

# Real Pull Planning Perfect Integration

*of corrugator and conversion planning*

## Increase Your Plant's Productivity with PC-Topp

- Reduce trim, improve corrugator productivity.
- Reduce work in progress and downtime due to lack of work with Pull Planning.
- React flexibly to production incidents and last minute schedule changes.
- Keep everybody informed on order progress and plant load.
- Connect Planning online to corrugator and conversion machines.
- Tight production control through instant feedback from production.
- Extensive production statistics, detailed production reports available instantly.



### Neugebauer Rhapso GmbH

Passauer Straße 30  
90480 Nürnberg, Germany

Tel. +49 (911) 99 400-0  
Fax +49 (911) 99 400-33

[www.pctopp.com](http://www.pctopp.com)  
[info@pctopp.com](mailto:info@pctopp.com)

[www.rhapso.com](http://www.rhapso.com)  
[info@rhapso.com](mailto:info@rhapso.com)

04/11

*The Experienced Scheduling System*

# Production

# Planning

Modern Pull Planning:

Shipping - Conversion - Corrugator

Automatic Optimisation & Interactive Planning

Full Integration between Corrugator & Conversion Scheduling



*PC-Topp's tight integration of corrugator and conversion machine scheduling supports modern Pull Planning which improves corrugator productivity, reduces work in progress, minimizes downtime for lack of work, and allows anticipating bottlenecks. PC-Topp's planning tools help the planner to establish optimum schedules while giving him full freedom of action.*

## ■ PC-Topp Supports Modern Pull Planning: Shipping – Conversion – Corrugator

- Recognize and avoid bottlenecks early.
- "Smart" order selection for corrugator scheduling
- Minimized work in progress, no downtime for lack of work

## ■ Corrugator Scheduling

- Automatic Optimisation: Choice of results for best trim, best cost, one roll size only, etc.
- Interactive Planning puts the planner in control.
- Optimum results controlled by cost factors: Improved productivity, trim, production cost

## ■ Conversion Machine Scheduling

- Automatic pre-planning continuously updates machine load status.
- Computer-aided fine planning: Intelligent on-screen planning board
- Automatic optimisation: Best possible order sequence

## Pull Planning with PC-Topp

PC-Topp perfectly integrates corrugator and conversion machine scheduling. Any change to the schedule is instantly visible in Production, each order end message from the plant immediately updates PC-Topp.

In the **classical approach** 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 tells him which orders will become available for shipping (and at what time).

In the modern **Pull Planning** approach 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, instead of "pushing" from the corrugator to conversion. This offers 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 adjust 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 minimum.
- **Improved corrugator productivity:** Longer runs and fewer changes increase corrugator productivity significantly. Knowing in advance which orders will really be required in conversion helps to streamline production. And the reduced level of work in progress allows Planning to add optional orders to further improve the result of Optimisation.

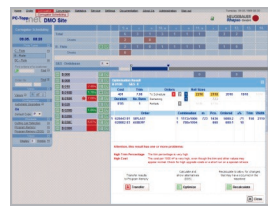
## Corrugator Scheduling

Pull planning helps choosing the right orders for the corrugator following what is required in conversion, but has no negative influence whatsoever on the resulting corrugator schedules: The whole planning process is targeted on optimum production on the corrugator.

The entire planning process is cost factor controlled: 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, average run length increases.

In both its planning modes, Automatic Optimisation and Interactive Planning, PC-Topp knows the tricks of the trade: It can work for one, two or three cut-off knives, 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 set-up should go to the top or bottom stacker, which one on the operator or drive side.

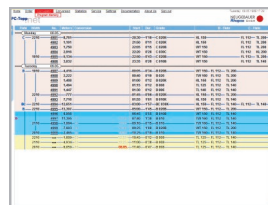
The **Corrugator Scheduling** page gives an overview of the quantities to schedule in each grade (separate by flute type) for the near future. One mouse click starts Optimisation or Interactive Planning with the right orders to schedule already highlighted.



The planner can pre-select how many days ahead he wants to go, and how far into the future the system can go for optional orders.

**Automatic Optimisation** suggests the orders to schedule in a particular grade, based on conversion machine planning. It identifies "Must Orders" that are due to be converted shortly, and optional orders to improve the optimisation result. Based on the available stock, it also suggests the paper sizes to use. Within seconds several alternatives are calculated. The planner then selects one of the options. He can also calculate alternatives with a varied selection of orders or on different paper sizes. In each phase, the results suggested by Optimisation can be further modified.

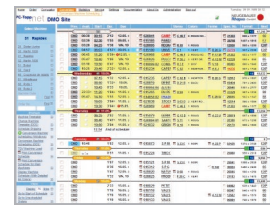
**Interactive Planning** does not choose runs automatically, but lets the planner make his own selection like in manual scheduling. The planner can bring in his experience and his own ideas, without any automatic features getting in the way. Assisted by the program, he creates a cutting list that is fully consistent with his requirements.



**Program Memory** lets the planner put the corrugator runs into the desired sequence. An automatic pre-sort can be refined manually. When the right sequence is established, PC-Topp computes the

starting and end time for each run. Schedules are adapted automatically, informing Planning and Production in real time for immediate reaction where required.

## Conversion Machine Scheduling



Each order sent to PC-Topp is automatically assigned a suitable production day for each of its operations.

**Fine planning** gives full control to the planner. He arranges

the final production sequence aided by the system which calculates starting and ending times for him, ensures on-time production of all of any order's parts, and integrates new orders into the schedule. 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.

**Automatic Optimisation** helps the planner revise his schedule by rearranging orders selected by him in the best possible sequence, ensuring that all orders are on time, identical or similar jobs run together, and unnecessary ink changes are avoided.

As production progresses, the machine schedules are constantly updated with **actual times and quantities**, starting times of subsequent jobs are adapted automatically.

In case of downtimes or other production incidents PC-Topp makes it easy to find alternatives instantly. PC-Topp's precise detail planning helps to **uncover bottlenecks early on** and eliminate them. PC-Topp shows all consequences of rush orders, production events etc., helping planners to reduce the damage to a minimum.



PC-Topp displays the long term **Machine Load** graphically, and can even reserve capacities for regular customers. The load diagram shows capacity bottlenecks before they occur, and prompts the

planner to open - or close - machines for extra shifts. PC-Topp analyzes machine capacity for each day, anticipates peak loads, and highlights free machine capacity. The system provides reliable information to Sales and thereby to the customer, available without disturbing the planners, and easily accessible to authorized persons in every department and even outside the plant, via Internet.