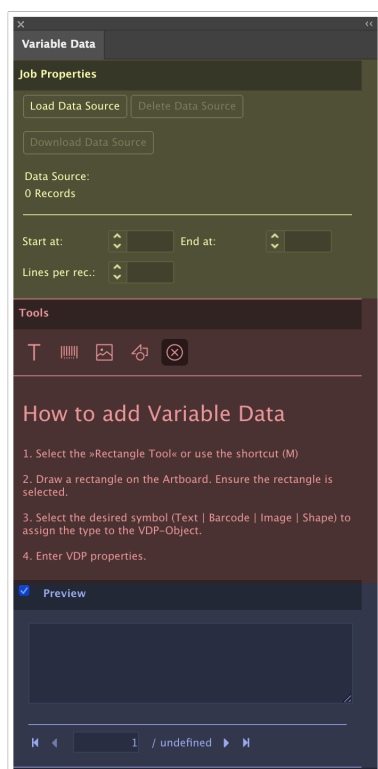# Variable Data

In this article we'll learn:

- How to access the **Variable Data** panel
- Which **areas** are available in the Variable Data panel
- Which **functions** the individual tools have
- How to create variable elements using a Barcode with a **serial number** as an example

1. Variable Data Panel

You can open the **Variable Data** panel by selecting **Window > Durst Workflow > Variable Data** in Adobe Illustrator. This panel allows you to create variable content such as: Text, Barcodes, Images, and Shapes and add them to print files. The *Variable Data* panel is divided into three sections:

- **Job Properties** (yellow area) – This area is used to upload and managing data sources (.csv files), define Start at and End at values, and specifying the Lines per record.
- **Tools** (red area) – Variable Data tools and settings
- **Preview** (blue area) – Displays a preview, displays error messages and determines which data record should be displayed.
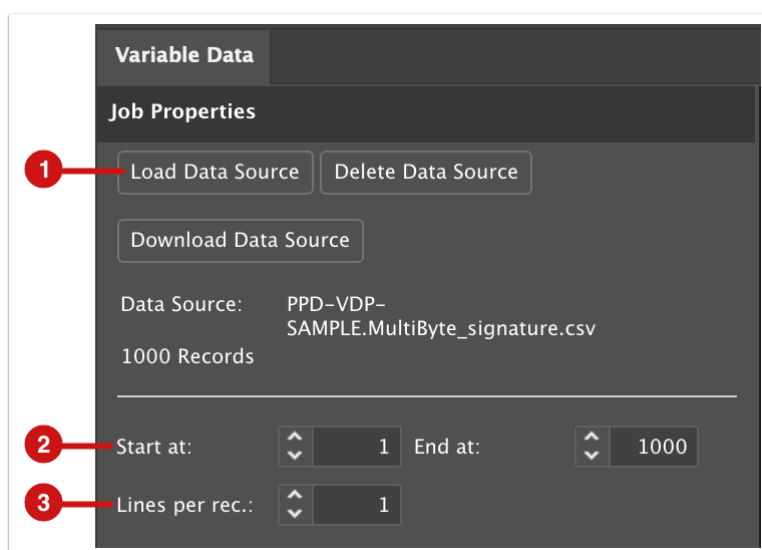
Figure 1: An overview of the *Variable Data* panel.

1.1. Job Properties

If there is a data source is available in the form of a CSV file, then upload it under the **Job Properties** area.

Figure 2: The *Job Properties* area of the *Variable Data* panel with a data source loaded.

The Job Properties area offers the following settings:

- **Load Data Source [1]** – Click on this button to upload the CSV file.
- **Delete Data Source** – Delete the selected data source if you no longer need it, for example.
- **Download Data Source** – If you need to make changes in the CSV file, you can download it using this button and modify it in a text editor.
- **Start at** and **End at [2]** – Use this to determine with which data set the variable data job should start and up to which data set the variable data job should be created. This information is important for the transfer to the Workflow in order to locate the correct values in the Send to Printer dialog under the *Variable Data* tab.
- **Lines per record [3]** – Enter the number of data records from the control file that should be used per Print Item. If the checkout out Print Item contains two designs, e.g., a green variation and an orange variation of a label, the first data set can be used for the green and the second data se for the orange version by choosing number 2.

> (i) **Not only CSV files are needed to create Variable data**
>
> Users do not have to use CSV files exclusively to create variable data. If sequential numbering or an intelligent string consisting of static and variable texts is needed, in many cases it is possible to create barcodes, serial numbers, etc. without a database (i.e., a CSV data source).

1.2. Tools

You can select the type of the variable data you wish to create using the **Tools** section. Depending on the tool selected, different options are available for defining specific types of variable data.

Figure 3: The *Tools* area of the *Variable Data* panel.
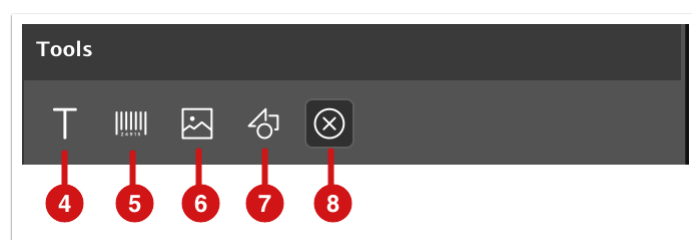
In the **Tools** area, four different options are available when creating variable content:

- **Text [4]** – Create variable text or serial numbers based on a CSV file or the serial number generator on normal paths (lines) or freely defined shapes.
- **Barcode [5]** – Create variable Barcodes or QR Codes based on a CSV file or using the serial number generator.
- **Image [6]** – Create variable images based on a CSV file.

- **Shape [7]** – Create variable shapes based on a CSV file.
- **Non-VDP Object [8]** – Convert variable elements back into simple vector shapes.

1.3. Preview

In the **Preview** area, you can activate this option to see updates in real time **[9]** of variable elements. In the display window **[10]** you can confirm whether the Barcode, QR Code, etc. is valid or if there are errors. Use the page numbering arrows or enter a record number to preview Individual records **[11]**.

Figure 4: The *Preview* area of the *Variable Data* panel.

2. Variable Content

Depending on the tool selected, different options are available. We describe the main options for each tool to create variable content in more detail below.

To create a variable element, you must first create either a line or a rectangle using the *Line Segment Tool* `(Shift)+(:)` or *Rectangle Tool* `(M)` available in Adobe Illustrator. The object you just created needs to be selected before you can activate any of the **Variable Data** panel tools.

2.1. Variable Text

By clicking the *T-button* **[12]**, different options are displayed, depending on the **source [13]** selected. The following options are available under *Source*.

2.1.1. String

If **String** is selected, any text can be entered in combination with variable strings.

- **Text [14]** – Enter static text or add variable placeholders to the string.
- **Add [17]** – Select the desired variable type: *Date*, *Serial Number*, *Column Name*, *Column Index,* and use add, to add them in the *Text* input field.
- **Input field [15]** – Depending on the cursor position in the *Text* input field, you can change the corresponding value of the variable here (Width, Start, Batch Count, etc.).
- **Fit Size [16]** – Since a defined rectangle is always of a finite size, it is possible that the text is either too long or too short for the text field. This option can be used to specify the text should fit inside the rectangle. Three entries are available in the pop-up menu: *None*, *Adjust Text Size* or *Reduce to Fit*.

Figure 5: The *Text* tool options when *String* for the *Source* is selected.
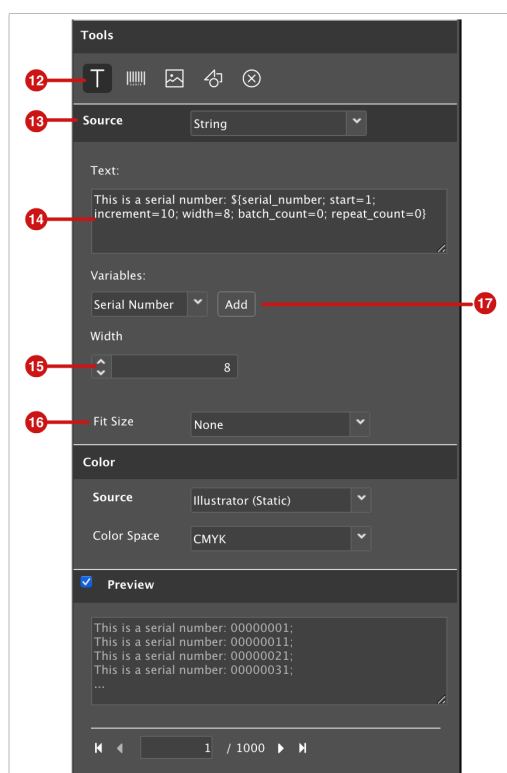
2.1.2. Serial Numbers

With the serial number generator, **Serial Numbers** can easily be generated without the need to create databases (CSV files). The following options are available:

- **Start [18]** – Enter the start value for the serial number here.
- **Increment [19]** – Define the increment in which the serial number is increased.
- **Width [20]** – Define the amount of digits the serial number should have.
- **Repeat [22]** – Define the number after which the serial number should be started again. Example: a value of 4 would create the following one-digit serial number: 1, 2, 3, 4, 1, 2, 3, 4, 1, 2, ...
- **Batch [23]** – Use this option to determine the amount of repetitions to be used subsequently for the respective serial number. Example: a value of 3 would generate the following one-digit serial number: 1, 1, 1, 2, 2, 2, 3, 3, 3, 4, 4, 4, 5, 5, 5, ...
- **Random [21]** – When this option is active, a random generator is used, which uses all serial numbers of the above defined settings once.

Figure 6: The *Text* tool options with a *Serial Number* selected under *Source*.


2.1.3. Datasource

If a Datasource has been uploaded in the **Job Properties** area, this CSV file can be accessed by selecting the *Datasource* option. The following options are available:

- **Column Name** and **Column Index [24]** – Select whether you want to map the column using the Columns Name or the Column Index of the CSV file.

- **Field Name [25]** – Depending on the previously selected option, the Column Name or the Column Number can be entered here.
- **Start Index** and **End Index [26]** – By entering a start and end value, values from the CSV file can be truncated. If Start Index 2 was entered in the input field, the first two characters of the record are not used. The same applies if a value is entered at the End Index input field.
- **Relative Line Index [27]** – The Relative Line Index option for selecting the data set to be used by the variable element from the value entered in the *Lines per Record* input field of the *Job Properties* dialog has been added to the *Lines per Page* input field.
- **Show longest entry [28]** – Activate this option if you want to display the longest value in the data source for the selected column when creating the variable element. This allows you to determine if there is enough space for the text or if it is being clipped.

**Figure 7**: The *Text* tool options for the selected *Datasource*.
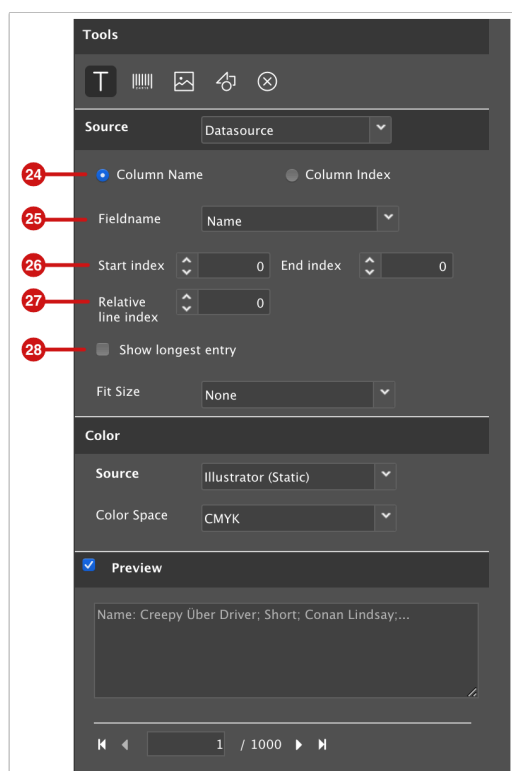
2.1.4. Date

If a date needs to change depending on the number of records, you can accomplish this by selecting **Date** under *Source.* The following options are available:

- **Fixed, Offset or Increment [29]** – Use this option to select whether you want to create a fixed date, a continuous date or repeating dates. While *Fixed* only allows you to select one date, the other two options provide you with additional appropriate options. The following options are available for the Offset option:
  - **Increment [30]** – Specify the offset from today's date with which the next date to be printed contains the next value.
  - **Format [31]** – Specify whether the date should be displayed as numbers or text.
  - **Locale [32]** – Determine the display format based on the selected region.

Figure 8: The *Text* tool options for *Date* selected under *Source*.
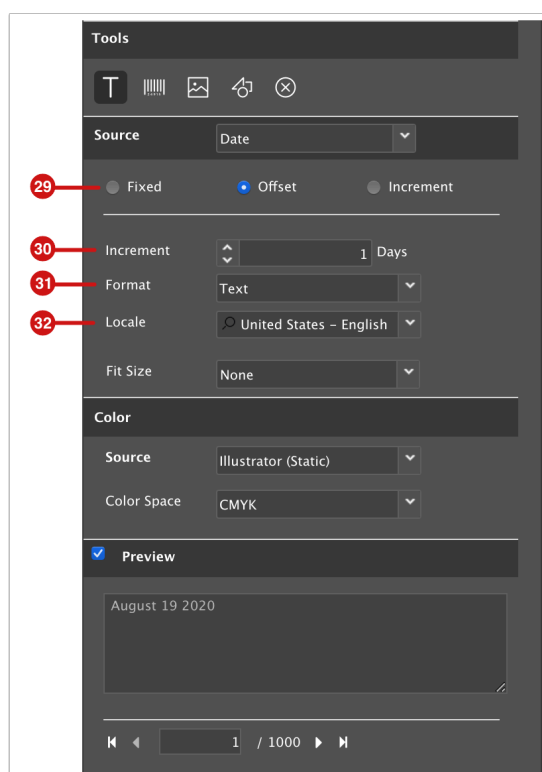
2.2. Variable Barcode/QR Code

By clicking on the **Barcode symbol [33]**, different options are displayed, depending on which Barcode **Type [34]** is selected. The following options are available.

- **Type [34]** – Select the desired Barcode/QR Code. All common types (well over 100 different options) are available.
- **Show Text [35]** – Use this option to determine whether the text of the barcode should also be displayed in human-readable form. This option is almost exclusively available for Barcodes.
- **Font** and **Font Size [36]** – If the text of a Barcode is displayed in human readable form, the Font and Font Size can be selected.

- **Additional Parameters [37]** – Use these settings to determine which parameters are used to generate the Barcode. The following functions are available:
  - <u>Others</u> – Specify Bar Width Reduction and whether the background/foreground (e.g.: the image) should be swapped.
  - <u>Quiet Zone</u> – Specify an additional blank area for all pages of a Barcode/QR Code.
  - <u>Text Options</u> – Specifies the position of the text placement.
  - <u>Bearers</u> – Offers the possibility to add additional bearer bars.
  - <u>Resolution</u> – Information for the module width using both horizontal and vertical values.
  - <u>Check Methods</u> – A selection of special test methods to verify whether a barcode is valid or not.

- **Source [38]** – Select the source the content for the Barcode/QR Code. The options available for *Source* have been described earlier in the section of variable texts.
- **Color [39]** – Set both the foreground and the background color as needed.

**Figure 9**: The *Barcode* tool with *String* selected under *Source*.
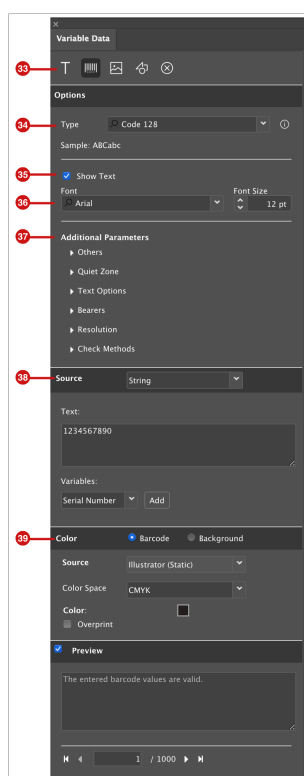
2.3. Variable Images

Click on the **Image icon [40]** to display options for variable images. The following options are available.

- **Select Folder [41]** – Select the appropriate folder on the Workflow server, where images are located.

- **Stretch [42]** – Activate this option if you want the image to fit the size of the placeholder.
- **Align [43]** – Determine how the image should be aligned to the placeholder. The options *Left*, *Center* and *Right* are available.
- **Scale up [44]** – Select how the image should fit in the placeholder without distorting the image: *None, Best Fit, Fit Width, Fit Height*.
- **Source [44]** – Variable images are usually placed based on the source the a CSV file. The available options have been previously described in the variable text section.

Figure 9: The variable *Image* option with *Datasource* selected under *Source*.
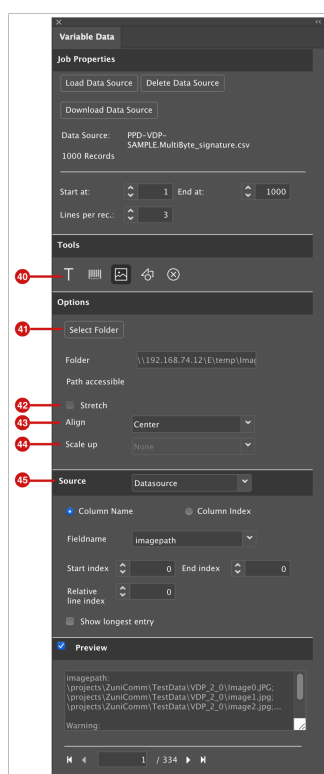

ⓘ   **Supported variable image formats**

Note that only images using the file extensions: .jpg, .jpeg, .png, .pdf and .svg can be used for variable images.

2.4. Variable Shapes

Click on the **Shapes symbol [46]** to display the options for the Shape tool. Essentially, you can use this option to change the color of a shape or contour in the **Color** area **[47]**. The available options for *Color* have previously been explained in more detail in the section for variable texts.

Figure 10: The variable *Shapes* tool when *Datasource* is selected under *Source*.
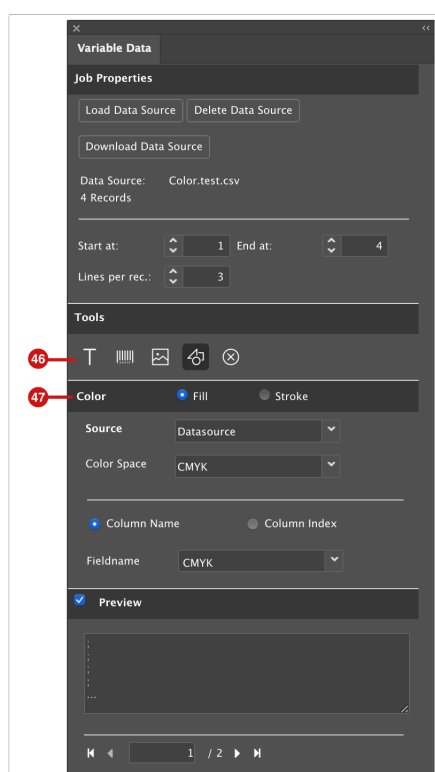
3. Create and impose a Production Job with a Variable Barcode

Our example uses: variable Barcodes, with an automatic serial number. We will describe in detail, the steps needed up to the finished imposition, which also has an influence on the output of variable data. The basic sequence of steps is:

1. **Create a Production Job** with a Print Item. You can read more about how to do this in the article **Creating a Production Job**.
2. **Set the Print item in the Production Job as a variable file**. You can find more information about this in the article **Articles and Production Jobs**.

3. Start **Adobe Illustrator** and check the **Print Item** out of the Production Job list, this is also possible for Articles and Order Print Items. You can read more on this topic in the article **File Management**.

4. Upload the data source, if required, and create the **variable element** using the **barcode** option. Additionally, the *Start* and *End values* for the VDP Job must be set.

5. **Check** the **Print Item into** the Workflow.

6. **Create** the **imposition** in the Workflow and determine the *Order* for the variable elements.

7. **Send** the Production Job to the **printer**.

All sub-steps are described in more detail below.

3.1. Checking the Print Item out

1. Open the **File Manager** panel and select the **Jobs [48]** tab.

2. Find and select the Production Job **[49]**.

3. This will automatically select the **Print Item [50]** in the Print Item area and display any related *information* in the **Print Data** tab.

4. Click on **Check Out [51]** in the footer of the panel to open the Print Item in Adobe Illustrator.

Figure 11: The *File Management* panel with the *Production Job* selected.
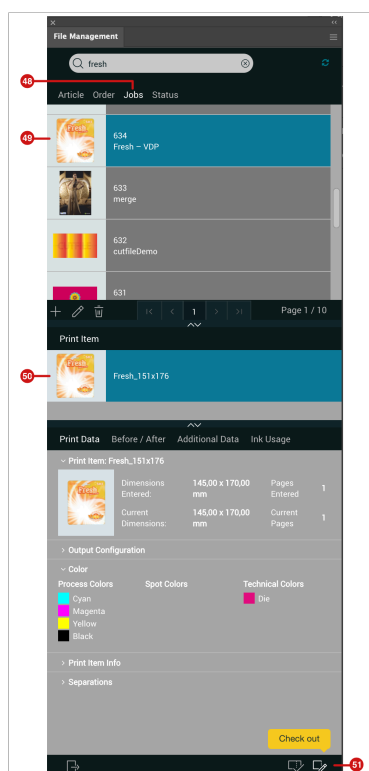
3.2. Add a Variable Barcode

Now you need to create the variable Barcode. Proceed as follows.

1. Select the **Rectangle tool [52]** and create a **rectangle [53]** using the desired size and position on the Print Item.
2. Then switch to the **Variable Data** Panel **[54]**.
3. Enter both **Start at** and **End at** values **[55]**. In our example, 19 data records will be created.
4. Then select the **Barcode** tool **[56]**. A placeholder Barcode is displayed matching the size of the rectangle created, since no values have been defined for the Barcode.
5. Then select the Barcode Type under **Type [57]**. In our example, we have chosen the EAN 13 Code, which requires 13 digits. An example EAN 13 code is shown below the drop-down.
6. Since EAN 13 codes can be generated in pre-defined dimensions using so-called *SC sizes,* the option **Use SC Size [58]** is activated in our example and the standard size *SC4 (120%)* was selected. The size of the rectangle will be adjusted according to the predefined SC Sizes. The *Apply SC Height* option has been deactivated so that the height of the SC size can be freely defined.
7. EAN 13 codes are normally displayed using human-readable text. Therefore, the option **Show Text [59]** has been activated and the **Font [60]** and **Font Size** have been defined.

Figure 11: The *Variable Data* panel with defined values for the selected Barcode (Part 1).

8. Under the **Source [63]** section select *String*.
9. In the **Text [64]** input field, create a string for the content. In our example the Barcode consists of the following elements:
   - 1 – Country code of America
   - 12345 – The UID number of a company
   - 001000 – A six-digit serial number that starts with 1,000 and increases by 1 each time.

10. The correct Barcode is displayed immediately afterwards in the specified size.
11. Make adjustments in the Additional Properties area as needed.
    - <u>Others</u> – Here we adjusted the **Notch Height [61]** to 3 mm. This creates a small gap between the three main separators on the bottom.
    - <u>Quiet Zone</u> **[62]** – A white space of 3 and 2 mm has been added to the *top* and *bottom*.

12. Finally, the Barcode **Color [65]** has been changed to match the existing color scheme. Click on the **Color Field [66]** and select the desired color for the Barcode.
13. Now you should quickly look at the Preview area to make sure that the Barcode is valid. You can also page through the different Barcodes to determine if they are correct. (Using a Barcode reader on your phone works well for this task to ensure that the first couple of Barcodes are able to be read or scanned).

Figure 12: The *Variable Data* panel with settings relevant for a variable *Barcode*. (Part 2)

3.3. Check in the Print Item

After you are satisfied with your settings and the Barcode is correct, you need to check the Print Item back into the Workflow:

1. To save the Print Item navigate to the **File Management** tab **[67]**.
2. Click on **Check In [68]** in the footer of the panel which will start the saving process and create a new version of the Print Item in the Workflow. Note that the Print Item preview is displayed without the Barcode, as the description of the Barcode with all the parameters is saved in the background as an XML file for the Print Item. When imposing VDP data, variable data Barcodes, Images, etc. are only displayed in the final impose output.

After checking the Print Item in, double check whether anything has changed concerning the variable element. The reason for this is because of the following: if you have applied an effect to the Barcode such as a multiply transparency, the Workflow cannot handle such information, and therefore the Barcode is displayed as it would look without the effect applied.

**Figure 13**: The *File Management* panel.

3.4. Impose the Print Item

Back in the Workflow, we still need to create the impose so we can output the VDP data. In most cases, **Step & Repeat Mode** is used for this purpose. Proceed as follows:

1. Switch to the **Impose** tab in the Production Job and select **Step & Repeat Mode**. You can find more information about imposing using this mode here **Step & Repeat**.
2. Under **Grid Settings [69]** select the number of Columns and Rows as needed and enter **Spacing** for both **Horizontal [70]** and **Vertical** values.
3. Then select the order in which the variable data Barcodes should be placed under the **Order (Variable Data) [71]** drop-down.

Figure 14: The *Impose Editor* using *Step & Repeat* Mode.
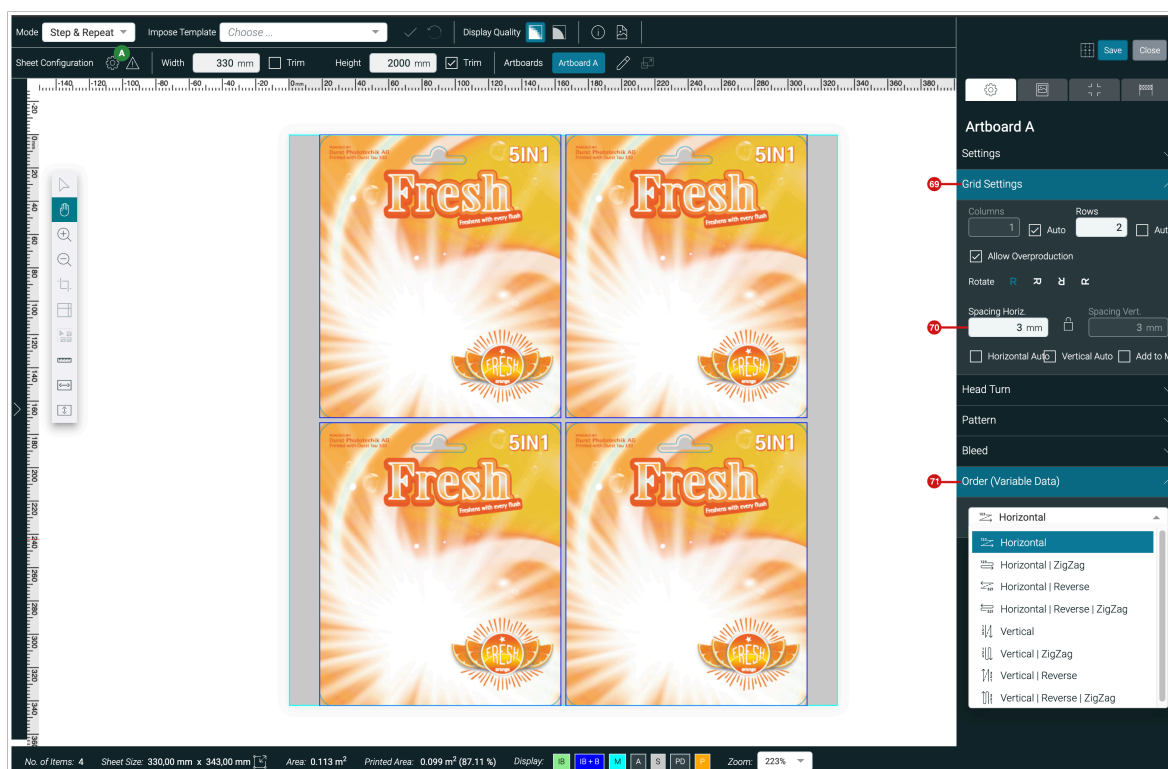
4. You can now **Save** the imposition and close the **Impose Editor**.
5. Under the **Impose** tab **[72]** of the Production Job, the imposition preview including the variable elements **[73]** are displayed. Now the Production Job is ready for print.

Figure 15: The *Impose* tab of the *Production Job* after saving the imposition with variable data.
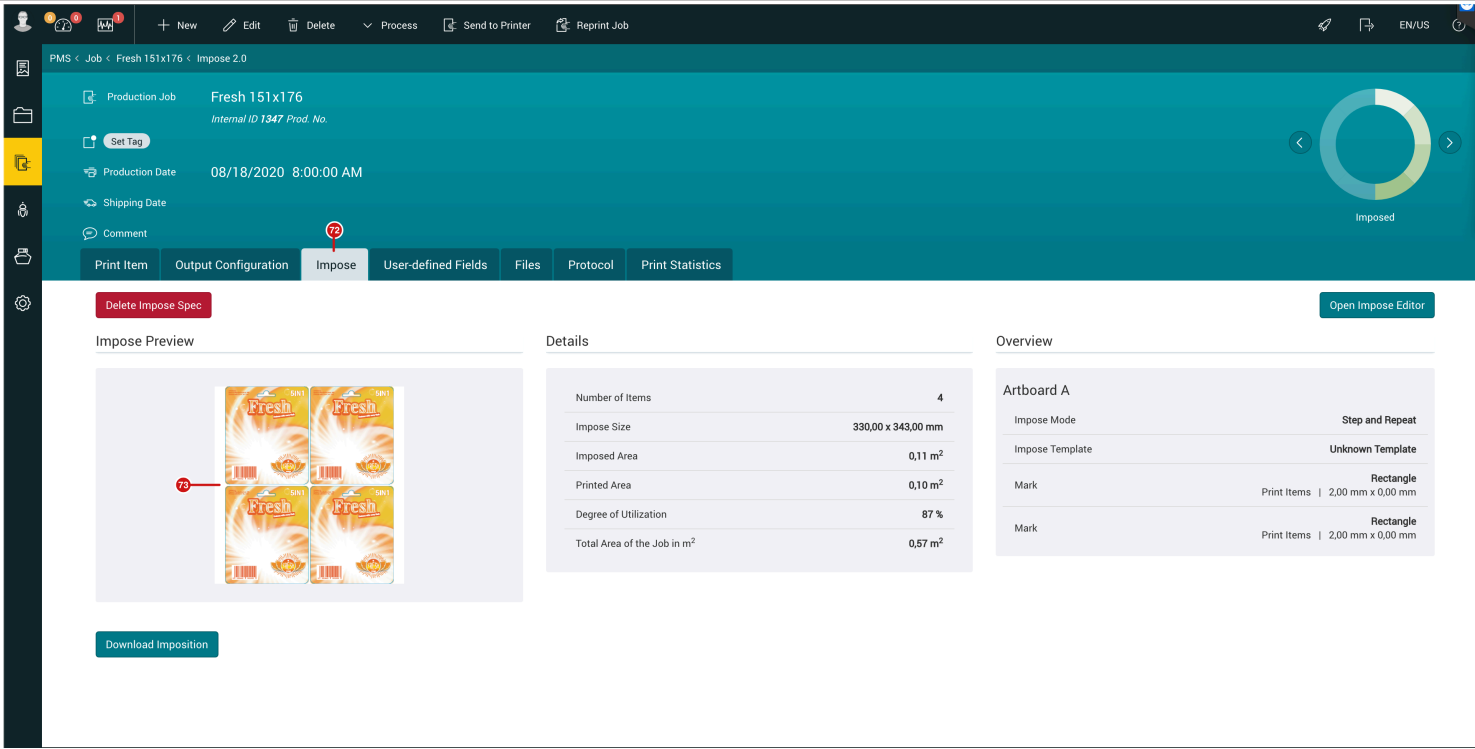
3.5. Send to Printer

Once the Print Items have been imposed, we simply need to send the Production Job to the printer. Please read this article **Sending a Production Job to the Printer**.

The only important factor in terms of variable data that must be set, is under the **Variable Data** tab in the *Send to Printer* dialog. On one hand, you can split the Production Job into two or more *Jobs* using **Split in [74]** and on the other hand the **Start** and **End values [75]** e.g. for test print runs, can be changed.

Figure 16: The *Variable Data* tab of the *Send to Printer* dialog.

Send to Printer   **Fresh 151x176**

| General | Size | Lead In/Out | Variable Data | Finishing | Inprint | Advanced |

Number of Print Items: **4**

74 — Split in [ ] Jobs

75 — Start [1] End [19]

Order [per Job ▾] ⓘ

Sorting	⇄ Horizontal
Datasource	EAN Barcodes.csv
Records in Datasource	19 excl. header row
Copies	5
Total number of Print Items	19
Total Area of the Job in m^2	0.566 m^2
Length of the Job	1.715 m
Substrate Size	Roll 3.200,00 mm x 100,00 m

Page Size **330,00** x **343,00** mm   Scaling **100,00%** x **100,00%**

Delete Impose Spec

Printer	Rho P10 250 HS (26)
Print Configuration	High Resolution (47)
Substrate	KÄMMERER Paper GmbH - Chantaffiche 250JE (30)
Substrate Definition	Roll 320cm (64)

Print Info

✕ Cancel   ✓ Send to Printer