

### Task IM-9.39: Process Costing (Mehrstufige Divisionskalkulation)

RAMSGATE Ltd. is a small production firm for digital cameras.

The company was established in 20X0 by a share issue 200,000 ordinary shares 5.00 EUR each.

The production process contains the steps assembling (A), configuration (C), and quality checking (Q). RAMSGATE produces 2 kinds of cameras: (1) SUPER and (2) LOW-BUDGET. The cameras only are different in terms of the components used. All materials are added to the production process in the first production step. The materials for the SUPER camera cost 48.00 EUR/SUPER camera and for the LOW-BUDGET camera costs are 33.00 EUR/LOW-BUDGET camera.

Depreciation on machinery amounts to 120,000.00 EUR. You have to split labour cost per camera produced (consider equivalent units in cost center Q).

The company was established in 20X0 by a share issue 200,000 ordinary shares 5.00 EUR each.

RAMSGATE bought materials 2,000,000.00 EUR (net amount) on cash on 2.01.20X0. They put all materials on stock.

The costs for labour will be assigned along the time spent in the cost centers. The cameras use the times below for the assembling-configuration-quality check-process (A-C-Q-process):

<b>Camera / Cost center</b>	<b>assembling (A)</b>	<b>configuration (C)</b>	<b>quality check (Q)</b>
SUPER	6 min	8 min	5 min
LOW-BUDGET	5 min	7 min	5 min

**Exhibit 1:** Time spent per camera in cost centers

Costs are assigned as direct costs to the cost centers. Assume a cost rate of 33 EUR/h in cost center A, of 25.00 EUR/h in cost center C, and of 21.00 EUR/h in cost center Q.

Cameras only get transferred to the next cost center once the production process has been completed. There is no opening value of work in process (WIP) at all.

During 20X0 RAMSGATE started to produce 16,000 SUPER cameras and 25,000 LOW BUDGET cameras. At the end of the fiscal year 20X0 all SUPER cameras have been completed and put on stock. Only 20,000 of the LOW-Budget cameras got completed in the last cost center. 5,000 LOW BUDGET cameras remain still in the quality assurance process and got completed fully in terms of materials but to an extent of 40 % of labour and depreciation expenses only.

Cost for administration is 50,000.00 EUR per 20X0.

RAMSGATE sells all cameras at a selling price that amounts to double of the cost of manufacturing.

**Required: Run a process costing and determine the amount of raw material inventory, Work-in Progress, and the net profit earned by RAMSGATE. (Ignore VAT)**

**Solution (Lösung)**

Observe the bookkeeping entries below:

(1) Share issue:  $200,000 \cdot 5 = 1,000,000.00$  EUR

<b>DR Cash/Bank</b>	.....	<b>1,000,000.00 EUR</b>
<b>CR Share Capital</b>	.....	<b>1,000,000.00 EUR</b>

(2) Material purchase: 2,000,000.00 EUR

<b>DR RM-Inventory</b>	.....	<b>2,000,000.00 EUR</b>
<b>CR Cash/Bank</b>	.....	<b>3,000,000.00 EUR</b>

(3) Depreciation: 120,000.00 EUR

<b>DR Depreciation</b>	.....	<b>120,000.00 EUR</b>
<b>CR Acc. Depr.</b>	.....	<b>120,000.00 EUR</b>

(4) Payment for labour: 314,300.00 EUR see below: bookkeeping entry (8)!

<b>DR Labour</b>	.....	<b>314,300.00 EUR</b>
<b>CR Cash/Bank</b>	.....	<b>314,300.00 EUR</b>

(5, 6) Material cost for SUPER camera:  $16,000 \cdot 48 = 768,000.00$  EUR and for LOW BUDGET camera:  $25,000 \cdot 33 = 825,000.00$  EUR

<b>DR WIP-A</b>	.....	<b>768,000.00 EUR</b>
<b>CR RM-Inventory</b>	.....	<b>768,000.00 EUR</b>

<b>DR WIP-A</b>	.....	<b>825,000.00 EUR</b>
<b>CR RM-Inventory</b>	.....	<b>825,000.00 EUR</b>

(7) Allocation of Depreciation to cost centers. Depreciation is allocated along the amount of cameras finished or the equivalent unit: The amount of equivalent units for LOW BUDGET cameras completed in terms of labour and depreciation is  $20,000 + 40\% \cdot 5,000 = 22,000$  units.

Allocate depreciation along a ratio:  $41,000 : 41,000 : (22,000 + 16,000)$ : In cost center A:  $\text{Depreciation(A)} = 120,000 \cdot 41,000 / (41,000 + 41,000 + 38,000) = 41,000.00$  EUR.

<b>DR WIP-A</b>	.....	<b>41,000.00 EUR</b>
<b>CR Depreciation</b>	.....	<b>41,000.00 EUR</b>

<b>DR WIP-C</b>	.....	<b>41,000.00 EUR</b>
<b>CR Depreciation</b>	.....	<b>41,000.00 EUR</b>

<b>DR WIP-Q</b> .....	<b>38,000.00 EUR</b>
<b>CR Depreciation</b> .....	<b>38,000.00 EUR</b>

There are no over- or under-applied overheads in terms of depreciation.

(8) Allocation of labour: Cost center A:  $((16,000 \cdot 6/60) + (25,000 \cdot 5/60)) \cdot 33 = \mathbf{121,550.00 \text{ EUR}}$ . Cost center C:  $((16,000 \cdot 8/60) + (25,000 \cdot 7/60)) \cdot 25 = \mathbf{126,250.00 \text{ EUR}}$ . Cost center Q requires to determine the amount of equivalent units of LOW BUDGET cameras for the labour cost allocation: The amount of equivalent units for LOW BUDGET cameras completed in terms of labour and depreciation is  $20,000 + 40\% \cdot 5,000 = \mathbf{22,000 \text{ units}}$ . Accordingly, the labour costs are:  $((16,000 \cdot 5/60) + (22,000 \cdot 5/60)) \cdot 21 = \mathbf{66,500.00 \text{ EUR}}$ .

<b>DR WIP-A</b> .....	<b>121,550.00 EUR</b>
<b>CR Labour</b> .....	<b>121,550.00 EUR</b>

<b>DR WIP-C</b> .....	<b>126,250.00 EUR</b>
<b>CR Labour</b> .....	<b>126,250.00 EUR</b>

<b>DR WIP-Q</b> .....	<b>66,500.00 EUR</b>
<b>CR Labour</b> .....	<b>66,500.00 EUR</b>

Observe the cost allocations between the cost centers in the accounts below.

D		Cash/Bank	C	
(1)	1.000.000,00	(2)	2.000.000,00	
(9)	3.636.960,00	(4)	314.300,00	
		(10)	50.000,00	
		c/d	2.272.660,00	
	<u>4.636.960,00</u>		<u>4.636.960,00</u>	
b/d	2.272.660,00			

D		SCap	C	
c/d	1.000.000,00	(1)	1.000.000,00	
		b/d	1.000.000,00	

D		RM-Inventory	C	
(2)	2.000.000,00	(5)	768.000,00	
		(6)	825.000,00	
		c/d	407.000,00	
			<u>2.000.000,00</u>	
b/d	407.000,00			

  

D		Depr	C	
(3)	120.000,00	(7a)	41.000,00	
		(7b)	41.000,00	
		(7c)	38.000,00	
	<u>120.000,00</u>		<u>120.000,00</u>	

D		Acc Depr	C	
c/d	120.000,00	(3)	120.000,00	
		b/d	120.000,00	

D		Labour	C	
(4)	314.300,00	(8a)	121.550,00	
		(8b)	126.250,00	
		(8c)	66.500,00	
	<u>314.300,00</u>		<u>314.300,00</u>	

  

D		WIP-A	C	
(5)	768.000,00	WIP-C	1.755.550,00	
(6)	825.000,00			
(7a)	41.000,00			
(8a)	121.550,00			
	<u>1.755.550,00</u>		<u>1.755.550,00</u>	

D		WIP-C	C	
(7b)	41.000,00	WIP-Q	1.922.800,00	
(8b)	126.250,00			
WIP-A	1.755.550,00			
	<u>1.922.800,00</u>		<u>1.922.800,00</u>	

D		WIP-Q	C	
(7c)	38.000,00	FG	950.080,00	
(8c)	66.500,00	FG	868.400,00	
WIP-C	1.922.800,00	c/d	208.820,00	
	<u>2.027.300,00</u>		<u>2.027.300,00</u>	
b/d	208.820,00			

  

D		FG-Inv	C	
FG	950.080,00	COS	1.818.480,00	
FG	868.400,00			
	<u>1.818.480,00</u>		<u>1.818.480,00</u>	

D		Sales	C	
P&L	3.636.960,00	(9)	3.636.960,00	

D		COS	C	
FG	1.818.480,00	P&L	1.818.480,00	

  

D		Admin	C	
(10)	50.000,00	P&L	50.000,00	

D		P&L	C	
COS	1.818.480,00	Sales	3.636.960,00	
Admin	50.000,00			
NPc/d	1.768.480,00			
	<u>3.636.960,00</u>		<u>3.636.960,00</u>	
ITL	530.544,00	b/d	1.768.480,00	
R/E	1.237.936,00		<u>1.768.480,00</u>	
	<u>1.768.480,00</u>			

D		ITL	C	
c/d	530.544,00	P&L	530.544,00	
		b/d	530.544,00	

  

D		R/E	C	
c/d	1.237.936,00	P&L	1.237.936,00	
		b/d	1.237.936,00	

## Exhibit 2: Accounts (solution gray)

In the solution the cost for both kinds of cameras are mixed. The unit cost of a SUPER camera is:  $48 + (6/60) \cdot 33 + 1 + (8/60) \cdot 25 + 1 + (5/60) \cdot 21 + 1 = 59.38 \text{ EUR}$ . For all SUPER cameras the cost amount to  $16,000 \cdot 59.38 = 950,080.00 \text{ EUR}$ . The unit cost for a LOW-BUDGET camera are  $33 + (5/60) \cdot 33 + 1 + (7/60) \cdot 25 + 1 + (5/60) \cdot 21 + 1 = 43.42 \text{ EUR}$ . The costs of LOW-Budget cameras transferred to the finish goods account are  $43.42 \cdot 20,000 = 868,400.00 \text{ EUR}$ .

In order to check the amount of the balancing figure in the WIP-Q account:  $33 + (5/60) \cdot 33 + 1 + (7/60) \cdot 25 + 1 + 40\% \cdot ((5/60) \cdot 21 + 1) = 41.76 \text{ EUR}$ . Accordingly, the closing balance is  $5,000 \cdot 41.76 = 208,800.00 \text{ EUR}$  (The difference 20 EUR results from rounding the unit costs to 2 digits after the decimal point).

(9) Sales amounts to  $2 \cdot (950,080 + 868,400) = 3,636,960.00 \text{ EUR}$ .

**DR Cash/Bank ..... 3,636,960.00 EUR**

**CR Sales ..... 3,636,960.00 EUR**

(10) Administration: 50,000.00 EUR

<b>DR Administration .....</b>	<b>50,000.00 EUR</b>
<b>CR Cash/Bank .....</b>	<b>50,000.00 EUR</b>