrect order numbers due to input errors, no need for barcoded order sheets!

The terminal makes it easy to pull an order forward when necessary, or even re-schedule an order from another machine if a problem arises at night, for example. After any such action, the overall schedule is instantly updated, and Planning (and the other machine's crew) are alerted.

Automatic Capturing of Times and Quantities

The times for Start Setup, Start Run and End Run are sensed automatically, and a **counter** (type IVO N214) connected to the machine is used for automatic recording of the quantities processed through the machine. To get the produced count of good items, the terminal asks for input of the number of pallets, the quantity per pallet, and the quantity on the last pallet.

Breakdowns are also sensed and recorded automatically, and the terminal prompts the operator to select a downtime cause from a clearly structured on-screen list. Breaks are also taken into account, as are downtimes occurring during setup. And just as in a handwritten shift report, the crew leader can explain with comments what exactly went wrong.

The terminals prompt for **Quality Checks** in accordance with predefined rules, and record the results including any measured values that may be required. Finally, the Machine Terminals can also be used for **Personnel Data Entry**: Each crew member simply inserts his smart key into the optional chip key reader when coming or leaving, and the system knows at all times who is present, and at which machine.

Downtimes, setups, production counts – all production events are recorded and archived, forming the basis for comprehensive production reports, available instantly and for any period in time. Graphical performance diagrams make it easy to analyze a shift in detail. All production data can also be shared with the host system to replace costly manual data entry.

In a separate section of the terminal screen, **On-Screen Performance Indicators** show the crew how well they are doing on the current job, or so far during their shift.

At a Glance

Schedules, Order Data, Drawings On-line at the Machine
Paperless production is near.

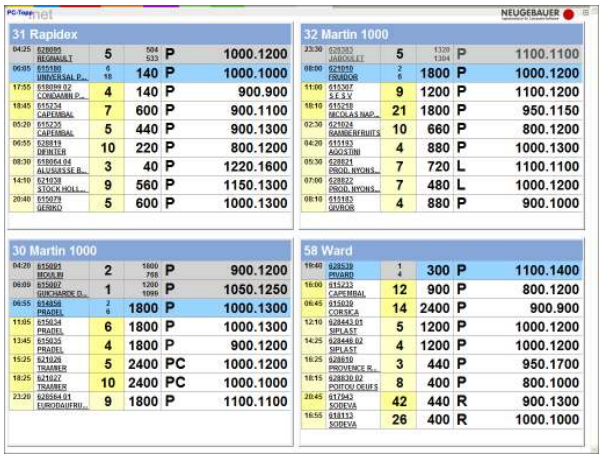
Automatic Capture of Production Data
Shift reports are available instantly.

Live Order Progress
Great overview of order status and schedules at all times

Production Statistics, Machine Performance Diagrams
Allow detailed analysis of production and machine performance.

PC-Topp Monitors

Production Monitoring | Keep Production Progress in Constant View



The PC-Topp Monitors, as opposed to the PC-Topp Terminals, primarily *show* information, with no user interaction. They are designed to be easily readable even from a distance, with a clear-cut layout, extra large fonts, and they present color coded information for intuitive interpretation.

The Corrugator Monitor

The Corrugator Monitor Intranet page shows the corrugator crew the optimum target speed for each corrugator run, depending on the grade and flute type being produced. A speedometer-like color coded bar shows the target speed and the current machine speed. The crew knows at all times how well they have been doing since the beginning of the shift, and the monitor motivates them to beat 100% every day. A live diagram shows them where they lost performance during stops or due to low speeds, and where they have been able to make up in productivity by running above target speed.

The Palletizer Monitor

The Palletizer Monitor is designed to be mounted overhead close to the end of the conveyor leading to the palletizer and bander machine. Its primary function is to keep informed the person in charge of refilling the storage areas for the different pallet types. The Palletizer Monitor shows the current and future orders separate by the last machine where the finished goods are put on the conveyor leading to the palletizer. One screen shows the compact information of four source machines; eight machines can be shown on dual monitors.

On-Line Link to the Conveyor System

Conveyor Link | The Automatic Plant

More and more plants are equipped with intelligent conveyor systems that manage the flow and storage of sheets between corrugator and conversion, and of half-finished goods between conversion steps.

Those computer controlled systems "know" at all times where each stack is located, and try to group stacks intelligently so that each order gets to its destination at the right time.

Obviously, each stack exiting the corrugator needs to be identified to the conveyor system so that it knows which order it belongs to, and which machine it will most likely be produced on. Quite clearly, a data entry terminal provided by the conveyor system is only a stop-gap solution. Likewise, it is not very elegant if the crew must tell the conveyor system manually which order will be produced next.

PC-Topp links the three components corrugator, conveyor system, and conversion, assuring smooth and reliable automatic operation of the entire plant.

Through its on-line corrugator link, PC-Topp provides the information needed by the conveyor system; a link between the stacker and the conveyor then passes on that data whenever a stack exits the corrugator. Thus, the conveyor knows the order's ID, the target machine, and whether further stacks for the same order will follow.

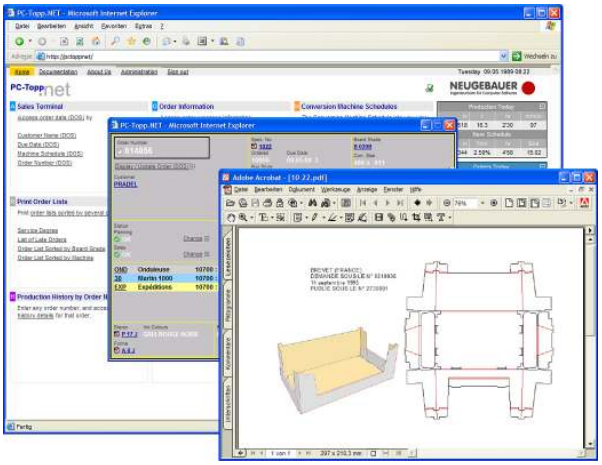
Each conversion machine keeps the conveyor system informed about the job it is currently producing, and the sequence and starting times of the next orders scheduled for production. This allows the conveyor to "think ahead" and pre-arrange the stacks in the right order, for a permanent and uninterrupted flow towards each machine.

PC-Topp has years of experience with links to conveyor systems from major manufacturers, including Dücker, Martin, Minda and Pentek.

Production Documents on Every Desktop

Access to Graphical Production Documents | Paperless Production Documents

The paperless plant has long been a dream – PC-Topp makes it come true. When an order is shown on a PC-Topp Intranet page, a simple click on a hyperlink can open a spec sheet complete with drawings, a graphic of the printing dies, or the die-cut form.



The graphics can be in the popular Adobe Acrobat PDF format, or an ArtiosCAD file that opens directly in the ArtiosCAD Viewer – in fact, any Windows document or application can be linked to any field in the PC-Topp order screen. This way, any available document can be made accessible by PC-Topp throughout the whole plant, in the office, directly at the machine, or even via Internet. The links connect a field value to a document stored somewhere on the network; that location as well as the exact document name can be configured in very flexible ways.

This functionality is available on any PC-Topp.NET screen, including the Machine Terminal and the Free Terminal. In short, on any PC in the corporate network users can now have access to job cards, spec sheets, and CAD drawings.

The required graphics are often easy to obtain: Chances are that spec sheets or drawings are created in-house using a Windows based application. In that case, PDF documents can be created using Adobe Acrobat with minimal cost and effort. Or else, the company that supplies the printing or cutting dies should be able to e-mail a PDF file with every new or altered stereo, allowing to quickly build a large up-to-date data base of drawings for all orders.

Pallet Labels

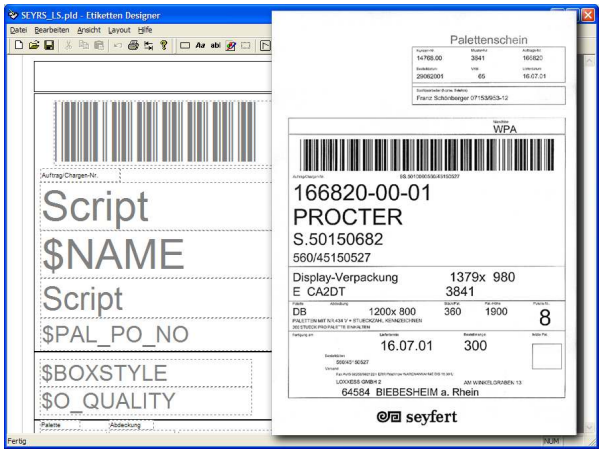
Pallet Labels | Barcodes, Logos, Customer Specific Labels

Shipping labels as well as internal tags with fully personalized design can be printed in a variety of ways, including customer specific designs, complex barcodes (SSCC) and logos. Labels can be printed in advance in the office, right at the corrugator or at the conversion machine, or using centrally located label printing stations in the plant. PC-Topp automatically calculates the number of labels required, observing specifications like the number of labels per pallet, or customer specific layouts or stationery.

The standard PC-Topp system includes the software to print labels on HP LaserJet 4 compatible laser printers, with custom coded personalized design supporting limited barcodes.

The **PC-Topp.NET Label Printing Terminal** even allows printing labels off site or at sub-contractors via Internet, or over a WAN.

The optional **Windows Labeling System** has a graphical design module with pre-programmed support for complex barcodes like the SSCC code required by many multi-national companies, allowing the use of all Windows fonts and bitmap graphics for logos etc. The design module is so easy to use that designs can be modified and created by your personnel. It supports scripting (Windows Scripting Host calls), allowing the implementation of highly complex calculations and conditional elements.



Labels are printed using Windows printer drivers, allowing the use of any Windows printer (direct network link via print server required). The Windows Labeling System integrates fully with PC-Topp, but will also print labels generated by other applications through its XML programming interface.

System Architecture

Network, Operating System | PC-Topp – The Experienced Scheduling System

System Structure, Network Architecture

PC-Topp uses a central file server as data repository (the server can be shared with other business applications). The Intranet functionality is provided by a dedicated Service PC acting as an application server, responsible also for the permanent data exchange with the host system. Those servers are linked to the client PCs by a switched Fast Ethernet or Gigabit network, preferably using structured Category 5 cabling or fiber optic links for longer distances.

Operating System

PC-Topp requires the Windows 2003 Server operating system on the file server and the Service PC, and Windows XP Professional plus Service Pack 2 on the client PCs. Microsoft Internet Explorer must be installed in an up-to-date version. Additionally, Internet Information Services, Microsoft .NET Framework 2.0 as well as SQL Server (or the free MSDE) have to be installed on the PC-Topp Service PC.

Hardware Recommendations

Generally, **PC-Topp Workstations** require PCs that allow Windows and other applications to run at a comfortable speed. We recommend using the fastest processors available at a reasonable price, as the top models yield only little extra speed at a high premium in cost. All applications benefit from generous memory sizes.

The speed of the **PC-Topp Services PC** affects all other workstations. Therefore, that PC should have the fastest possible processor and a generous amount of memory operating at a high data rate and front side bus speed. The **File Server** speed also benefits greatly from an extra large sized memory.

PC-Topp supports HP LaserJet 4 compatible **laser printers**. Under the Windows Pallet Labeling System, any printer supported by Windows can be used. All printers should have a direct connection to the network (print server).

Training, Start-up Assistance, Support

Project Plan | PC-Topp for Your Plant

The introduction of PC-Topp means new methods in Planning and Production, but the project also affects Sales, Shipping, and of course the IT department. Good preparation and organization make it possible to make a smooth transition in a surprisingly short time.

Programming of the Data Transfer towards PC-Topp
- Usually done by the customer's IT department.

Pre-Installation Training
- Three to four days in our office in Nürnberg
- PC-Topp in a simulated production environment, practical introduction to the basic concepts and procedures.

Software Installation
- Support during entry of basic data and parameters
- Start-up of order data transfer
- On-line connection to the corrugator (or PC-Topp Corrugator Terminal)
- Installation of the PC-Topp Intranet

Personalized Modifications
- Personalized reports
- Additional data fields on-screen and in printed reports
- Exact positioning of the orders on the corrugator
- Pallet labels with personalized design
- Implementation of Production suggestions

Introduction Phase 1: Planning, Connection to Corrugator
- Re-create existing corrugator schedules in PC-Topp
- Manual data entry of production in Conversion
- Synchronisation with actual situation in plant
- Start of active planning with PC-Topp

Introduction Phase 2: Pull-Planning, Preparation for Shop Floor Data Collection
- Extend pre-planning over a period of several days
- "Smarter" selection of orders for corrugator scheduling
- Planning of Shipping
- First PC-Topp Machine terminal for training purposes

Introduction Phase 3: Shop Floor Terminals
- PC-Topp Machine Terminals at all machines
- Integrate drawings from the CAD system
- Support during machine operator training

Permanent Support, Software Updates
- Remote maintenance via modem: Assistance and support whenever problems occur, installation of new or personalized program modules
- Software Maintenance: Unlimited support by telephone, many new functions in every software release
- On-site visits for follow-up training and software maintenance

Our Customers: PC-Topp World-Wide

Customers | Multi-Nationals as Well as Individual Plants

PC-Topp is installed in many countries world-wide, is present on every continent.

We are there for you when you need help: PC-Topp runs very reliably, systems have been running for years with no intervention from outside. But when a client needs support, we help via telephone, modem or on-site, with the shortest possible reaction time. This is how we can have satisfied customers even on the opposite side of the earth.

PC-Topp speaks your language: The PC-Topp Scheduling System is available in English, French, German, Italian, Polish, Portuguese, Russian, and Spanish as well as in Danish, Norwegian and Swedish, with a special U.S. edition that works in feet and inches. Native speakers in our staff and our representatives make sure that screen dialogues are worded well in every language. Upon request, all plant terminals are available in other languages as well, thus avoiding shop floor language problems.

Algeria
Tonic Emballage

Argentina
Smurfit Kappa

Cameroon
Rossmann

Chile
Smurfit Kappa

Denmark
SCA Packaging
Smurfit Kappa

Dominican Republic
Smurfit Kappa

Estonia
SCA Packaging

France
Allard
David S. Smith
Emin-Leydier
Mondi Packaging
Rossmann
Seyfert Group
Smurfit Kappa

Germany
SCA Packaging
Seyfert Group

Ireland
Smurfit Kappa

Italy
Adda Ondulati
Cartiera Ondulato Umbro
Galimberti
Gariboldi
Ghelfi, Grimaldi
ME-CART
Ondaplast
Ondulati del Friuli
Ondulor Oristano
Polypack
Rossmann
Sandra
Smurfit Kappa
and others

Ivory Coast
Rossmann

Japan
Dan Au

Lebanon
Gemayel Frères

Lithuania
SCA Packaging

Madagascar
Newpack

Mexico
Smurfit Kappa
Sultana

Morocco
CMCP

Netherlands
Smurfit Kappa

Norway
Peterson Sarpsborg
Smurfit Kappa

Poland
David S. Smith, Rossmann
Stora Enso, Werner Kenkel

Portugal
Portucel
Vouga
Zarrinha

Romania
Romcarton

Russia
SCA Packaging

South Africa
APL, Seyfert Group, Unicor

Spain
Europac
Rossmann

Sweden
Smurfit Kappa

Switzerland
SCA Packaging

Tunisia
SES
Unipack

United Kingdom
David S. Smith
Majestic
Smurfit Kappa

Venezuela
Smurfit Kappa

What Results Can Be Expected?

Reduction of Work-In-Progress

"PC-Topp has done all that was promised," says Michael Pierse of Smurfit Italy in Novi Ligure. "After the first few weeks, it allowed us to stop the corrugator for two full days, without missing a single delivery."

Better Observance of Delivery Dates

But that drastic reduction of work-in-progress was only part of the results they achieved: "Before, we had a large number of different roll sizes. Today, 80% of our production comes out of our largest paper width, with enormous gains in productivity and savings in reel changes."

Improved Corrugator Scheduling

"It has become a lot quieter in the Planning Office, we are more efficient with less hassle," observes Bernard Claude, responsible for Logistics at David Smith Kaysersberg Packaging S.A. in Kunheim, France.

No More Lost Time for Lack of Work

"We hadn't thought we would make progress so fast: After little more than a month with PC-Topp, we were able to eliminate the planning board, and today we are working without any printed order sheets in Planning. Thanks to PC-Topp, there is no more downtime because of lack of work, we were able to reduce work-in-progress considerably and improve the precision with which we keep our delivery delays, and we react much more flexibly to last minute changes."

Flexible Reaction to Last Minute Changes

Every day, PC-Topp prints more than 4000 pages of production documents in the group's two plants, each of which has a capacity of more than 450 tons per day.

Enterprise-Wide Access to Order Status and Production Progress

"Our problem was the extremely limited intermediate storage area. Often, we had to stop the corrugator although the machines urgently needed the sheets," says Laurent Gangloff, Chef de Fabrication at Rossmann. "With PC-Topp this just doesn't happen anymore. And the increase in productivity allowed us to eliminate 2-3 hours of corrugator overtime every day!"