

WOLOWITZ CASE – SOLUTIONS



A BRIEF ANALYSIS ABOUT THE INITIAL COST STRUCTURE

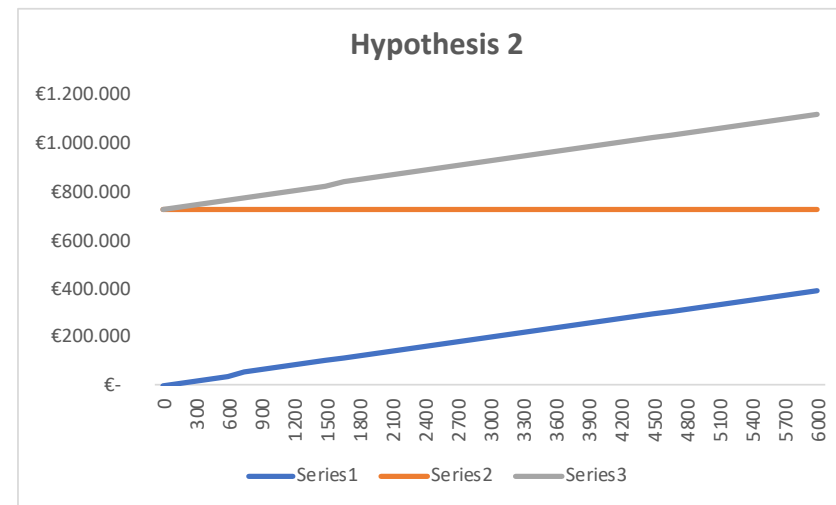
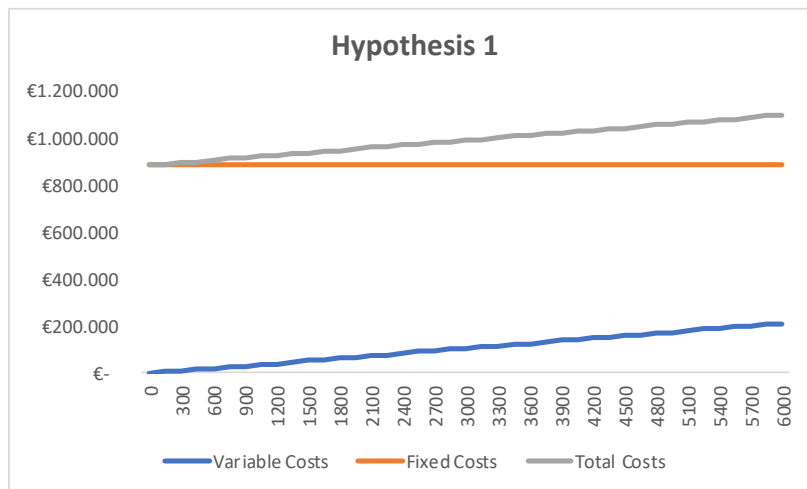
First hypothesis: the cost of direct labor is fixed (company operating in Europe)

	Variable	Fixed	Total
Manufacturing	\$ -123.200,00	\$ -540.600,00	\$ -663.800,00
Selling	\$ -66.459,00	\$ -82.000,00	\$ -148.459,00
Administrative & General		\$ -263.405,00	\$ -263.405,00
Total	\$ -189.659,00	\$ -886.005,00	\$ -1.075.664,00

Second hypothesis: the cost of direct labor is variable (company operating in USA)

	Variable	Fixed	Total
Manufacturing	\$ -284.800,00	\$ -379.000,00	\$ -663.800,00
Selling	\$ -66.459,00	\$ -82.000,00	\$ -148.459,00
Administrative & General		\$ -263.405,00	\$ -263.405,00
Total	\$ -351.259,00	\$ -724.405,00	\$ -1.075.664,00

A COMPARISON BETWEEN THE HYPOTHESIS



$$\text{Manufacturing variable cost per unit} = \frac{\$ 123.200}{5.410} = \$ 22,77$$

$$\text{Selling variable cost per unit} = \frac{\$ 66.909}{5.220} = \$ 12,82$$

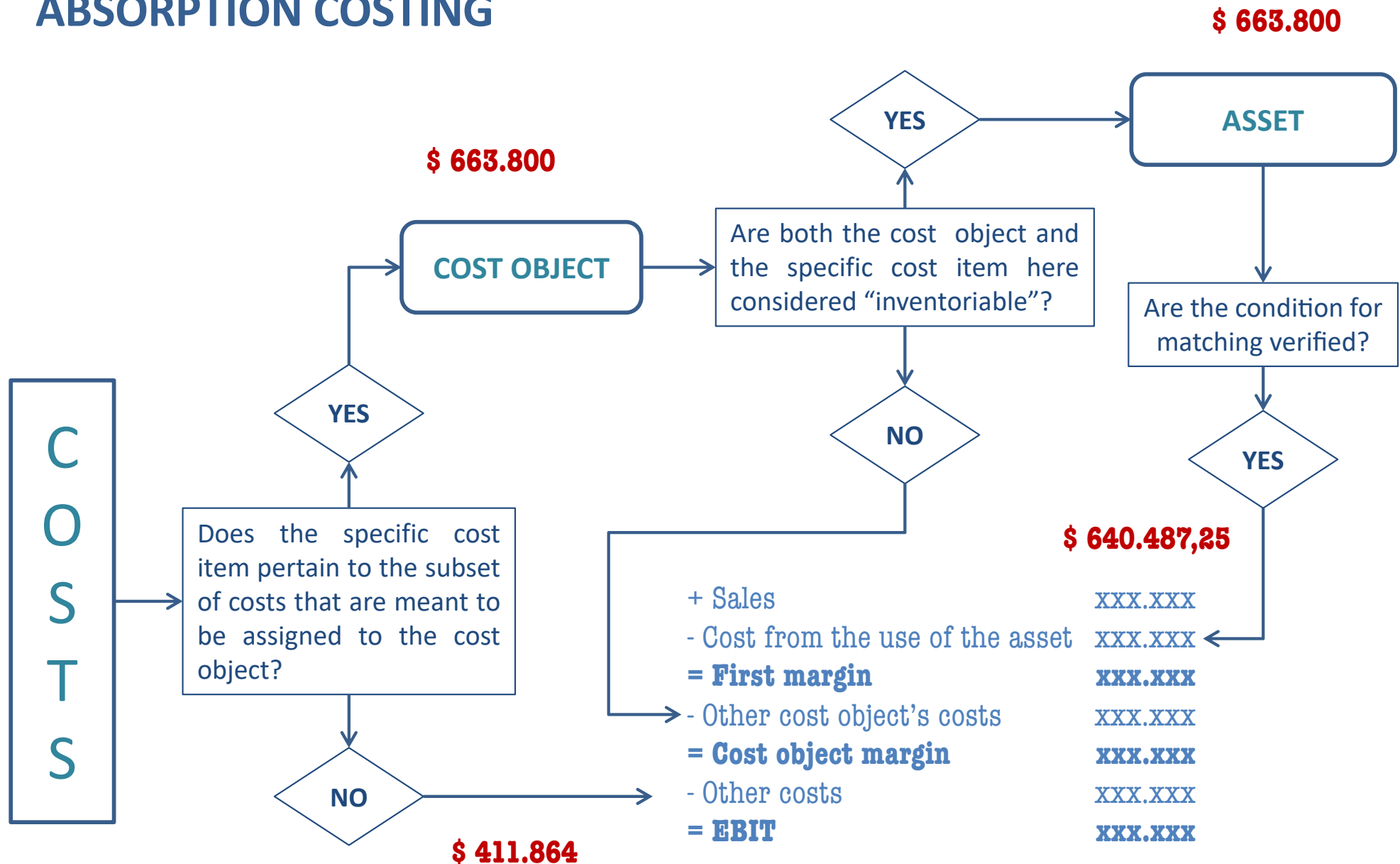
$$\text{Fixed Costs} = \$ 886.005$$

$$\text{Manufacturing variable cost per unit} = \frac{\$ 284.800}{5.410} = \$ 52,64$$

$$\text{Selling variable cost per unit} = \frac{\$ 66.909}{5.220} = \$ 12,82$$

$$\text{Fixed Costs} = \$ 724.405$$

ABSORPTION COSTING



ABSORPTION COSTING – COGS INCOME STATEMENT

Direct Materials	\$	100.060,00	\$	18,50
Direct Labour	\$	161.600,00	\$	29,87
Manufacturing Overhead (Variable)	\$	23.140,00	\$	4,28
Manufacturing Overhead (Fixed)	\$	379.000,00	\$	70,06
Total Manufacturing Costs	\$	663.800,00	\$	122,70

of chairs made 5410

Full Manufacturing Cost per unit \$ **122,70**

of chairs sold 5220

Cost of Goods Sold \$ **640.487,25**

Please note: this method of determining the cost per unit assumes the adoption of a "push" logic in the assignment of fixed costs (the fixed cost coefficient is calculated on the basis of the quantities obtained)

5.220 chairs	Sales Revenues	\$	1.041.100,00	100,00%
5.220 chairs	- Cost of Goods Sold	\$	-640.487,25	-61,52%
	= Gross Margin	\$	400.612,75	38,48%
	- Selling General & Administrative Expenses	\$	-411.864,00	-39,56%
	= EBIT	\$	-11.251,25	-1,08%

ABSORPTION COSTING – TOTAL OUTPUT INCOME STATEMENT

5.410 chairs	Sales Revenues	\$	1.041.100,00	100,00%	5.410 chairs
	Change in Inventory	\$	23.312,75	2,24%	
	Total Output	\$	1.064.412,75	102,24%	
	Direct Materials	\$	-100.060,00	-9,61%	
	Direct Labour	\$	-161.600,00	-15,52%	
	Manufacturing Overhead (Variable)	\$	-23.140,00	-2,22%	
	Manufacturing Overhead (Fixed)	\$	-379.000,00	-36,40%	
	Gross Margin	\$	400.612,75	38,48%	
	Selling Variable Costs	\$	-66.459,00	-6,38%	
	Selling Fixed Costs	\$	-82.000,00	-7,88%	
General & Administrative Expenses	\$	-263.405,00	-25,30%		
EBIT	\$	-11.251,25	-1,08%		

UNITARY MANUFACTURING COST

Variable Manufacturing Costs	\$	123.200
Fixed Manufacturing Costs	\$	540.600
Total Manufacturing Costs	\$	663.800

Variable Manufacturing Costs	\$	123.200
# of chairs made		5410

Variable Manufacturing Cost per unit **\$ 22,77**

Fixed Manufacturing Costs	\$	540.600
# of chairs made		5410

Fixed Manufacturing Cost per unit **\$ 99,93**

Total Manufacturing Costs per unit **\$ 122,70**



TWO COMPONENTS, DIFFERENT BEHAVIOR

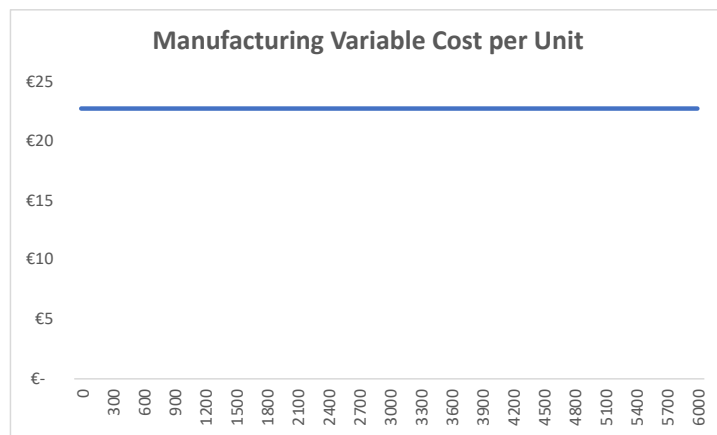
Manufacturing Variable Costs

Product Made

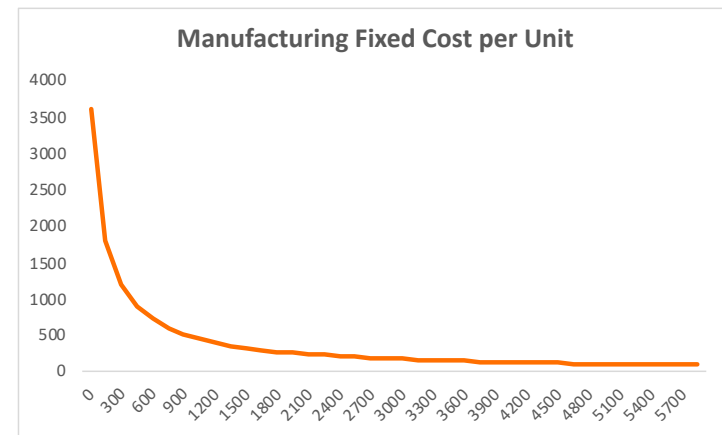
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Manufacturing Fixed Costs

Product Made

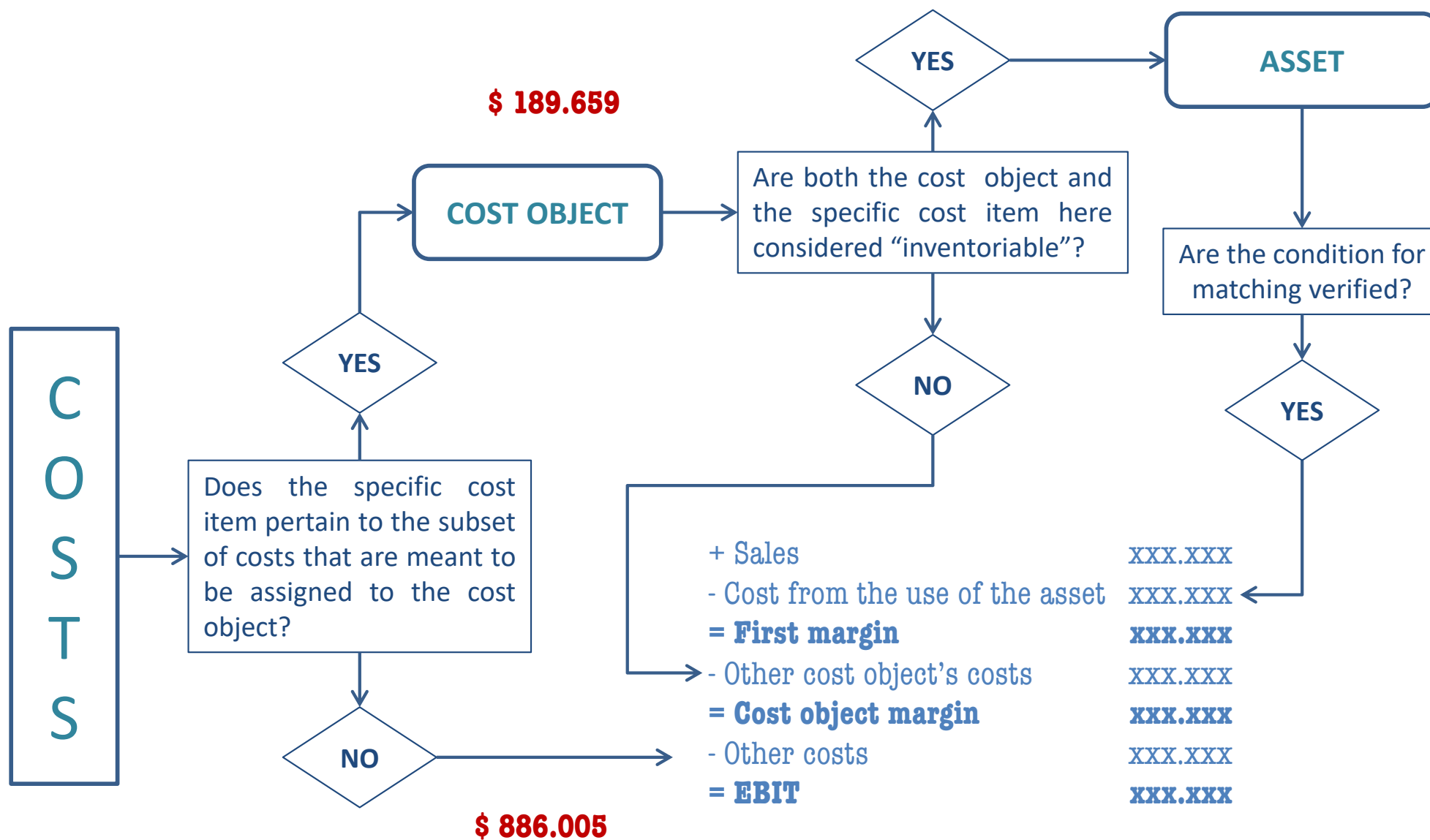


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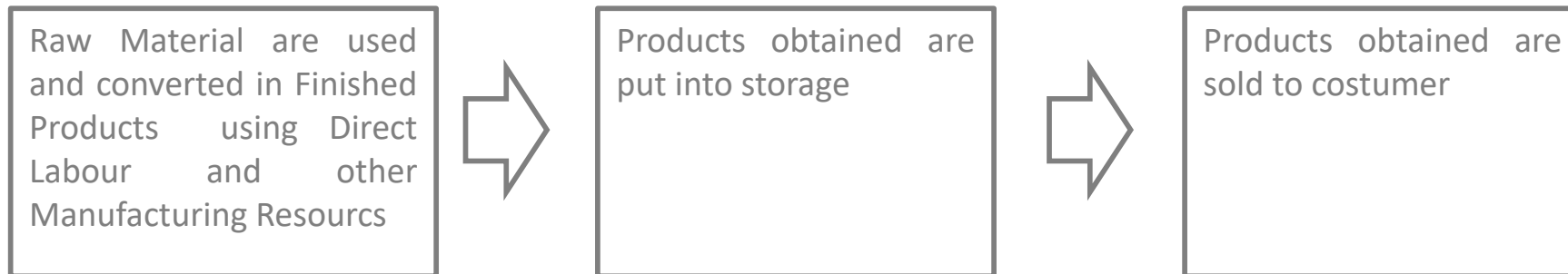


VARIABLE COSTING

Please note: from now on it is assumed that the company operates in Italy, consequently the labour cost is supposed to be fixed.



VARIABLE COSTING



RAW MATERIALS ➡ WORK IN PROCESS ➡ FINISHED PRODUCT ➡ COST OF GOODS SOLD



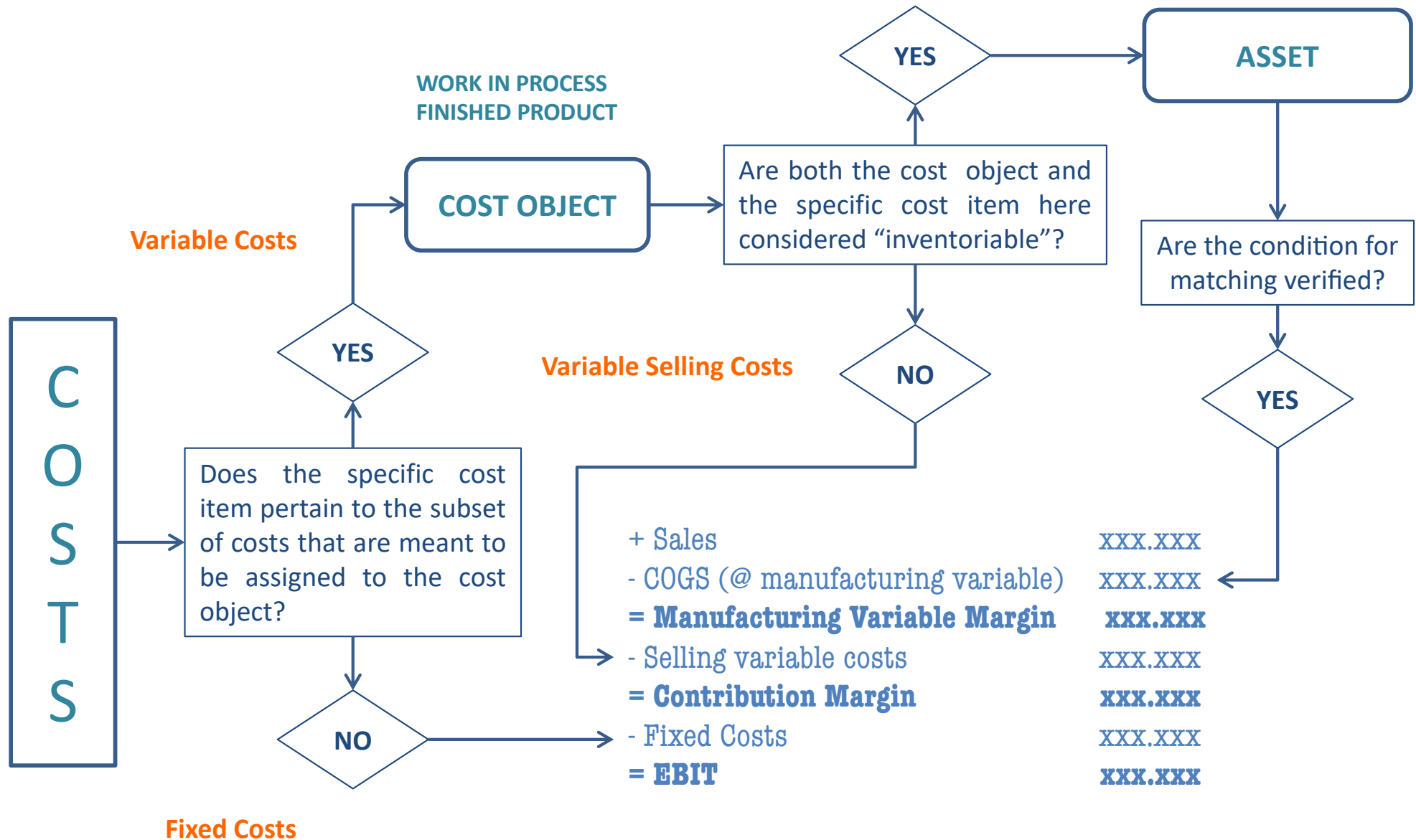
Variable **Manufacturing** Costs are incurred

Variable **Selling** Costs are incurred

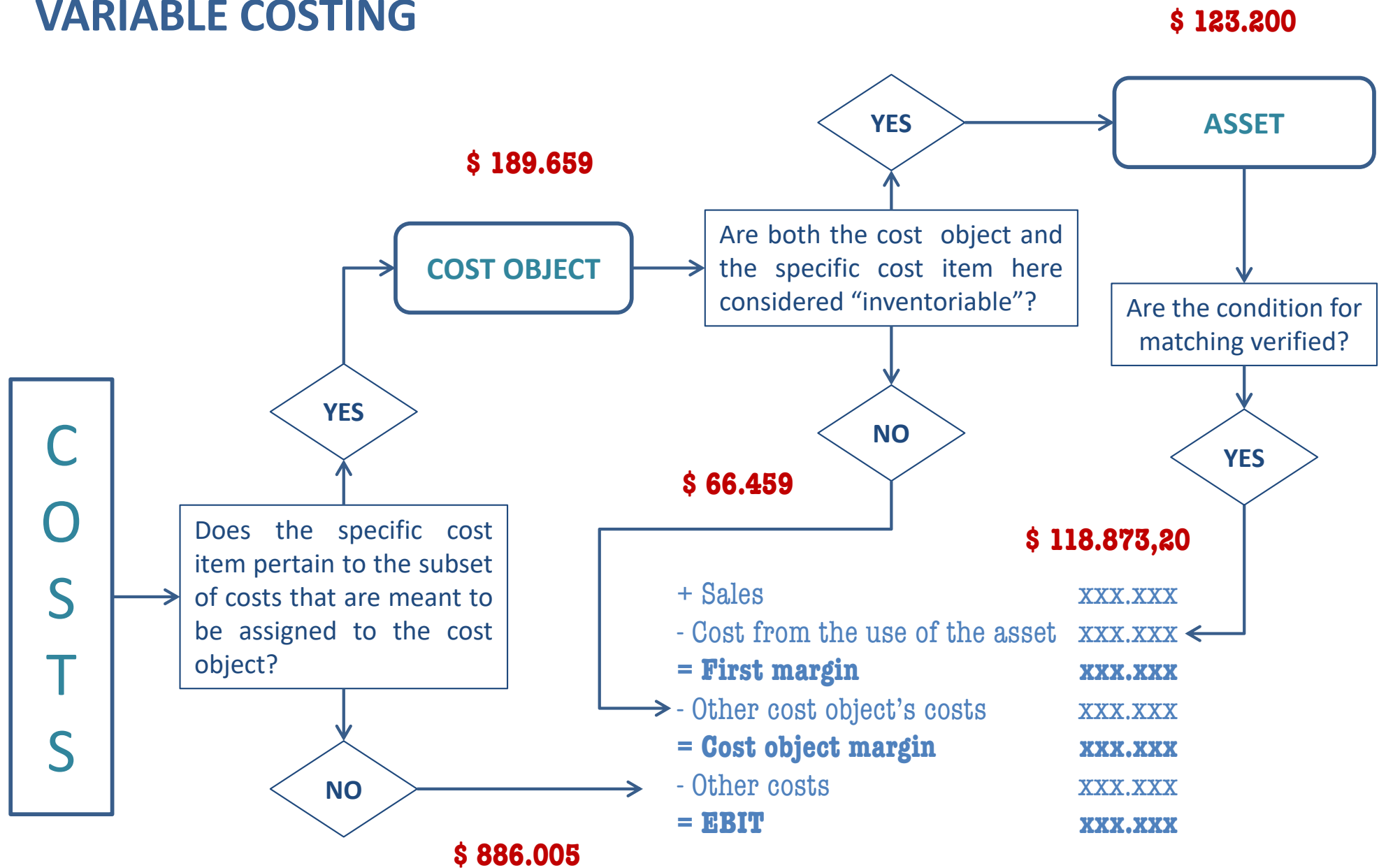
MORE PRECISELY

Variable Manufacturing Costs

WORK IN PROCESS
FINISHED PRODUCT



VARIABLE COSTING



VARIABLE COSTING – COGS INCOME STATEMENT

Direct Materials	\$	100.060
Direct Labour	\$	-
Manufacturing Overhead (Variable)	\$	23.140
Manufacturing Variable Costs	\$	123.200

of chairs made 5.410

Variable Manufacturing Cost per unit \$ **22,77**

of chairs sold 5.220

Cost of Goods Sold (@Manufacturing Variable) \$ **118.873,20**

5.220 chairs

Sales Revenues	\$	1.049.800,00	100,00%
- Cost of Goods Sold	\$	-118.873,20	-11,32%
= Manufacturing Variable Margin	\$	930.926,80	88,68%
- Selling Variable	\$	-66.909,00	-6,37%
- Contribution Margin	\$	864.017,80	82,30%
- Direct Labour	\$	-161.600,00	-15,39%
- Other Manufacturing Fixed Costs	\$	-379.000,00	-36,10%
- Selling General & Administrative Expenses (fixed)	\$	-345.405,00	-32,90%
= EBIT	\$	-21.987,20	-2,09%



VARIABLE COSTING – TOTAL OUTPUT INCOME STATEMENT

Variable Manufacturing Cost per unit		\$	22,77	
# of chairs increasing the inventory			190	
Change in Inventory		\$	4.326,80	
5.410 chairs	Sales Revenues	\$	1.049.800,00	100,00%
	Change in Inventory	\$	4.326,80	0,41%
	Total Output	\$	1.054.126,80	100,41%
	Direct Materials	\$	-100.060,00	-9,53%
	Direct Labour	\$	-	0,00%
	Manufacturing Overhead (Variable)	\$	-23.140,00	-2,20%
	Selling Variable Costs	\$	-66.909,00	-6,37%
	- Contribution Margin	\$	864.017,80	82,30%
	- Direct Labour (fixed)	\$	-161.600,00	-15,39%
	- Manufacturing Fixed Costs	\$	-379.000,00	-36,10%
	- Selling General & Administrative Expenses (fixed)	\$	-345.405,00	-32,90%
	= EBIT	\$	-21.987,20	-2,09%

UNITARY VARIABLE COST

Variable Manufacturing Costs	\$	123.200
Variable Selling Costs	\$	66.909
Total Variable Costs	\$	190.109

Variable Manufacturing Costs	\$	123.200
# of chairs made		5.410

Variable Manufacturing Cost per unit **\$ 22,77**

Variable Selling Costs	\$	66.909
# of chairs sold		5.220

Fixed Manufacturing Cost per unit **\$ 12,82**

Total Variable Costs per unit **\$ 35,59**



TWO COMPONENTS, BOTH CONSTANT

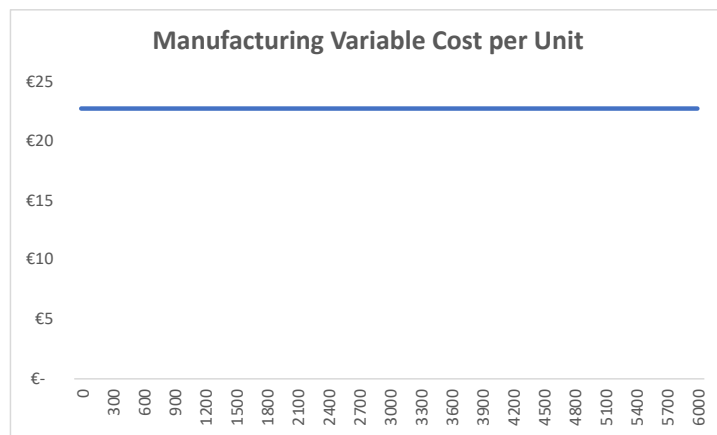
Manufacturing Variable Costs

Product made

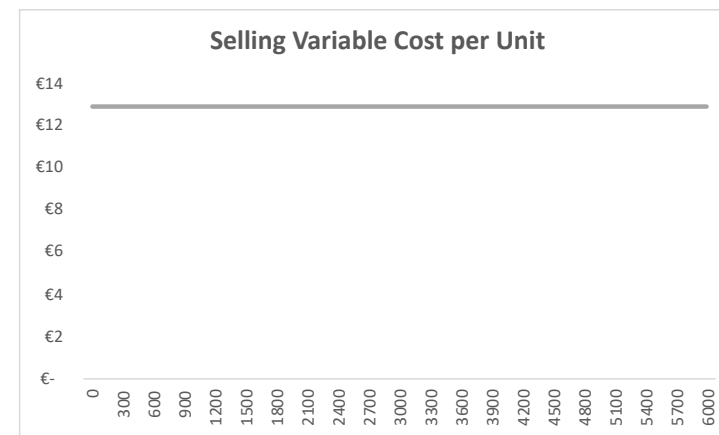
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Selling Variable Costs

Product sold



+



ABSORPTION COSTING – COGS INCOME STATEMENT

5.410 chairs MADE $\xrightarrow{+ 125}$ 5.535 chairs MADE
 5.220 chairs SOLD 5.220 chairs SOLD

Direct Materials	\$	100.060
Direct Labour	\$	161.600
Manufacturing Overhead (Variable)	\$	23.140
Manufacturing Overhead (Fixed)	\$	379.000
Total Manufacturing Costs	\$	663.800

of chairs made 5410

Full Manufacturing Cost per unit \$ **122,70**

of chairs sold 5220

Cost of Goods Sold \$ **640.487,25**

Sales Revenues	\$	1.049.800,00
- Cost of Goods Sold	\$	-640.487,25
= Gross Margin	\$	409.312,75
- Selling General & Administrative Expenses	\$	-412.314,00
= EBIT	\$	-3.001,25

Direct Materials	\$	102.372
Direct Labour	\$	161.600
Manufacturing Overhead (Variable)	\$	23.675
Manufacturing Overhead (Fixed)	\$	379.000
Total Manufacturing Costs	\$	666.647

of chairs made 5.535

Full Manufacturing Cost per unit \$ **120,44**

of chairs sold 5.220

Cost of Goods Sold \$ **628.707,34**

Sales Revenues	\$	1.049.800,00
- Cost of Goods Sold	\$	-628.707,34
= Gross Margin	\$	421.092,66
- Selling General & Administrative Expenses	\$	-412.314,00
= EBIT	\$	8.778,66

VARIABLE COSTING – COGS INCOME STATEMENT

5.410 chairs MADE $\xrightarrow{+ 125}$ 5.535 chairs MADE
 5.220 chairs SOLD 5.220 chairs SOLD

Direct Materials	\$	100.060
Direct Labour	\$	-
Manufacturing Overhead (Variable)	\$	23.140
Manufacturing Variable Costs	\$	123.200

of chairs made 5.410

Variable Manufacturing Cost per unit **\$ 22,77**

of chairs sold 5.220

Cost of Goods Sold (@Manufacturing Variable) **\$ 118.873,20**

Sales Revenues	\$	1.049.800,00
- Cost of Goods Sold	\$	-118.873,20
= Manufacturing Variable Margin	\$	930.926,80
- Selling Variable	\$	-66.909,00
- Contribution Margin	\$	864.017,80
- Direct Labour	\$	-161.600,00
- Other Manufacturing Fixed Costs	\$	-379.000,00
- Selling General & Administrative Expenses (fixed)	\$	-345.405,00
= EBIT	\$	-21.987,20

Direct Materials	\$	102.372
Direct Labour	\$	-
Manufacturing Overhead (Variable)	\$	23.675
Manufacturing Variable Costs	\$	126.047

of chairs made 5.535

Variable Manufacturing Cost per unit **\$ 22,77**

of chairs sold 5.220

Cost of Goods Sold (@Manufacturing Variable) **\$ 118.873,20**

Sales Revenues	\$	1.049.800,00
- Cost of Goods Sold	\$	-118.873,20
= Manufacturing Variable Margin	\$	930.926,80
- Selling Variable	\$	-66.909,00
- Contribution Margin	\$	864.017,80
- Direct Labour	\$	-161.600,00
- Other Manufacturing Fixed Costs	\$	-379.000,00
- Selling General & Administrative Expenses (fixed)	\$	-345.405,00
= EBIT	\$	-21.987,20