SYSTEC
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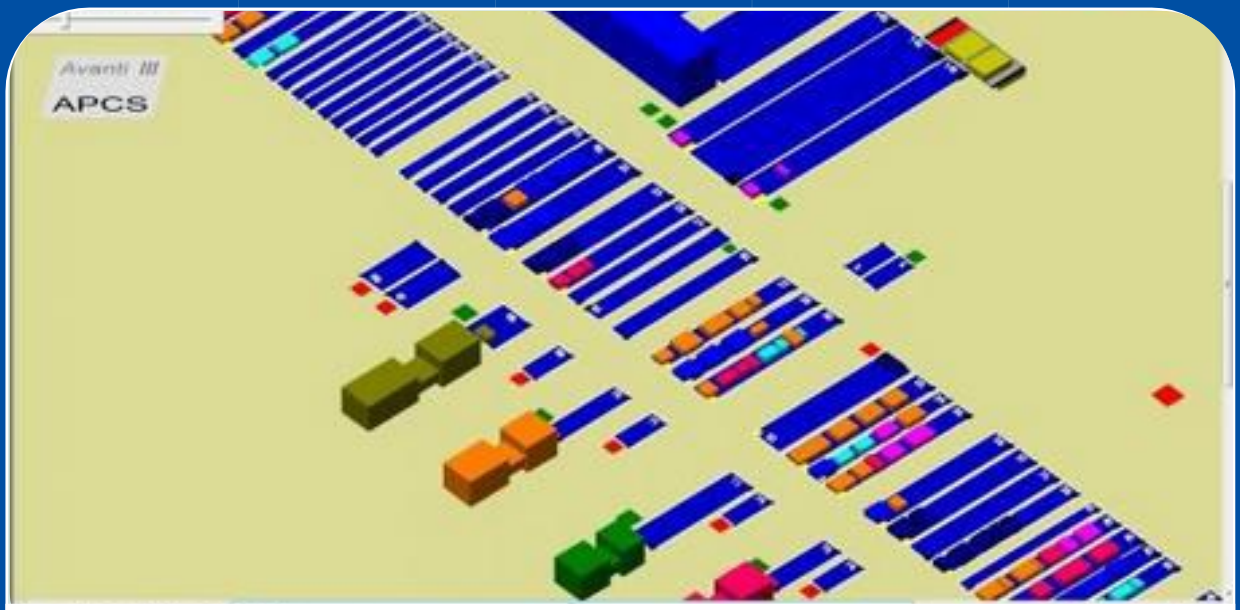


ADVANCED PRODUCTION CONTROL SYSTEM

Systec is the North American licensed distributor of the Avanti Advanced Production Control System (APICS). APICS is a powerful module computer control system which integrates with the corrugator and plant production scheduling software to provide fully automatic operation of the work-in-process and material handling system. APICS reduces labor and waste, while increasing machine utilization and production capacity for a safer and more efficient work environment.

APICS Minimum Requirements:

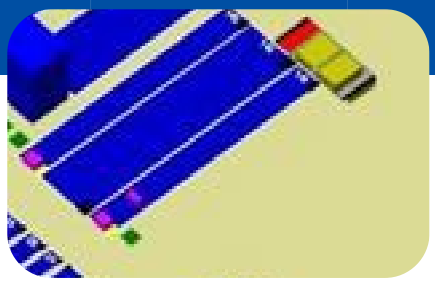
- APICS requires a server to run the software. This can be a physical PC, or plant server.
- Virtual – VM servers (Virtual Machine Servers)
- 3 Work-Stations:
  - 1 near the corrugator: Allows APICS to see what is coming from the corrugator (Length, Width, Order Number, Last Order)
  - 1 near the conversion machine: Allows AIPCS to see what the conversion machines require
  - 1 with the planner: Allows APICS to see the latest schedule

FINISHING MACHINES

Each machine is a different color – All loads for that machine will be this same color. This makes it easier to see which loads are going to which machine.

WIP LINES

Each WIP Line is numbered. Direction of flow for each line is also indicated. Colorization of each line indicates the line status (Retrieve, Direct, Disabled). Loads are represented real-time.



TRANSFER CAR

The transfer cars in the system are color coded to represent status: Red = manual, Yellow = Load Pick-up, Green = Running and in Home Position.

ADVANCED PRODUCTION CONTROL SYSTEM

GUI (Graphical User Interface)

COLORS AND LOADS

Machines

- Each machine is a different color – This makes it easier to see which loads are going to which machine.
- Each load of the same color has a different number. These numbers represent the order number for that machine.
- Load on APICS will be scaled to the size of the physical load

Visual Error Detection

- Black Loads - these loads are either:
  - Not planned for APICS to detect them
  - Could be over from a previous order
  - Are a result of machine breakdown
- Red Loads - these are loads where APICS doesn't know the order number
  - An operator will need to go and identify these loads
- Flashing Loads - these are loads that are blocked by loads that are on a later order
  - APICS will automatically move loads around to correct this. They won't be moved until required.

LOAD TRACKING

- Each Transfer Car will have encoders that measures loads as they move onto the Transfer Car Beds
  - This allows APICS to double check what the corrugator has produced
  - If there is an error the loads will have a RED border and will be maintained at the end of the WIP Line
    - An operator will have to check what the error is on this load
- If there are gaps between loads, the conveyor will stop moving loads onto the Transfer Car Bed
- If there aren't any gaps between loads, the conveyors will still run as directed
  Example: APICS tells the car to pick up 48in from the line. The Car will pick up 43.3in, then the releasing conveyor will operate as the car bed will continue to run to collect the load. This will leave a break in the loads.
- Transfer Cars will recalculate the best way to move loads to the same conversion machine.
  Example: Two (2) loads of the same order could be on 1 line. 1 load could be 39in (2 Stacks) and the other in 78in (4Stacks). The Transfer Car Bed is 98.4in. In this scenario the Transfer Car would take the entire 1st Load (39in) and then take 2 Stacks from the 2nd load (39in) to maximize the pick-up efficiency. The total loads would utilize 78in of the Transfer Car bed.
- APICS can deal with 2nd pass work. The order number will stay the same but with an additional number/letter.
  Example: Order 1 – 12345 Same Order 1 after 2nd Pass – 12345A

LOAD BUILDING

Load Building

- This is where loads are stored together to fill a car
- APICS tells the PLC the slit width of the loads so that a full car bed can be filled
- This requires 2 zones

Partial Orders

- Orders can be split at the corrugator
  Example: A 10,000 sheet order can be split into a 6,000-sheet order and then later another 4,000-sheet order
- WIP can be stored for the split order, but other orders can use this space if required

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