



SOLAR INTELLIGENT SPEAKER

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This problem situation was written by Luis Antonio Camacho Galindo (luiscamacho@tec.mx); with the support of the TecGPT AI platform, with the purpose of serving as discussion material in the classroom; it does not intend to illustrate good or bad administrative practices. Some data on the problem situation has been modified at the request of the persons and institutions involved.

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The Company

The ZTXIX Company is preparing to launch a new product called Solar Intelligent Speakers. The event is scheduled to take place in San Francisco on June 15. Solar Intelligent Speakers are innovative devices that combine the functionality of traditional speakers with solar-powered technology and artificial intelligence, allowing users to enjoy music both indoors and outdoors while reducing their carbon footprint and a powerful device interaction using their own voice. This launch is highly anticipated in the tech industry due to its potential to revolutionize the way people interact with audio devices.

The main issue surrounding the launch of Solar Intelligent Speakers is the unexpected increase in manufacturing costs due to a shortage of solar panels, a key component of the product. This shortage has led to a significant rise in production expenses, jeopardizing the company's initial pricing strategy and profit margins. The company is now facing a dilemma in deciding whether to proceed with the launch as planned, delay it to source more affordable solar panels, or explore alternative solutions to mitigate the cost increase and maintain competitiveness in the market.

The company's supervisor has been given the task of analyzing the implications of the manufacturing cost increase on the pricing strategy and profitability. He needs to apply costing methods to evaluate the impact of the shortage of solar panels on the unit cost of Solar Intelligent Speakers, considering switching from a Job Costing System to a Process Costing System. The priority is to address the cost challenge while ensuring the successful launch of their innovative product.

To successfully launch the Solar Intelligent Speaker, he must determine the cost of producing each unit. This involves an accurate calculation of production costs to set a competitive, yet profitable price.

Understanding the implications of these costing methods is crucial. By analyzing them, the supervisor will appreciate the relevance of these accounting techniques and how they contribute to making informed business decisions.

Production Process

The production of speakers is introducing an innovation by using an imported pre-assembled solar speaker circuit inside a hard case made with recycled plastic flakes. It needs two steps: assembly and packing.

The launch of the Solar Intelligent Speakers is full of innovation and sustainability.



Image. TecGPT, 2025.



Image: TecGPT, 2025.

Unit Cost

The ZTXIX Company will use a job costing system for its production costs and a predetermined factory overhead rate, based on direct labor costs to apply factory overhead to all jobs. The new Solar Intelligent Speaker is an exciting innovation for the market with great expectations on the market acceptance.

During the first semester of 2026, the company processed three requests:

1. SIS-Solar Intelligent Speaker-001 with 7,000 pieces
2. SIS-Solar Intelligent Speaker-001 with 9,000 pieces
3. SIS-Solar Intelligent Speaker-001 with 8,500 pieces

In order to manufacture a single unit, the following materials are needed:

- ▶ Pre-assembled solar speaker circuit: 1 batch of 1,000 units at \$660,000 pesos (MXN)*batch
- ▶ Recycled plastic flakes for hard case: 5,200 grs. at \$9.00 pesos(MXN)*kg
- ▶ Direct labor: 1.5 hours at \$52.49 pesos(MXN)*hr

The estimated semester overhead for 2026 includes:

- ▶ Indirect labor: 7,000 hours
- ▶ Facility rent: \$720,000.00 pesos (MXN)
- ▶ Utilities : \$147,000.00 pesos (MXN)
- ▶ Maintenance and repairs: \$233,000.00 pesos (MXN)
- ▶ Equipment depreciation: \$190,000.00 pesos (MXN)
- ▶ Others: \$35,000.00 pesos (MXN)

The supervisor is interested in the following information:

- ▶ How many direct labor hours have been used?
- ▶ How much is the overhead application rate?
- ▶ The precise unit cost.

* 1.00 MXN = 0.054193 USD (X-rates.com, 2025).

Job Costing

The supervisor wants to obtain:

- ▶ The total manufacturing cost for each job
- ▶ A Statement of Cost of Goods Manufactured
- ▶ An Income Statement for the semester ended June 30, 2026.

Normal Cost

The cost to be calculated is per job.

Revenues are calculated adding a profit margin of 70% to the Cost of Goods Sold.

Sales and Administrative Expenses as a percent of revenues are 30%.

Inventories are not considered since the production of the semester is scheduled: it begins and ends within the period without accumulating inventories, except for a beginning materials inventory consisting of:

Pre-assembled solar speaker circuit: $(0.8 \text{ batch} * \$660,000 \text{ pesos}) = \$528,000.00 \text{ pesos (MXN)}$

Recycled plastic flakes for hard case: $(50,000 \text{ kg} * \$9.00 \text{ pesos}) = \$450,000.00 \text{ pesos (MXN)}$

The jobs were completed in the production area, 90% of the third job was delivered to the store and the rest remains in the finished goods inventory. First and second jobs were completely delivered.

From Jobs to Process Costing

After working with Job Costing, the supervisor has considered standardizing the process and increasing the production capacity. He wants to be sure that all speakers are manufactured with the same quality, sound and battery condition.

There is no need to buy new machinery. However, he is wondering if this change in the costing system will be profitable. He needs to determine the new cost optimization strategy.

The process is working with two cost pools: assembly and packaging.

After this migration, the supervisor wants to know:

- ▶ The new Cost of Manufactured Goods
- ▶ The new Income Statement for the semester ended on December 31, 2026.

During the first semester of implementation of this change in the company, the Accountant decided to use the Weighted Average Method. The following data was obtained:

Revenues are calculated adding a profit margin of 70% to the Cost of Goods Sold.

Data related to the Process Costing System

	Assembly Process	Completion	Packing Process	Completion
Beginning Inventory	0	0%	0	0%
Beginning Inventory costs				
DM	\$ 978,000.00		\$ -	
COCO	\$ -		\$ -	
Completed units in the month	¿?		¿?	
Units started during the period	24,500		¿?	
Ending WIP Inventory	2500	70%	3,900	75%
Period costs				
DM	\$ 17,316,600.00		\$ -	
COCO	\$ 3,561,437.50		\$ 60,000.00	

Source. Own elaboration, 2025.

The supervisor wants the accountant of The ZTXIX Company to suggest the optimal costing system and to determine whether the new Solar Intelligent Speaker product line is profitable. The following questions arose: (1) What are the main differences between job costing and process costing? (2) How should they calculate the unit cost of production for the Solar Intelligent Speaker using job costing? (3) How would the unit cost differ when using process costing for the Speaker? (4) What factors should they consider when choosing between job costing and process costing?

The supervisor is expecting a detailed cost analysis report for the Solar Intelligent Speaker using both job costing and process costing methods, including a recommendation on which method to use based on findings.