

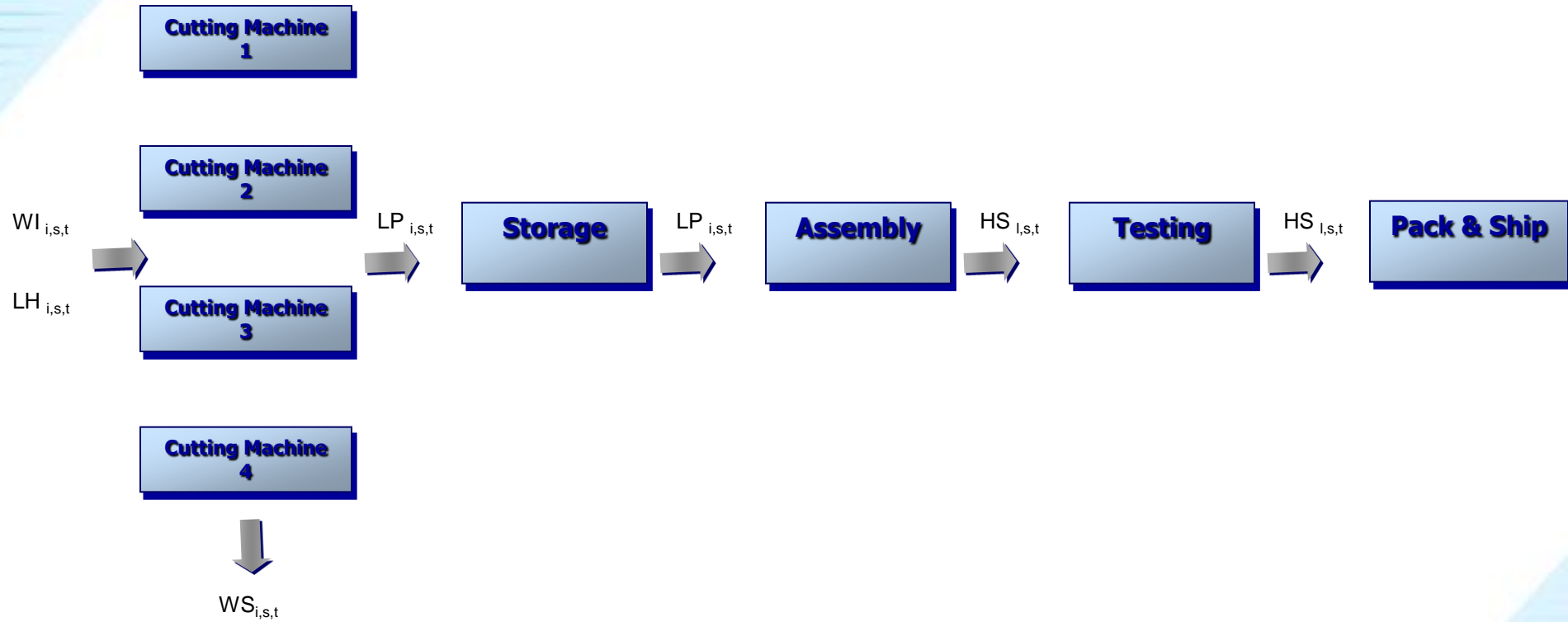


**Condumex-Arela**

# **An ABC Model for Harness Production**



# Harness Production: Process Flow



# Basic ABC Model

$$CHS_i = CUT_i + ASM_i + INS_i + PCK_i$$

Harness Type i  
Cost

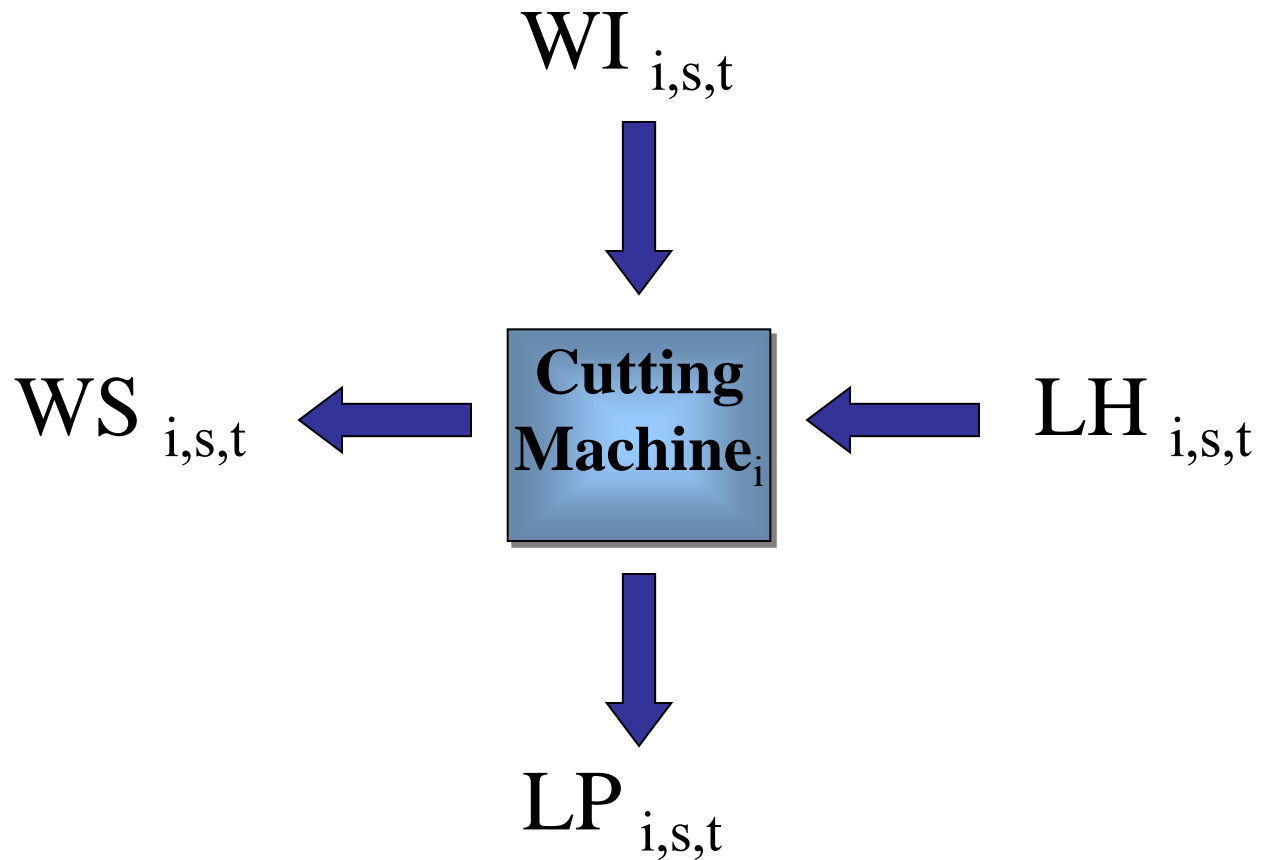
Cutting  
Cost

Assembly  
Cost

Inspection  
Cost

Pack & Ship  
Cost

# Wire Cutting Activity



# Wire Cutting Variables

The number of leads produced ( $LP$ ) at a particular cutting machine ( $i$ ), by a specific shift ( $s$ ), in a given day ( $t$ ), is a function of:

- amount of wire cable input ( $WI$ )
- number of man-hours used ( $LH$ )
- number of machine-hours used ( $MH$ )
- amount of wire scrap generated ( $WS$ )

# Basic ABC Model

$$CUTC_i = LABRC_i + WIREC_i + MACHC_i$$

Cutting  
Cost

Labor  
Cost

Wire  
Cost

Machine  
Cost

$$LABRC_i = \frac{SAL}{CF1} * \sum_{k \in S} \sum_{t \in M} \frac{TRS_{i,k,t}}{CF2}$$

$$WIREC_i = PW_i * \sum_{k \in S} \sum_{t \in M} WI_{i,s,t}$$

$$MACHC_i = PM_i * \sum_{k \in S} \sum_{t \in M} MH_{i,s,t}$$

Where:

i = Harness Type

k = Shift

t = Date

# Monthly Results

Total number of leads produced at a specific cutting machine and shift (  $TLP_{i,s}$  ), per man-hour:

$$TLP_{i,s} = \sum_t LP_{i,s,t} / \sum_t LH_{i,s,t}$$

Total amount of wire scrap generated at a specific cutting machine and shift (  $TWS_{i,s}$  ), per kilogram of wire:

$$TWS_{i,s} = \sum_t WS_{i,s,t} / \sum_t WI_{i,s,t}$$

# Benchmark Data

During a 14-day period, baseline data will be collected (using previous model) to compute:

$ALP_{i,s}$  : average number of leads produced at  
cutting machine  $i$ , shift  $s$

$AWS_{i,s}$  : average amount of wire scrap produced  
at cutting machine  $i$ , shift  $s$

# Cost Saving Calculation

Cost savings are estimated by using “increased cutting machine productivity” (*IMP*) and “reduction in kilograms of wire scrap” (*RWS*)\* :

$$\mathbf{IMP} = (\mathbf{TLP}_{i,s} - \mathbf{ALP}_{i,s}) \geq 0$$

$$\mathbf{RWS} = (\mathbf{AWS}_{i,s} - \mathbf{TWS}_{i,s}) \geq 0$$

\* *Condumex* will provide dollar-values to be assigned to *IMP* and *RWS*.