HEXAGON

HxGN EAM Equipment Depreciation

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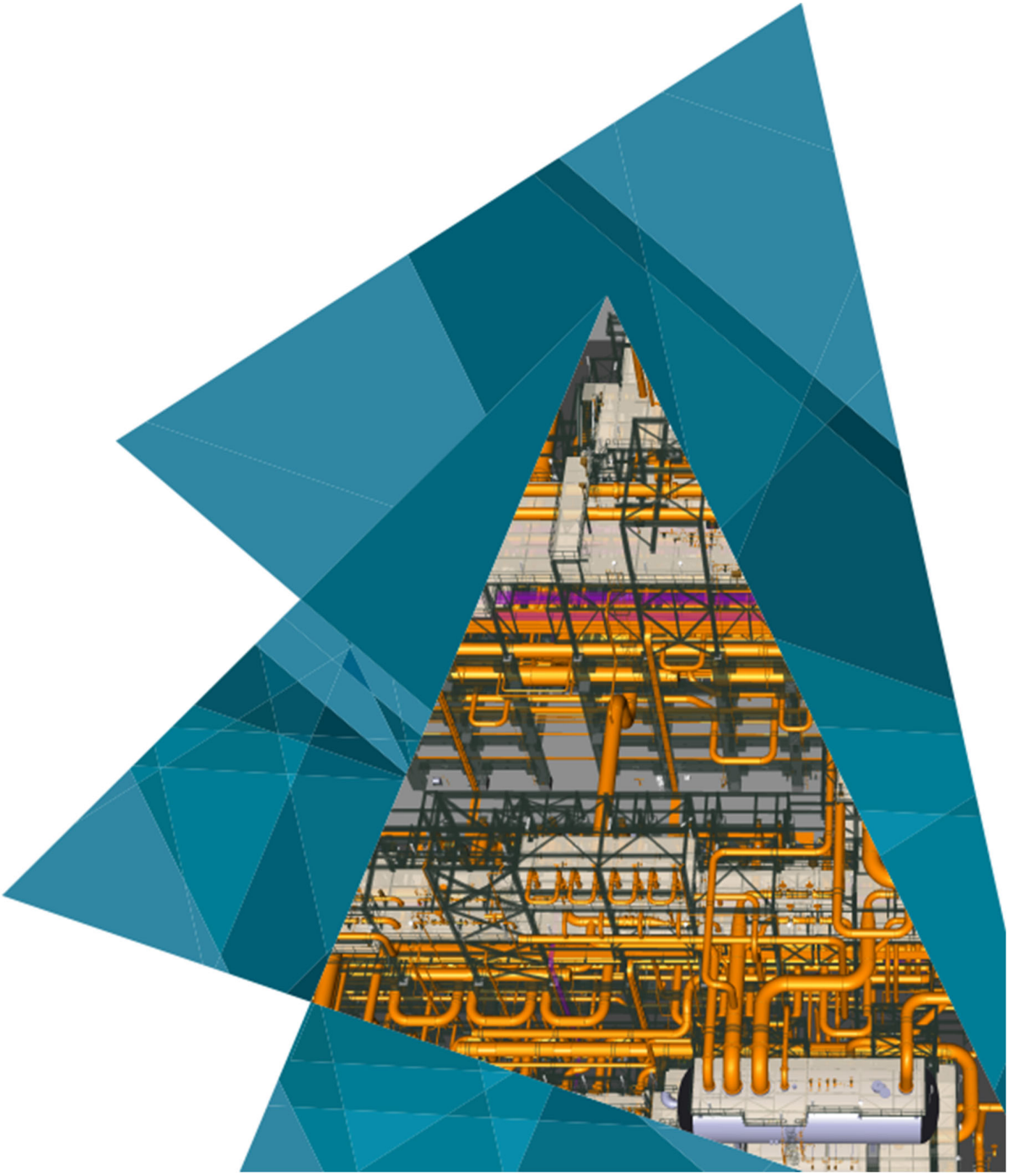

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About this brief

This brief will review how to utilize the attributes Depreciation Type and Depreciation Category to more accurately value equipment over its useful life.

It is intended primarily for maintenance personnel that oversee installation and commissioning of equipment and technicians who perform preventative maintenance on equipment assets

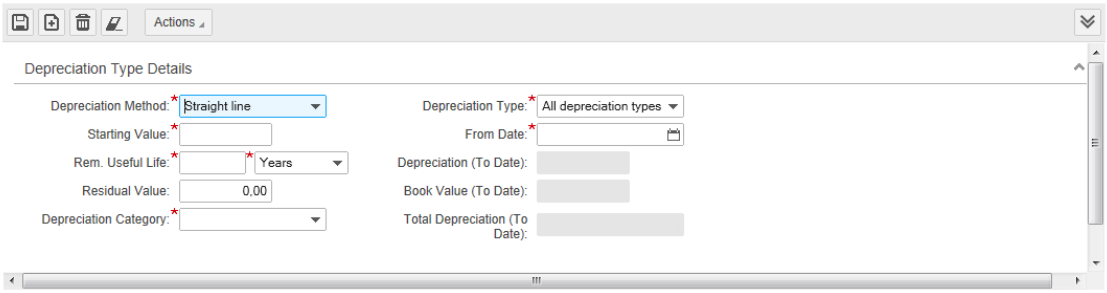
Overview

The newest release of HxGN EAM provides functionality and support of equipment depreciation in more detail and can more accurately calculate the value of equipment assets over their useful life.

The added functionality will give clients the flexibility to track depreciation using different standards for operational and accounting purposes. Depreciation calculations will also incorporate tracking for events that change equipment value, useful life, lifetime output, and support suspension of equipment operation and reactivation of that same equipment.

EAM user interface

The **Depreciation** tab of the **Asset** screen has been enhanced with additional fields and functionality.



These fields include the following:

1 **Depreciation Type**
An information attribute to denote the employed accounting standard

2 **From Date**
Starting date of a depreciation event

3 **Depreciation Category**
Classification for a depreciation event

4 **Relative Start**
Utilized with Equipment Configuration

5 **Relative Start UOM**
Utilized with Equipment Configuration

6 **Effective From**

7 **Effective From UOM**

8 **Notes**

9 **Change Value**
Utilized with depreciation categories Increase Value and Decrease Value

10 **Change Life**
Utilized with depreciation categories Increase Life and Decrease Life

11 **Change Est. Lifetime Output**
Utilized with depreciation categories Increase Est. Lifetime Output and Decrease Est. Lifetime Output

The Depreciation tab also includes User Defined Fields.

Depreciation standards

The Equipment Depreciation record previously included a Depreciation Type field (entity DETP) defaulted with the value '*.' With the new EAM release, the entity DEPT will have three more available values and support additional user defined values for identifying depreciation standards.

The following depreciation standards are included with EAM:

- **GAAP (Generally Accepted Accounting Principles)**
  Generally Accepted Accounting Principles refer to the standard framework of guidelines for financial accounting used in any given jurisdiction; known as accounting standards or standard accounting practices. The performance elements include revenue or expenses, assets or liabilities, gains, losses, and comprehensive income. These standards are used throughout the United States.
- **GASB (Government Accounting Standards Board)**
  The Government Accounting Standards Board was created in 1984 to establish accepted accounting principles for state and local government entities.
- **IFRS (International Financial Reporting Standards)**
  International Financial Reporting Standards are designed as a common global business language for business affairs so that company accounts are understandable and comparable across international boundaries. The performance elements include Revenue or expenses, and assets or liabilities. These standards are used in 100 countries included those of the European Union.

The depreciation type field remains an informational attribute for the equipment asset. The addition of this detail will give clients the flexibility to track depreciation using different standards for operational and accounting purposes.

Depreciation methods

EAM supports four methods (or types) of equipment depreciation: Straight Line, Sum of Years Digits, Double Declining Balance, and Units of Output

Straight Line Depreciation

The simplest and most commonly used depreciation method, straight line depreciation is calculated by taking the purchase or acquisition price of an asset subtracted by the salvage value divided by the total productive years the asset is expected to benefit the organization.

$$\frac{(Starting\ Value - Residual\ value)}{Remaining\ Useful\ Life\ in\ Years}$$

Example: A new machine is purchased, costing $5000. You expect a salvage value of $200 selling parts when it is decommissioned. The machine is expected to be kept in operation for 5 years. Using this information,

($5000 - $200) / 5 years = $ 960 annual depreciation expense

Sum of Years Digits Depreciation

Sum of Years Digits is considered an accelerated and more conservative method of depreciation. It assumes an asset loses more value in the first several years of use. To calculate depreciation charges using the Sum of Years Digits method, take the expected life of an asset (in years) count back to one and add the figures together (e.g., 3 years useful life = 3 + 2 + 1 Sum of the years = 6).

$$(Starting\ value - Residual\ value) * \left(\frac{Remaining\ Years\ of\ Life}{Sum\ of\ Years\ Digits}\right)$$

Example: A new machine is purchased, costing $5000. You expect a salvage value of $200 selling parts when it is decommissioned. A 5-year useful life translates to 15 using the sum of years calculation. With $5000 - $200, we have a depreciation base of $4800. In the first year the machine would be depreciated by 5/15 (33.33%), the second year by 4/15 (26.66%), the third year by 3/15 (20%), the fourth year by 2/15 (13.33%), and final year by the remaining 1/15 (6.667%). This translates into depreciation charges of $1599.84 the first year, $1279.68 the second year, $960.00 the third year, $639.84 the fourth year, and $320.02 the fifth year.

Double Declining Balance Depreciation

The double declining balance depreciation method is like an accelerated version of straight-line depreciation. To use it, first calculate depreciation like using the straight line method. You then figure out the total percentage of the asset that is depreciated the first year and double it. Each subsequent year, that same percentage is multiplied by the remaining balance to be depreciated. At some point, the value will be lower than the straight-line charge, at which point, the double declining method will be scrapped, and straight line used for the remainder of the asset's life.

$$BookValue * (2 * Straight\ Line\ Rate)$$

$$Straight\ Line\ Rate = \frac{1}{Estimated\ Years\ of\ Life}$$

Example: In the straight-line example, we calculated that a $5000 machine with a $200 salvage value and an estimated useful life of five years would be depreciated by $960 annually. The first year, we must compare this to the total amount to be depreciated, in this case, $4800 ($5000 base - $200 salvage value = $4800). Dividing $960 by $4800, we determine the straight-line depreciation charge is 20% of the total depreciation amount of $4800. Using this information, the figure is doubled to 40%. So, in the first year, you take $4800 multiplied by 40% to get a total depreciation charge of $1920. In the second year, you take the same percentage (40%) and multiply it by the remaining amount to be depreciated ($4800 - $1920 = $2880) to get $1152. In the third year, the remaining amount to be depreciated is $1728 ($2880 - $1152 = $1728), multiplied by 40% yields a depreciation charge of $691.20. However, this figure ($691.20) is below the amount that would be charged using straight line depreciation and so the double declining balance is, and straight line immediately used. Therefore, the depreciation charge in the third year is $960.

Units of Output

In the Units of Output method of depreciation, depreciation is charged according to the actual usage of the asset. For the Units of Output method, higher depreciation is charged when there is higher activity and less is charged when there is a lower level of operation. Zero depreciation is charged when the asset is idle for the whole period. This method is useful when a company has many fixed assets with varying usage.

$$Depreciation\ per\ Unit * Units\ of\ Output$$

$$Depreciation\ per\ Unit = \frac{(Starting\ value - Residual\ Value)}{Estimated\ Lifetime\ Output}$$

Example: A plant costing $110 million was purchased on April 1, 2010. The salvage value was estimated to be $10 million. The expected production was 150 million units. The plant was used to produce 15 million units till the year ended December 31, 2010. Calculate the depreciation on the plant for the year ended December 31, 2011.

$$\text{Depreciation} = \left(\frac{\$110\ million - \$10\ million}{150\ million\ units}\right) * 15\ million = \$10\ million$$

Depreciation categories

The Equipment Depreciation record also includes a Depreciation Category (entity DECT) to classify depreciation events. The entity DECT will have 11 available values to classify depreciation events.

The following depreciation categories are included with EAM:

- **Commission**
  Depreciation begins from the date an equipment asset is commissioned. The initial depreciation record created for an asset will be defaulted with a value of Commission. This holds true even if the record is created later following the commission date of the equipment asset.

- **Early Disposal**
  The Early Disposal depreciation category is used when an equipment asset will be permanently removed from service or scrapped. System logic prevents any additional depreciation records being created after the Early Disposal depreciation event.
- **Suspend**
  The Suspend depreciation category can be used when an equipment asset is taken out of service.
- **Reactivate**
  The Reactivate depreciation category is used only following the suspension from service of an equipment asset.
- **Increase Value**
  Over the course of its operation, a good preventative maintenance program or mechanical enhancement can positively change the value of an equipment asset. The Increase Value depreciation category is used for this type of event.

  The system will require a value for the Change Value field. This value will be used to recalculate the Starting Value for the equipment asset. If the user enters 0 for the Change Value field, the system grant access to update the Residual value for the equipment asset.

  The system will then calculate the depreciation details for the equipment asset beginning from the designated From Date using the defined Depreciation Method and the new Starting Value increased by the value of Change Value and stores the details in the database. These details replace any existing records of the same date or projected date.
- **Decrease Value**
  Over the course of its operation, an equipment asset can degrade or decline in productivity level, negatively changing its value. The Decrease Value depreciation category is used for this type of event.

  The system will require a value for the Change Value field. This value will be used to recalculate the Starting Value for the equipment asset. If the user enters 0 for the Change Value field, the system grant access to update the Residual value for the equipment asset.

  The system will then calculate the depreciation details for the equipment asset beginning from the designated From Date using the defined Depreciation Method and the new Starting Value decreased by the value of Change Value and stores the details in the database. These details replace any existing records of the same date or projected date.
- **Increase Life**
  Over the course of its operation, a good preventative maintenance program or mechanical enhancement can positively change the useful life of an equipment asset. The Increase life depreciation category is used for this type of event.

  The system will require a value for the Change Life field. The system then calculates the depreciation details for the depreciation record created beginning from the designated From Date using the defined Depreciation Method and the new Remaining Useful Life increased by the value of Change Life and Residual Value and stores the details in the database. These details replace any existing records of the same date or projected date
- **Decrease Life**
  Over the course of its operation, an equipment asset can degrade or decline in productivity level, negatively changing its life. The Decrease Life depreciation category is used for this type of event.

The system will require a value for the Change Life field. The system then calculates the depreciation details for the depreciation record created beginning from the designated From Date using the defined Depreciation Method and the new Remaining Useful Life decreased by the value of Change Life and Residual Value and stores the details in the database. These details replace any existing records of the same date or projected date

- **Increase Estimated Lifetime Output**
  Over the course of its operation, a good preventative maintenance program or mechanical enhancement can positively change the lifetime output of an equipment asset. The Increase Estimated Lifetime Output depreciation category is used for this type of event. The system restricts this depreciation category for use only when the depreciation method is Units of Output.

  The system then calculates the depreciation details for the depreciation record created beginning from the designated From Date using the defined Depreciation Method and the new Estimated Lifetime Output increased by the value of Change Est. Lifetime Output and Residual Value and stores the details in the database. These details replace any existing records of the same date or projected date.
- **Decrease Estimated Lifetime Output**
  Over the course of its operation, an equipment asset can degrade or decline in productivity level, negatively changing its lifetime output. The Decrease Estimated Lifetime Output depreciation category is used for this type of event. The system restricts this depreciation category for use only when the depreciation method is Units of Output.

  The system then calculates the depreciation details for the depreciation record created beginning from the designated From Date using the defined Depreciation Method and the new Estimated Lifetime Output decreased by the value of Change Est. Lifetime Output and Residual Value and stores the details in the database. These details replace any existing records of the same date or projected date.
- **Change Depreciation Method**
  A change in accounting policy or buyout by another corporation may necessitate the need to change depreciation methods for an equipment asset to align with new practices. The Change Depreciation Method depreciation category is used for this type of event.

  The system will exclude Units of Output if there are existing depreciation records for an equipment asset. Additionally, the system will verify the equipment asset has not been marked for Early Disposal.

  The system then calculates the depreciation details for the depreciation record created beginning from the designated From Date using the selected Depreciation Method and stores the details in the database. These details replace any existing records of the same date or projected date.

Equipment depreciation illustrated

Buildings, machinery, equipment, furniture, fixtures, computers, outdoor lighting, parking lots, cars, and trucks are all examples of assets that will last for more than one year but will not last indefinitely. During each accounting period (year, quarter, month, etc.) a portion of the cost of these assets is being used up. The portion being used up is reported as Depreciation Expense on the income statement. In effect, depreciation is the transfer of a portion of the asset's cost from the balance sheet to the income statement during each year of the asset's life.

EAM provides several depreciation methods for allocating an equipment asset’s cost to depreciation expense. These depreciation methods are Straight Line, Double Declining Balance, Sum of Years Digits and Units of Output.

EAM navigation and data entry

The user will begin the process to track asset depreciation by navigating from the Main Menu to the **Assets** screen, select an asset, and then go to the **Depreciation** tab.

1. The user will click Add Depreciation Type.
2. The user will select a Depreciation Type (GAAP, GASB, IFRS, or *)
3. If there are no existing depreciation records for the asset, the system will default the From Date to be the asset’s Commission Date.
4. The user will then select the Depreciation Method (Straight Line, Double Declining Balance, Sum of Years Digits, or Units of Output)
5. If there are no existing depreciation records for the asset, the system will default the Depreciation Category to Commission.
6. The user then enters values for Starting Value, Remaining Useful Life, and Residual Value and saves the record.

The asset depreciation tracking process has begun. The system will calculate depreciation for the asset, using the selected depreciation method at regular fiscal intervals. These figures can be viewed by clicking the View Depreciation Details button. EAM will display the asset depreciation details in a protected list view. The Depreciation Details also include cumulative figures for Depreciation (To Date), Book Value (To Date), and Depreciation (Period to Date).

If, during the third annual maintenance and servicing of the asset, a sub-assembly is replaced with an enhanced sub-assembly build, this could extend the life of the asset and increase its residual value. Both events can be recorded and tracked with EAM.

For the increased useful life of the asset; the user will navigate to the **Depreciation** tab for the asset and click Add Depreciation Type.

1. The user will select the Depreciation Type currently in use
2. The user will select the From Date to be the date of the third annual maintenance review and service.
3. The user will then select the current Depreciation Method
4. The user will then select a Depreciation Category of Increase Life.
5. The user then enters a value for the number of years more the asset will be in service to the Change Life field.
6. The user then submits the record.

For the increased residual value of the asset; the user will remain on the **Depreciation** tab for the asset and click Add Depreciation Type.

1. The user will select the Depreciation Type currently in use
2. The user will select the From Date to be the date of the third annual maintenance review and service.
3. The user will then select the current Depreciation Method
4. The user will then select a Depreciation Category of Increase Value.
5. The user will enter 0 for the Change Value field. The system will then enable the Residual Value field and the user will enter the new Residual Value for the asset.
6. The user then submits the record.

Equipment configuration with depreciation

Future depreciation events can be planned for equipment assets created with Equipment Configuration templates. When the **Depreciation** tab is called from the **Equipment Configuration** screen, the system will require values for Relative Start and Relative Start UOM.

From the designated Commission Date, a user can set a Relative Start and Relative Start UOM to sequence and apply a planned depreciation event. The Relative Start represents a timeframe from the Commission Date when the depreciation event will take place.

Example: A Commission Date is set for 1/1/2015. The Relative Start is set at 5 and the Relative Start UOM is set to Years. Therefore, at 5 years following 1/1/2015 the depreciation event will occur (per the other defined details).