**Chapter 4 (Process Costing and Hybrid Product Costing) Video**

Chapters 3 and 4 cover the traditional product and service costing methods

**CHAPTER 4**

With a **PROCESS-COSTING SYSTEM,** a company works in a **repetitive production environment,** *manufacturing a large number of like units in a continuous flow.*

**In process costing, costs are normally accumulated by department.**

**Conversion costs:** Direct Labor + Manufacturing Overhead Costs

**EQUIVALENT UNITS**

In a manufacturing process with continuous production, some units are unfinished at period-end.

Processing costing uses the concept of ***equivalent units***.

* The term refers to the amount of manufacturing activity that has been applied to a batch of physical units after adjusting for the stage of completion.

**Equivalent-unit calculations are made for:**

* Direct materials
* Conversion cost (direct labor and overhead)

**Equivalent units** is a key concept in process costing.

* If a batch of goods has been completed, the *number of physical units and equivalent units will be the same*.
* Units in the ending Work-in-Process Inventory are only partially completed and may be in different stages of production.
  + For example, 100% of the materials may be present in the product, but only 50% of the conversion work (labor and overhead) may have been performed.
* **Conversion costs are usually assumed to be added continuously throughout the process in text problems.** Thus, if 100 units are 60% of the way through the process, the company is said to have performed 60 equivalent units of work during the period.
  + *Make the assumption if information to the contrary is not provided*
* **Direct materials, in contrast, are usually added at discrete points in text problems.** When considering materials, determine at what point the ending in-process units are and then evaluate whether the materials have been added.
  + If materials have been added, the units are 100% complete with respect to materials; if not, the units are 0% complete.

When *computing the cost of a unit*, ***we base the related calculations on equivalent units, not physical units***.

**TRACKING COSTS**

**Departmental production reports** are completed to disclose equivalent units and unit costs, along with the cost of completed production and the cost of the ending work-in-process inventory.

* The text focuses on the **weighted-average method** of process costing because of the method's popularity in practice.
* *All units completed during a period are assumed to be started and completed during that period.*
* *Equivalent units are calculated without distinguishing as to whether the manufacturing activity occurred in current period or the preceding period.*

**OVERHEAD ALLOCATION**

**Assigning Overhead**

* ***Actual versus normal costing****:* Either actual overhead or applied overhead (i.e., actual costing or normal costing) may be used with process costing.
  + The use of applied overhead smooths per-unit cost fluctuations attributable to changes in production levels, as was the case in job-costing systems.
  + Uses an appropriate cost driver to apply overhead

**Cost drivers**

* As in process costing, cost drivers should be chosen to provide an equitable allocation of overhead to products.

**HYBRID PRODUCT-COSTING SYSTEMS**

*Some processes have elements of both the job-cost (Chapter 3) environment and the process-cost (Chapter 4) environment.*

A third (hybrid) system known as **operation costing** may be used**.**

Characteristics

* Batch environment
* Conversion costs similar across product lines,
* Direct materials and direct labor significantly different across product lines

Conversion costs are usually applied to products by using a predetermined application rate.

Direct materials would be tracked by job, but the other cost elements would be more efficiently tracked by process.

**Example:**

The Andrews Co. employs a process-costing system for its manufacturing operations. All direct materials are added at the beginning of the process, and conversion costs are incurred uniformly throughout the process. The company’s production schedule for March is as follows.

|  |  |
| --- | --- |
| **Work in Process Inventory** | **Units** |
| Work in process (WIP) March 1 (40% complete as to conversion) | 10,000 |
| Units started in March | 45,000 |
| Total Units to Account for | 55,000 |
| Units from beginning WIP, which were completed and transferred out in March | 10,000 |
| Units started and completed during March and transferred out | 37,000 |
| Units in process March 31 (30% complete as to conversion) | 8,000 |
| Total Units to Account for | 55,000 |

|  |  |  |
| --- | --- | --- |
| **Work In process Inventory** | **Direct Materials** | **Conversion** |
| March 1, beginning inventory | $118,000 | $87,200 |
| March direct material | $540,000 |  |
| March conversion |  | $778,800 |
| Total Costs (1) | $658,000 | $866,000 |
|  |  |  |
| Total Costs To Account for |  | $1,524,000 |

1. The company uses the weighted-average method of process costing. This method combines beginning inventory costs and costs incurred during the period

Compute equivalent units of direct material and conversion activity for March.

Compute the ending work-in-process inventory.

Worksheet

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Calculation of Equivalent Units: Rainbow glass company | | | | | | | |
|  | Weighted-Average Method | | | | | | | |
|  | |  | Percentage of  Completion | | |  | | |
|  | | Physical Units |  | Conversion | | Equivalent Units | | |
| **Materials** | Direct Material | | Conversion |
| Units completed and transferred out during March | | 47,000 | 100% | 100% | | 47,000 | | 47,000 |
| Work in process, March 31 | | 8,000 | 100% | 30% | | 8,000 | | 2,400 |
| Total units accounted for | | 55,000 |  |  | |  | |  |
| Total equivalent units March | |  |  |  | | 55,000 | | 49,400 |
| Total Costs (weighted avg method) | |  |  |  | | 658,000 | | 866,000 |
| Cost per Unit | |  |  |  | | 11.9636 | | 17.5304 |
|  | |  |  |  | |  | |  |
| Cost of goods manufactured and transferred out to finished goods inventory | | (47,000 x 11.9636) + (47,000 x 17.5304) | | | | | | 1,386,218 |
| Cost of ending WIP inventory | | (8,000 x 11.9636) + (2,400 x 17.5304) | | | | | | 137,782 |
| Total cost to account for | |  |  | |  | |  | 1,524,000 |