

APICS Automated Production Inventory Control System

WHAT IS APICS?

Automated Production Inventory Control System

APICS is not a scheduling system.

APICS is a SLAVE to the scheduling system in the site that it is installed.

Can Interface with ALL scheduling systems

MINIMUM REQUIREMENTS

- APICS requires a server to run the software.
 - This can be physical, i.e. PC
 - 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 – To see what the conversion machines require
 - 1 with the planner – Allows APICS to see the latest schedule

GUI – GRAPHICAL USER INTERFACE

Factory Layout – Shows Corrugator, Conversion Machines, Conveyors – Length, Width

COLORS AND LOADS

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.
- 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
- Grey Hatching – This will show that loads of the same order will be placed on this line

Black Loads

- These loads are either:
 - Not planned for APICS to detect them
 - Could be over from a previous order
 - Machine break down

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
- This is in case the order schedule changes
- Prevents the car doing work when not required

WIP PERCENTAGE

- Rule of thumb is 70% full utilization – (Not a fixed answer)
- If there isn't enough storage for loads they will need to be "rotated" back through the WIP
 - This takes time - delays loads getting to the machines
 - Orders get split up – delays loads getting to the machines

How to choose lines

- APICS will choose the line that matches the loads dimension the best
- APICS will try to choose a line nearest the machine that requires this load
- Extra storage Lines near the conversion machines
 - Allows Orders to be stored nearer to their required machines

WIP LINES

- Every line is numbered
- If the number of the line is at the top, the line flows down
- If the number is at the bottom, the line flows up (return line)

EVERY WIP must have a return line

- By clicking on the line will see the information about each line
 - (Length/width of line, loads on the line, etc.)

Line Status

- Retrieve – **GREEN** Border - Loads will be picked up from these lines but not dropped off onto
- Direct – **BLUE** Border – Won't pick from these line but will drop off onto them Line
- Off – **RED** Border – These Line won't be used in automatic mode – Can be used in manual

Each Line has a small box that represents if the line has loads present or is completely full.

- **YELLOW** Box – Loads are present
- **RED** Box – Line is full

CORRUGATOR TAKE OFF CONVEYORS

Load Building

- This is where loads are stored together to fill a car bed
- 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 on the corrugator
 - E.g. A 10,000 sheet order can be split into 6,000, then half hour later the other 4,000
- WIP can be stored for the split order but other orders can use this space if required

LOAD TRACKING

- Each Transfer Car will have encoders that measures loads as they move onto their 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 kept at the end of the 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
- If there aren't any gaps between loads, the conveyors will still run unless told
 - E.g APICS tells the car to pick up 48in from the line.
The Car will pick up 43.3in, then the releasing conveyor will stop, but the car bed will still run to collect the load.
This will leave a break in the loads
- Transfer Cars can recalculate the best way to move loads to the same conversion machine
 - E.g. 2 loads of the same order could be on 1 line
1 load could be 39in (2 Stacks) and the other load could be 78in (4Stacks)
Transfer Car Bed could be 98.4in
The Transfer Car would take the entire 1st Load (39in) and then take 2 Stacks from the 2nd load (39in)
Total loads on 78in on the car bed

APICS can deal with 2nd pass work. The order number will stay the same but with an additional number/letter.

E.g. Order – 12345

After 2nd Pass – 12345A

TRANSFER CAR

The Transfer Cars have different modes and each is represented by a different colour

- **RED** – Manual
- **YELLOW** – Picking up loads
- **GREEN** – Running but not doing anything – Normally goes to “HOME” position

These colors are shown where the operator would stand – near Bed A