

WASTE DATA MANAGEMENT AT THE BAXTER MANUFACTURING FACILITY IN COSTA RICA

DECEMBER 10, 2010



Baxter

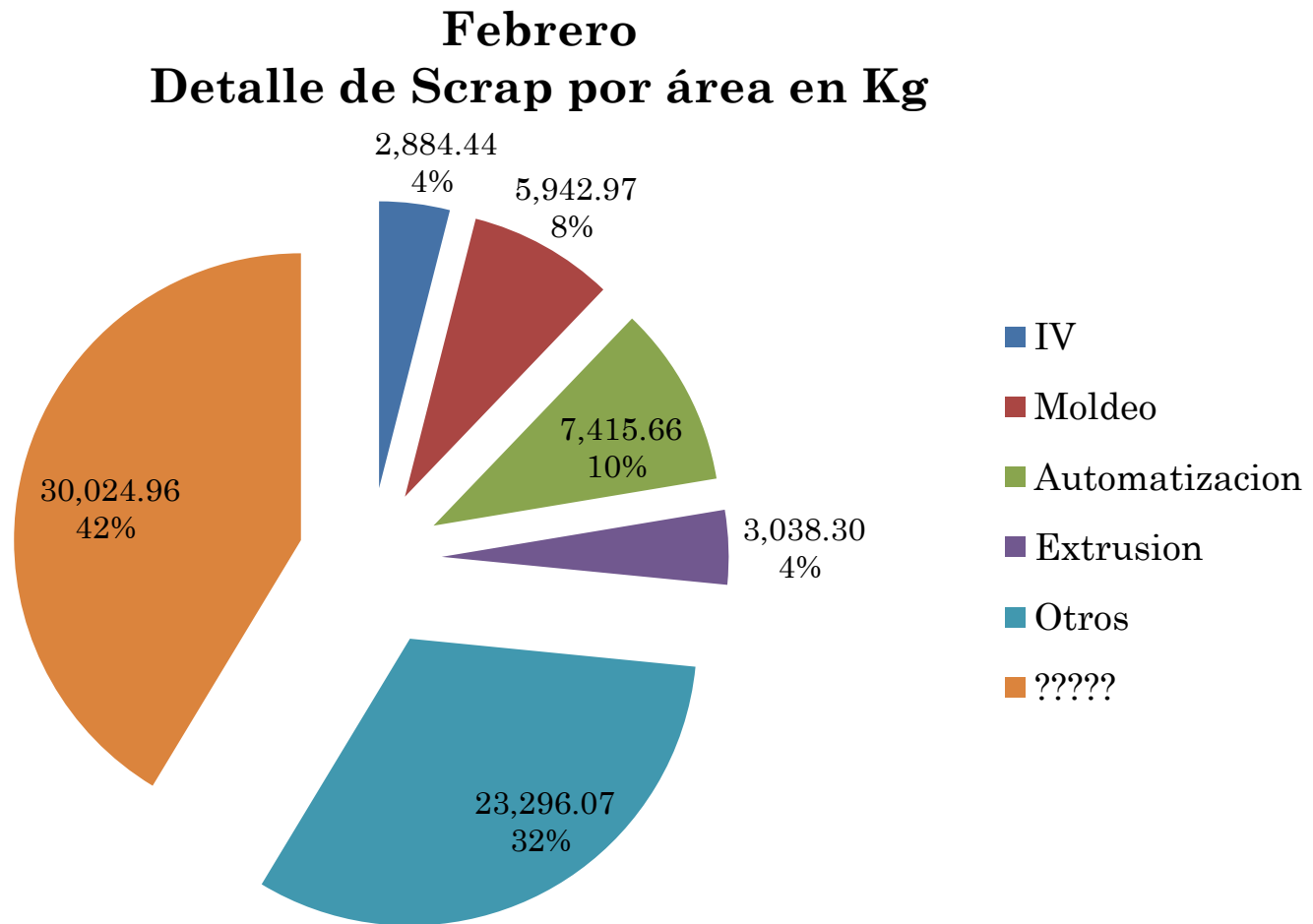
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CURRENTLY...

- Four manufacturing departments
 - Different waste
 - Different waste tracking methods
 - Different file structures
- EHS waste data
 - Total manufacturing waste manually calculated
 - HC Recycling versus total from departments

EHS REPORT



WHY ARE WE HERE?

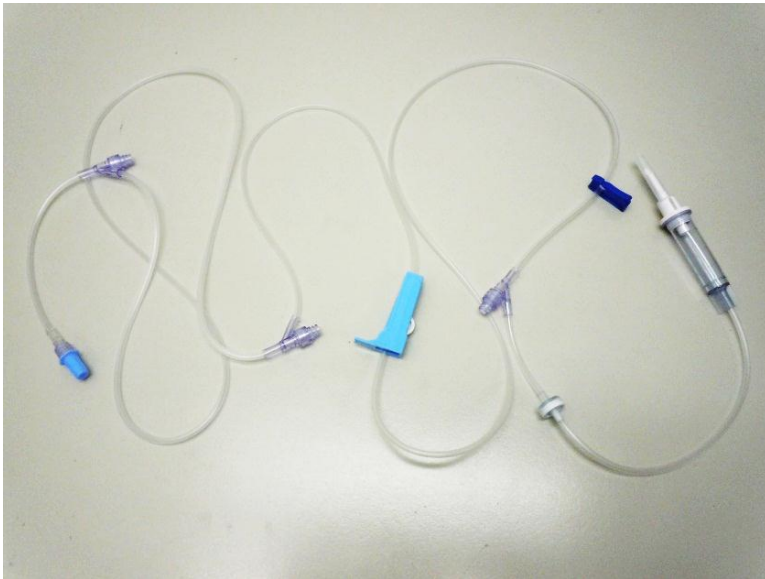
- EHS Department requests
 - Automate the calculation process
 - Find accuracy issues
 - Recommend solutions
- Approach
 - Waste stream map
 - Integration of files
 - Recommendations

2C8537 WASTE STREAM MAP

○ Purpose

- Gain an understanding of manufacturing process
- Identify where waste is produced
- Calculate total waste per IV set created
- Estimate waste generation per day and month

2C8537 CLEARLINK SYSTEM CONTINU-FLO SOLUTION SET



- Manufacturing waste:
13,25g
- Packaging waste:
5,62g
- Total waste:
18,87g
- Amount produced daily:
43.935 units

CURRENT PROCEDURE FOR DATA COLLECTION

- EHS calculates total monthly scraps manually
 - Different data
 - Inconsistent structure of files
 - Lack of explanations
- There is room for improvement
 - Step toward standardizing files

EXTRUSION EXCEL TEMPLATE

Numero de Parte	Turno	Extrusor	Operador	PS#	Dia	Horas Mil	Cantidad Producidad	Material para moler	Cantidad de Scrap	Numero de Resina

- One file for the year
- Unit of measure: Pounds
- Data entered in real time

MOLDING EXCEL TEMPLATE

○ “Scrap” Sheet

Codigo	Produccion Planeada	1		31		Acumulado	Scrap por Runner
		Turno #	Turno #	Turno #	Turno #		
Total							

○ “Acumulado” Sheet

Codigo	Produccion Planeada	1		31		Acumulado	Peso (kg)	Unidades
		Turno #	Turno #	Turno #	Turno #			
Total							Total Scrap	

- Total scrap not calculated
- Unit of measure: Kilograms
- Data is entered daily

AUTOMATION EXCEL TEMPLATE

Areas de Plastico y Automatizacion Control digitaciones Mes de.../Areas of Plastic and Automation Control for the Month of			
Fecha/Date	Turno/Shift	Maquina/Machine	Peso en kg/Weight in kg
		TAE1	
		TAE2	
		TS	
		Y200 1	
		INT	
		CLK	

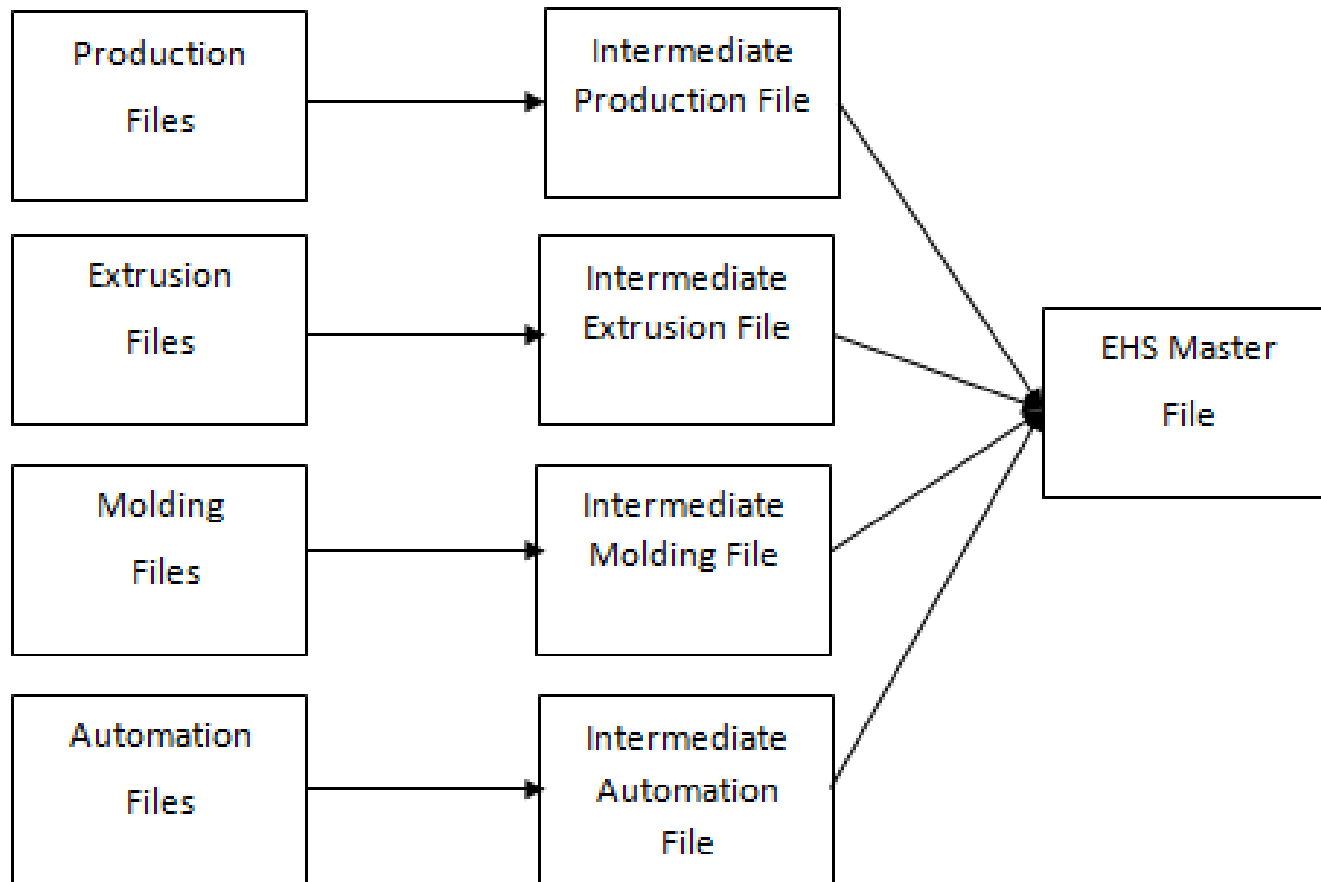
- Unit of measure: Kilograms
- Total waste value not provided
- Data is recorded daily by machine

PRODUCTION EXCEL TEMPLATE

	Mes Actual				
	1	30	31		
Tipo/Type				Total gr	Total (kg)
Por Defectos/For Defects					
De Piso/Floor					
Materia Prima/Raw Materials					
Tiromat(kg)/Type of Packaging					
Total (kg)					

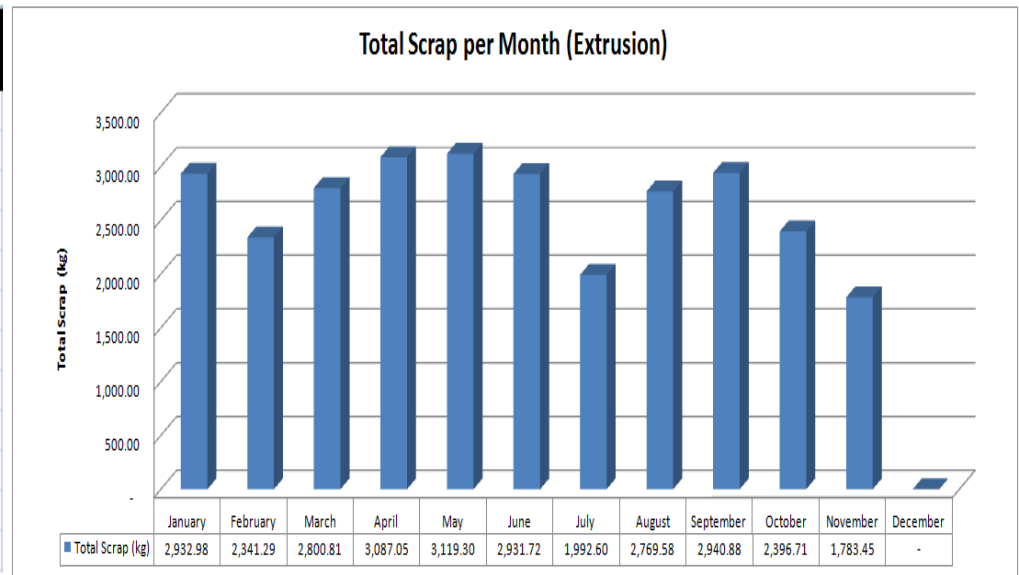
- Table varies from line to line
 - Example is from IV1
- Unit of measure: Varies (pounds, kilograms, grams)
- Record daily

EHS DEPARTMENTAL INTEGRATION FILE



INTERMEDIATE FILES

Month	Total Scrap (lb)	Total Scrap (kg)
January	6,452.55	2,932.98
February	5,150.84	2,341.29
March	6,161.78	2,800.81
April	6,791.51	3,087.05
May	6,862.46	3,119.30
June	6,449.78	2,931.72
July	4,383.72	1,992.60
August	6,093.08	2,769.58
September	6,469.93	2,940.88
October	5,272.76	2,396.71
November	3,923.60	1,783.45
December	-	-

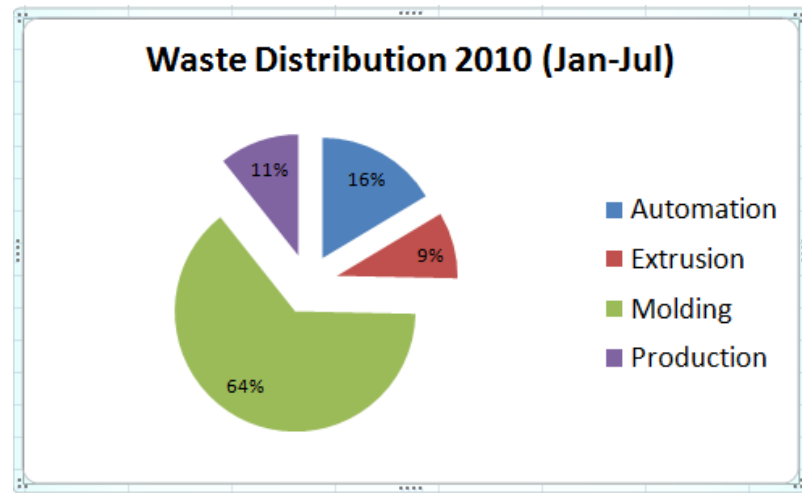


- Intermediate files have two tabs
 - Data tab
 - Visual representation tab
- Created to function with current files
- Update automatically

EHS MASTER FILE

- Integrate the diverse files
- EHS Master File has three sheets
 - Filterable data table
 - Graphical representation
 - Mean/Variance/Standard deviation

Month	Department	Total Scrap (kg)
January	Automation	268.47
January	Extrusion	2,932.98
January	Molding	23,989.22
January	Production	2,862.00



DEPARTMENTAL FILE RECOMMENDATIONS

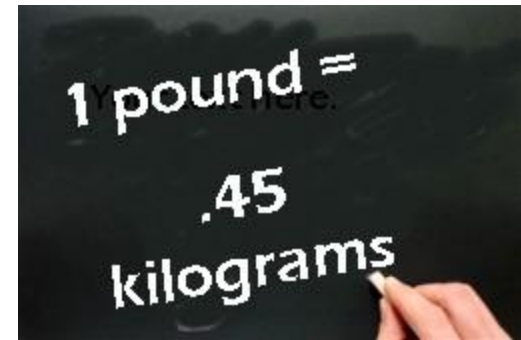
- Devise unified file naming system
- Standardize unit of measure
- Total monthly scrap
- Create files in advance
- Consult user guide when making changes

DEVISE UNIFIED FILE NAMING SYSTEM

- Example of current naming problems between departments
 - FEBRERO 2010
 - Febrero 2010
 - feb 2010
- Suggested naming solution
 - “Month and year”
 - For example: Febrero 2010
 - First letter of month capitalized
 - Full name of month in Spanish

STANDARDIZE UNIT OF MEASURE

- Different unit of measure between each department
 - Extrusion – pounds
 - Molding – kilograms
 - Automation – kilograms
 - IV – line dependent: pounds, kilograms, grams
- Standardize unit of measure for departments
 - Kilograms
 - Ease of final data collection
 - Eliminates confusion and conversions



TOTAL MONTHLY SCRAP

- Problem

- Monthly scrap totals not always provided by departments
- EHS Department difficulty in finding numbers and calculating total

- Recommended solution

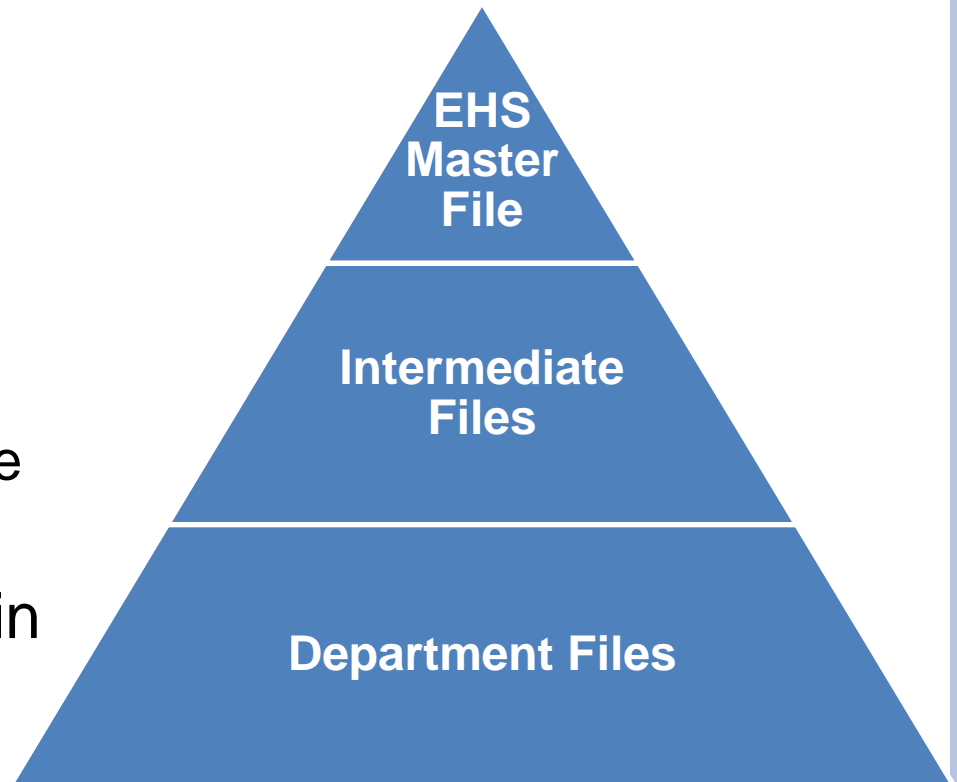
- Add scrap values in one cell
- Make it the same cell for every month

CREATE FILES IN ADVANCE

- Create each month at beginning of year
 - Makes cell referencing easier
 - Lowers monthly maintenance time
 - Catches complications with files early

CONSULT USER GUIDE

- Intermediate files are important
- Modifications to department files may cause problems
 - Changes need to be made in the intermediate files
- User Guide helps maintain integrity of system



PRODUCTION DEPARTMENT

- Issues
 - Excel files
 - Waste segregation
 - Waste data
- Pilot program
 - Improvements
 - Disparity remains
- Production volume as main priority

SOLUTION: STANDARD EXCEL SHEET

- Standard template for all lines
 - Example:

Day	Manufacruring Scrap (kg)	Packaging Scrap (kg)	Total Scrap (kg)
1			
2			
3			
4			
5			
...			
...			
...			
28			
29			
30			
31			
Total Scrap (kg)			

SOLUTION: WORKER EDUCATION

- Informational sessions
 - Importance of recycling to Baxter
 - Puts more responsibility on employees
- Recycling guidelines
 - Post at key points in department
 - Acts as a reminder

SOLUTION: INCENTIVES

- Waste data collection as part of performance evaluation
 - Accountability
 - Accuracy
- Line competition for accuracy
 - For waste segregation and recording
 - Similar to current system for production volume

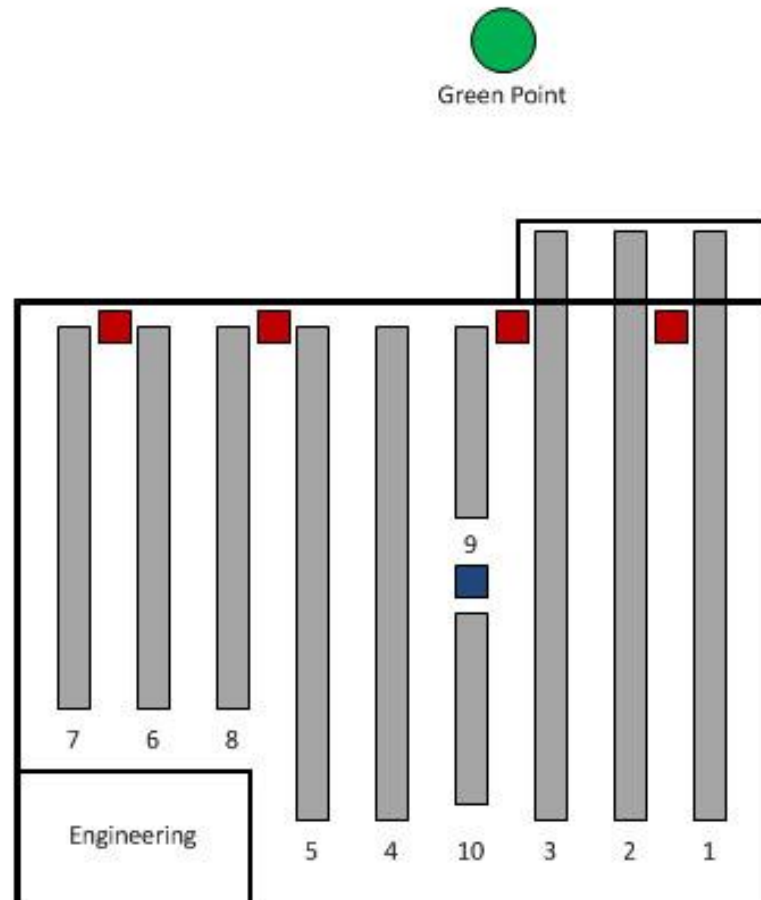
SOLUTION: WASTE MEASUREMENT STATIONS

○ Problem

- Only one balance
- Centrally located, but still inconvenient for some lines

○ Solutions

- Four more balances: one for every two lines
- One additional balance at green point with recording chart



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RESULTS



THANK YOU

- Sra. Sussy Madrigal
- Sr. Cristian Coto
- Sr. Alexander Navarro
- Sra. Natalia Méndez
- Sr. Enrique Moya
- Sr. Jorge Rodríguez
- Sr. Pablo Hernández
- Sr. Nelson Chacon
- Sr. Isaac Solano
- Everyone who has provided their insights



THANK YOU

Any Questions?