

EFI Metrix Tech Note:
Digital Cutting Machines

Version 2020.2



Table of Contents

Digital Cutting Machines	3
Adding a Digital Cutting Machine.....	3
Digital Cutting Tools and Cutter Operations.....	4
MXML Tags.....	5



Digital Cutting Machines

What it Is

2020.2 introduces a new database equipment category, Digital Cutting Machines, in addition to the standard Guillotine Cutting Machines. Digital Cutting Machines can cut complex shapes and use a variety of tools for cutting, creasing, perforating, and scoring, while Guillotine Cutting Machines can cut only straight lines. The paths for cuts, creases, and so on are referred to as "contours".

When a digital cutting machine is used in a project, Metrix calculates the cutting costs based on the time required to perform operations on all types of contour lines.

Note: For additional information, see *Tech Note: Irregular Shape Products and Multiple Contour Lines*.

How it Works

Adding a Digital Cutting Machine

1. Open the database and select Digital Cutting Machines.
2. Click **Add New**. The New Digital Cutting Machine dialog opens. Required fields are highlighted in red.

- a. **Name:** Must be a unique name.
- b. **Device ID:** Must be a unique name.
- c. **Description:** A description of the digital cutter.
- d. **Manufacturer:** Manufacturer of the digital cutter.
- e. **Linear Units per Hour:** Linear distance that can be cut in an hour.
- f. **Hourly Rate:** Cost per hour to run the digital cutter.
- g. **Hours per Position:** Time needed to travel to a position on the sheet.
- h. **Make Ready Hours per Sheet:** Setup time for each sheet to be cut.
- i. **Minimum Height:** Minimum sheet height for this device.
- j. **Maximum Height:** Maximum sheet height for this device.
- k. **Minimum Width:** Minimum sheet width for this device.
- l. **Maximum Width:** Maximum sheet width for this device.

- m. **Minimum Material Thickness:** Minimum thickness of material for this device.
 - n. **Maximum Material Thickness:** Maximum thickness of material for this device.
3. **Digital Cutting Tools for the selected Digital Cutting Machine:** There must be a minimum of one digital cutting tool defined for each device, such as routers, cutting blades, scorers, etc.

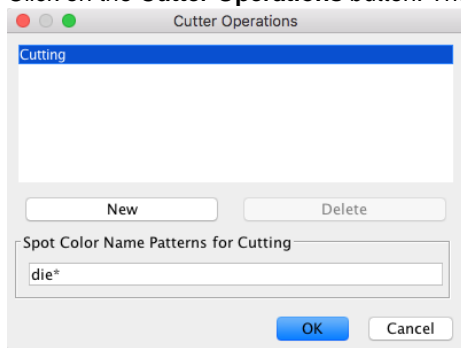
Digital Cutting Tools and Cutter Operations

Digital cutting machines can perform a number of different Cutter Operations, depending on the tool that is used. Each digital cutting machine must have at least one tool.

Cutter Operations

To add Cutter Operations to the database:

1. In the database, select Digital Cutting Machines from the Equipment list.
2. Click on the **Cutter Operations** button. The Cutter Operations dialog opens.

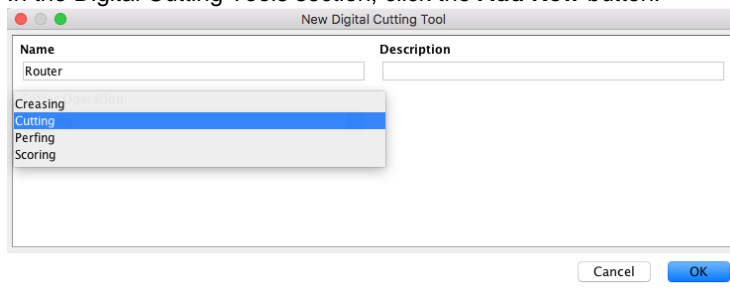


- “Cutting” is a required operation for all digital cutting machines, so it cannot be deleted.
3. Click **New**. The Input dialog opens.
 4. Enter a name for the new Cutter Operation, for example, “Crease”, and then click **OK**. “Crease” now appears in the list of Cutter Operations and “Crease*” appears in the Spot Color Name Patterns for Crease field. The asterisk means that if any file used to create an irregular shape product contains a spot color with a name that starts with “crease” (for example, “Crease Line”), it will be associated with the Crease Cutter Operation. You can add other spot color names in this field, separated by commas, that you want to associate with the selected Cutter Operation.
 5. When you have finished entering Cutter Operations and Spot Color Name Patterns, click **OK**.

Digital Cutting Tools

To add a Digital Cutting Tool to a cutting machine:

1. In the database, select a Digital Cutting Machine from the list, or create a new one.
2. In the Digital Cutting Tools section, click the **Add New** button.



3. In the New Digital Cutting Tool dialog, enter a Name and Description.
4. Select a Cutter Operation to associate with the new tool, and then click **OK**. The tool appears in the Digital Cutting Tools for the selected Digital Cutting Machine.

Limitations

- Calculations do not account for tool changes

MXML Tags

Parent: Root/Resource Pool

Attribute / Sub Element	Use	Description
<i>Name</i>	Required	Required when running in memory-only mode (i.e., when the root MetrixXML /@MemoryOnly = True). The name displayed in the Metrix user interface to identify this digital cutting machine.
<i>DeviceID</i>	Required	Unique identifier for the element. The ID attribute can be used as a referenced to the element form elsewhere in the MXML document. Up to 255 characters.
<i>Description</i>	Optional	Optional, and only read when running in memory-only mode (i.e., when the root MetrixXML /@MemoryOnly = True). Optional field used in some exported JDF.
<i>Manufacturer</i>	Optional	Optional, and only read when running in memory-only mode (i.e., when the root MetrixXML /@MemoryOnly = True). Optional field used in some exported JDF.
<i>Speed</i>	Required	Linear Units Per Hour. Required when running in memory-only mode (i.e., when the root MetrixXML /@MemoryOnly = True). The number of linear units (inches or millimeters) that can be cut per hour. Used to calculate the cutting costs and time to produce.
<i>HourlyRate</i>	Required	Required when running in memory-only mode (i.e., when the root MetrixXML /@MemoryOnly = True). The hourly rate for this cutting machine. Used to calculate the layout and project costs.
<i>MakeReadyPerPosition</i>	Required	Required when running in memory-only mode (i.e., when the root MetrixXML /@MemoryOnly = True). The hours (or fractions of hours) required to complete makeready for each positioning of the cutter. Used to calculate the layout cost and time to produce.
<i>MakeReadyPerSheet</i>	Required	Required when running in memory-only mode (i.e., when the root MetrixXML /@MemoryOnly = True). The hours (or fractions of hours) required to complete makeready for each sheet to be cut.
<i>MinHeight</i>	Required	Required when running in memory-only mode (i.e., when the root MetrixXML /@MemoryOnly = True). The minimum height of a sheet for this cutting machine.
<i>MaxHeight</i>	Required	Required when running in memory-only mode (i.e., when the root MetrixXML /@MemoryOnly = True). The maximum height of a sheet for this cutting machine.
<i>MinWidth</i>	Required	Required when running in memory-only mode (i.e., when the root MetrixXML /@MemoryOnly = True). The minimum width of a sheet for this cutting machine.
<i>MaxWidth</i>	Required	Required when running in memory-only mode (i.e., when the root MetrixXML /@MemoryOnly = True). The maximum width of a sheet for this cutting machine.
<i>MinThickness</i>	Required	Required when running in memory-only mode (i.e., when the root MetrixXML /@MemoryOnly = True). The minimum thickness of a sheet for this cutting machine.
<i>MaxThickness</i>	Required	Required when running in memory-only mode (i.e., when the root MetrixXML /@MemoryOnly = True). The maximum thickness of a sheet for this cutting machine.



<i>DigitalCuttingTool CutterOperation</i>	Required	Required when running in memory-only mode (i.e., when the root MetrixXML /@MemoryOnly = True). The cutter operation performed by the cutting tool, as well as the Description and Name.
---	----------	--

Example:

```
<DigitalCuttingMachine Description="digicut description" DeviceID="digicut" HourlyRate="100" ID="Ref_0"
MakeReadyPerPosition="0.01" MakeReadyPerSheet="0.1" Manufacturer="digi manufacturer" MaxHeight="100"
MaxThickness="6" MaxWidth="100" MinHeight="3" MinThickness="0.001" MinWidth="3" Name="digicut"
Speed="1000">
  <DigitalCuttingTool CutterOperation="Cutting" Description="00 blade" Name="Knife"/>
  <DigitalCuttingTool CutterOperation="Perfing" Description="perforator" Name="Perfer"/>
  <DigitalCuttingTool CutterOperation="Creasing" Description="creases" Name="Creaser"/>
</DigitalCuttingMachine>
```

METRIX-13849, 14605

