

Workshop: Procurement of Packaging for Exports

Guyana, April 19-23, 2010

INFORMATION
ADVICE
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Packaging Equipment; Specifications & Purchasing



TFO
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Experts in trade for developing countries
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Executing/Host Partner:



GUYANA

Supporting Partners:

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The choices to be made

The nature of the packaging machinery industry

Package design, machinability and productivity

Intermittent motion and continuous motion designs

Levels of automation and machine speed

Adjustability or change parts?

Package Machinability

The typical package design focus is on containment, protection and marketing considerations

Frequently overlooked is the fact that:

Machines are used to bring package and product together

So package must be readily handled and transported through packaging machinery

Good package design makes for efficient production

Package Design and Machinability

Packages with lower centers of gravity handle better

Stiffer, more rigid packages handle better

Common pack dimensions on multi-sized lines can reduce change-over times

Accelerations acting on a package's inertial and structural properties can seriously alter its handling characteristics

Package Control

Control implies knowing a package component's exact position at every moment of time

Machine parts usually are built to close tolerances

All machine components should be under positive control

Ideally, the package also should be positively controlled within the machine

Packages moving on a conveyor are not under control

The Package and the Production Line

Machine sub-systems carrying the package must be integrated with the subsystems that carry the product

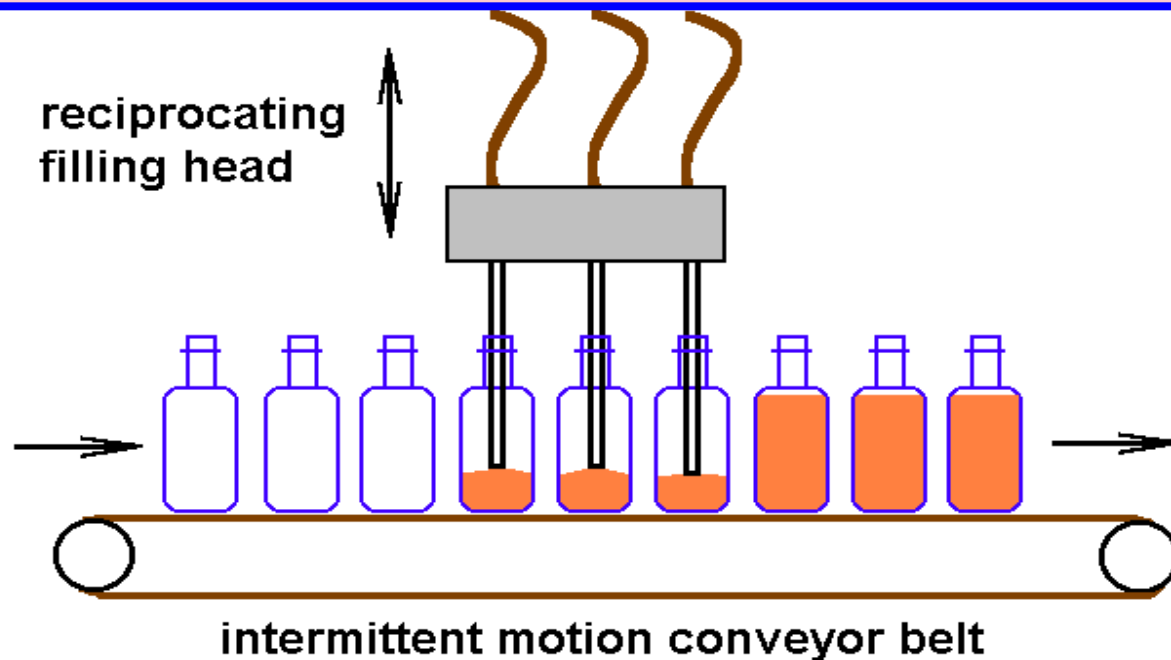
In production, the package becomes part of the machine

The machine must not damage or alter the package

Comparing product, package and machine, the machine is the most perfected element

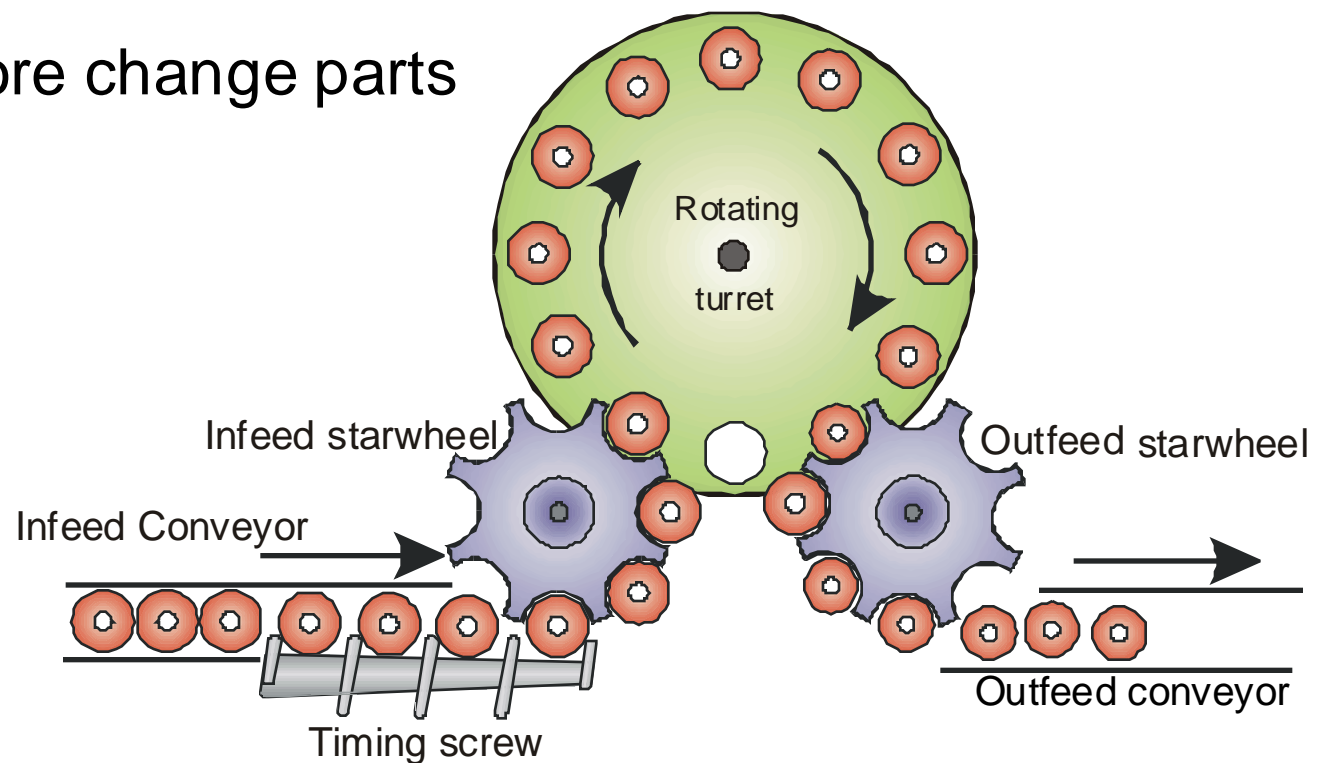
Intermittent Motion Machines

- ▶ packages stop to accomplish an operation
- ▶ simple and generally easy changeover
- ▶ limited production speed (under 100 cpm)

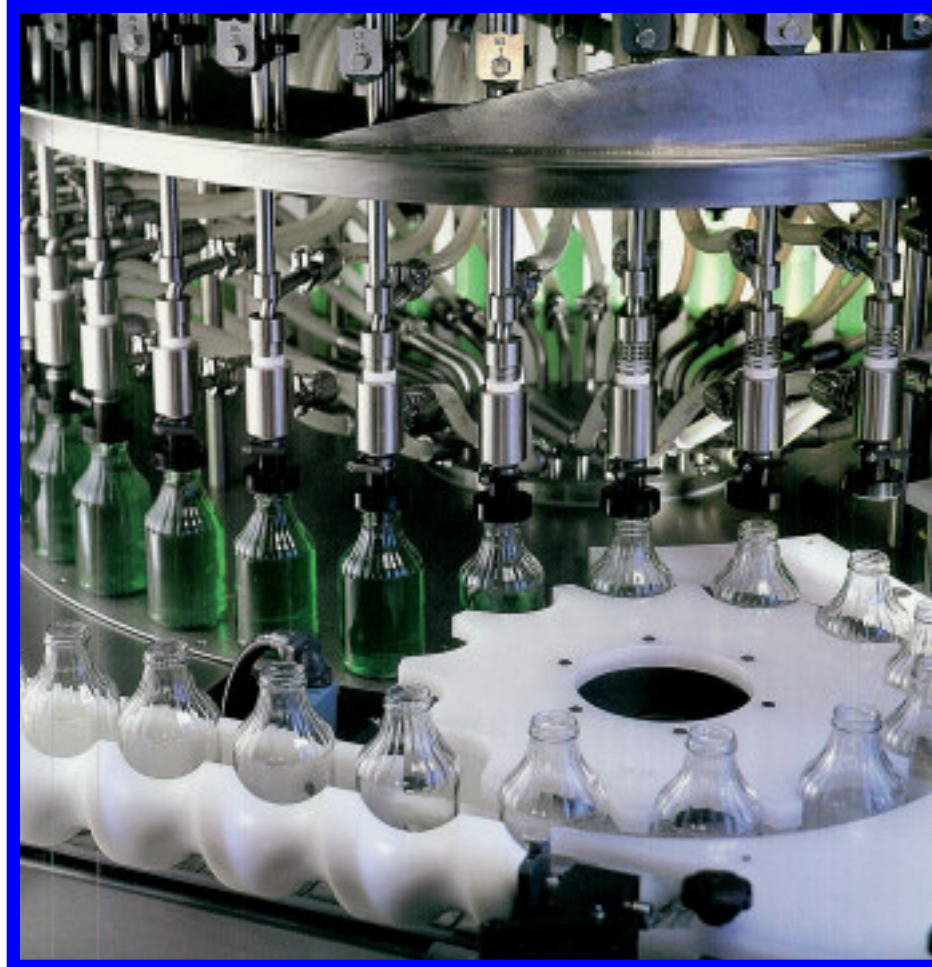


Continuous Motion Machines

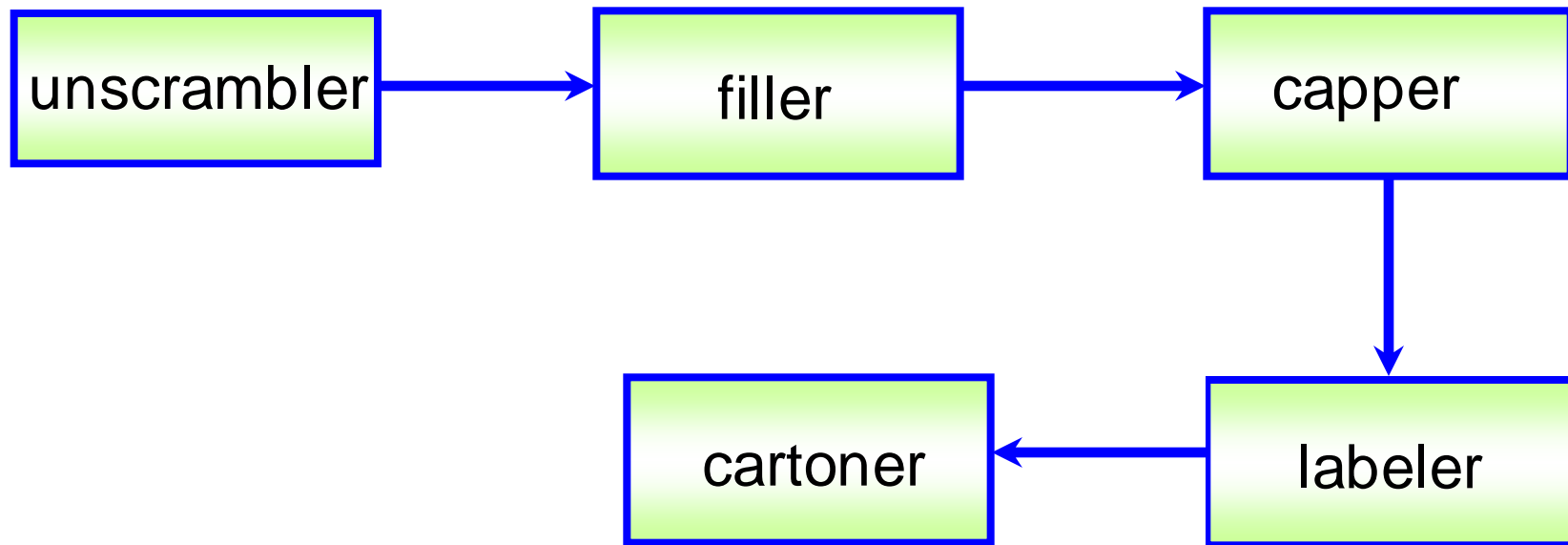
- ▶ Package speed can be constant throughout the line
- ▶ Capable of high production rates (over 2,000 cpm)
- ▶ Requires more change parts



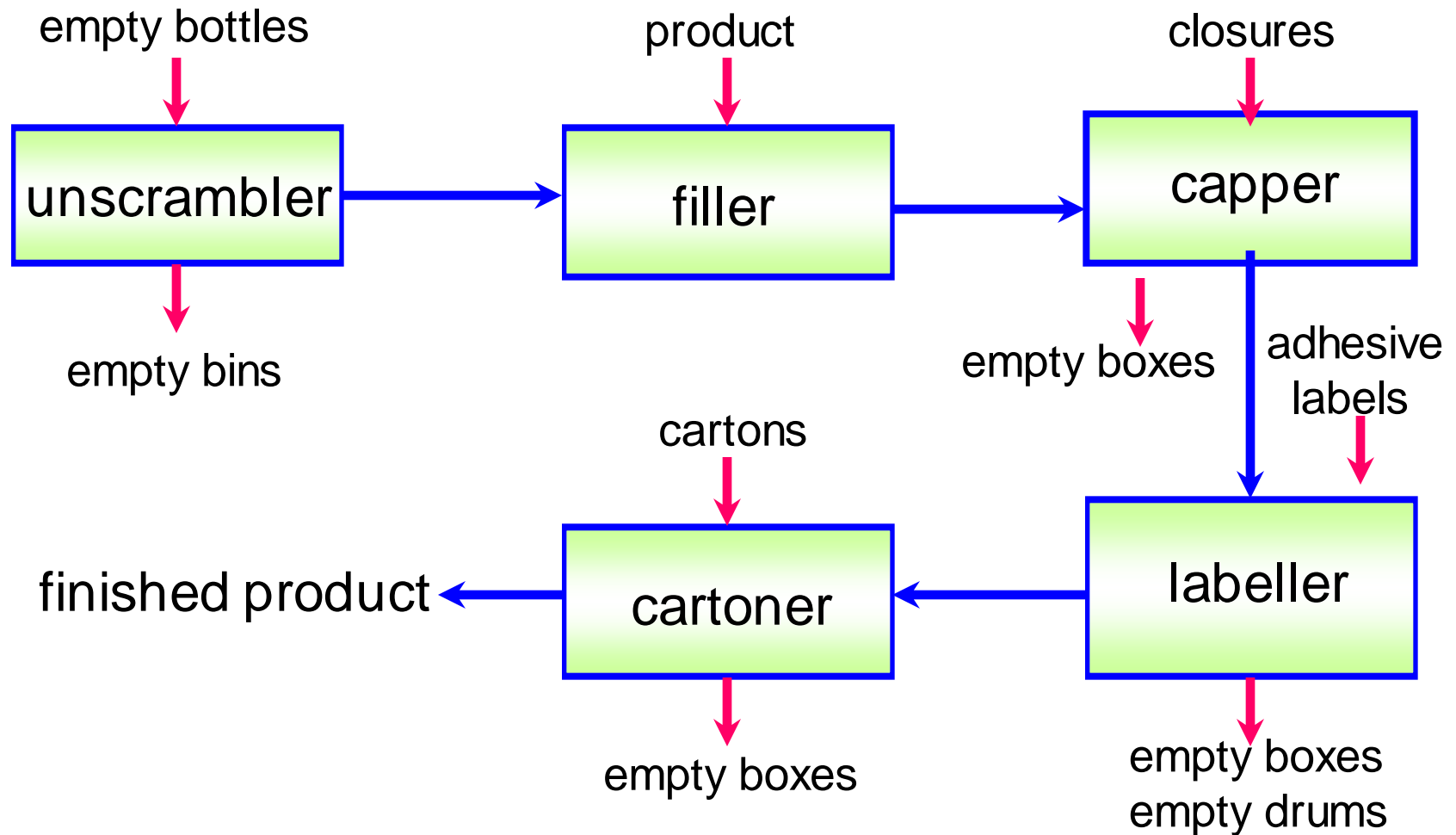
Filler Infeed Screw and Starwheel



Block Diagram showing Line Functions



Note Input/Output Activities



Levels of Automation

Manual with machine assist?

Operator tended machine?

Fully automated production?

Level of automation is a function of labour cost as well as of available technology

Higher automation levels require:

- tighter material tolerances
- more highly qualified technical staff

Higher Speed is Only Good if Needed !

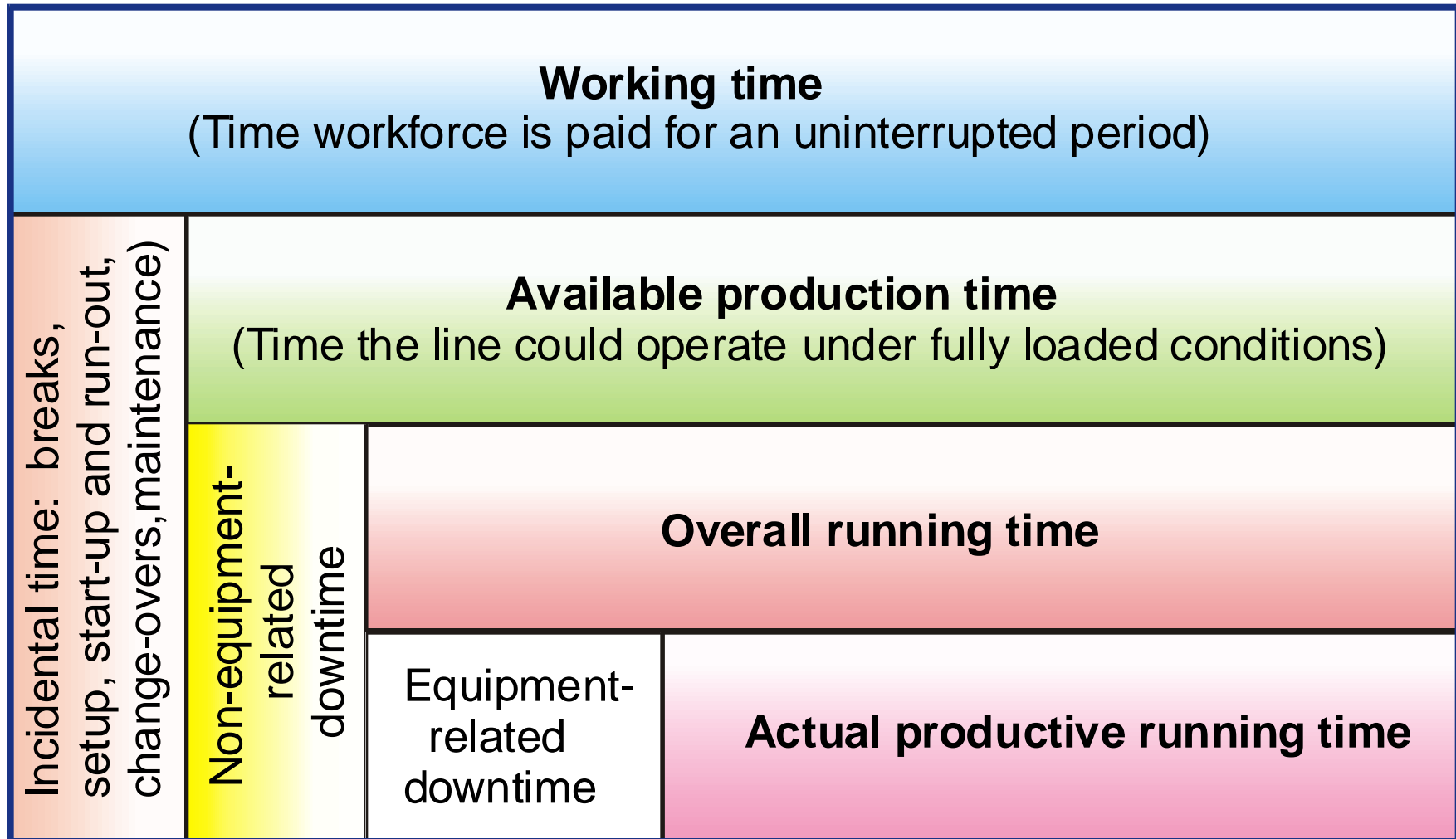
Be very specific in estimating required output

The difference between 80 cpm and 100 cpm may require a completely different machine configuration

Twice as fast is usually more than twice as expensive

10 containers per minute = 600 containers per hour
= 1,200,000 containers per year

Available Production Time



How Fast Does it Go?

Design speed

The cycle rate of the machine as designed, running empty

Capacity

Upper sustainable limit producing quality packages

Running speed

Instantaneous operating rate

Output

Quantity of quality packages produced in a given time



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Assigning Machine Speeds in a Line

Traditional lines use the filler as a benchmark

Machines before & after the filler run progressively faster

Current trend is to dynamic controls where each machine speed is continuously variable

Adjustments or Change Parts?

If running only a few defined package sizes:

- Specify machine with change parts

Where there are many package and product variations:

- Specify a fully adjustable machine

Machinery Information Sources

Trade shows

InterPack, Pack Expo, etc., and regional shows

Trade literature; buyer's guides

Trade Associations

Trade professionals

other packagers

machinery consultants