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FAST CLEANING ROLL SNAPPING INSTALLATION SYSTEM SOLUTION FOR 3D AND LARGE FORMAT PRINTERS

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Fast cleaning roll snapping installation system solution for 3D and Large format printers

1. Abstract

Abstract:

Cleaning roll is a high frequency replacement supply used in the 3D and Large Format printers used for doing an automatic servicing of the Print heads of the system. The replacement workflow is a challenging and time-consuming task that involves the user reaching into the machine from the front and top simultaneously with a limited space available.

In a production environment the downtime of the tasks contributes significantly to the overall operating expense of the equipment.

Fast cleaning roll snapping installation system solution for 3D and Large format printers

2. Problems Solved

Due to the increase of sealing requirements for service station in the 3D printers, the cleaning roll access for the operator is compromised to ensure a robust and fast cleaning roll replacement. The main challenges are:

- the tight space for interaction with the rolls
- the threading through the upper rolls of the assembly.

The problems with the existing cleaning roll system are:

- The threading of the new roll through the upper rolls is very hard because of the lack of rigidity of the supply's threading mylar.
- The attachment of the leading edge with the cleaning roll core is complicated due to lack of rigidity of the supply's mylar, lack of visibility for the operator and lack of space to manipulate the leading edge and mylar.

Prior Solutions:

Prior solutions have a mylar in the leading edge of the new supplies that is used as a snapping mechanism. This mechanism and material have limited rigidity and makes it difficult for the user, first to do the threading of the new roll and second, snap the new roll into the core, specially at the further part of the core where the visibility and space is tight.

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3. Description

The solution consists in a plastic snap that comes welded or glued at the edge of the new cleaning roll and its negative cavity at the core of the same cleaning roll. As per current core's internal design in a waved shape, it is possible to allow up to 8 negative cavities, so it must increase the chances of catching to hook them at whatever position of the core (see Figures 1 and 2).

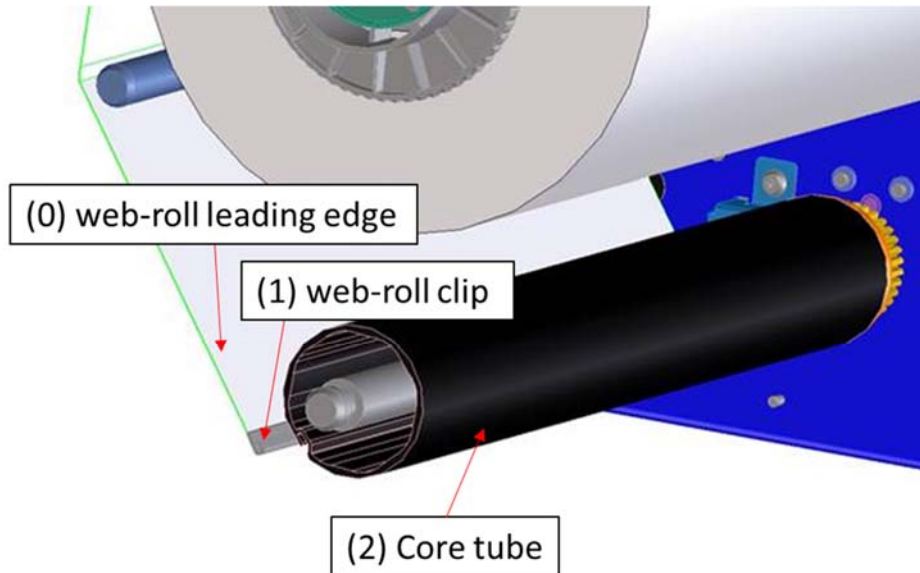


Figure 1

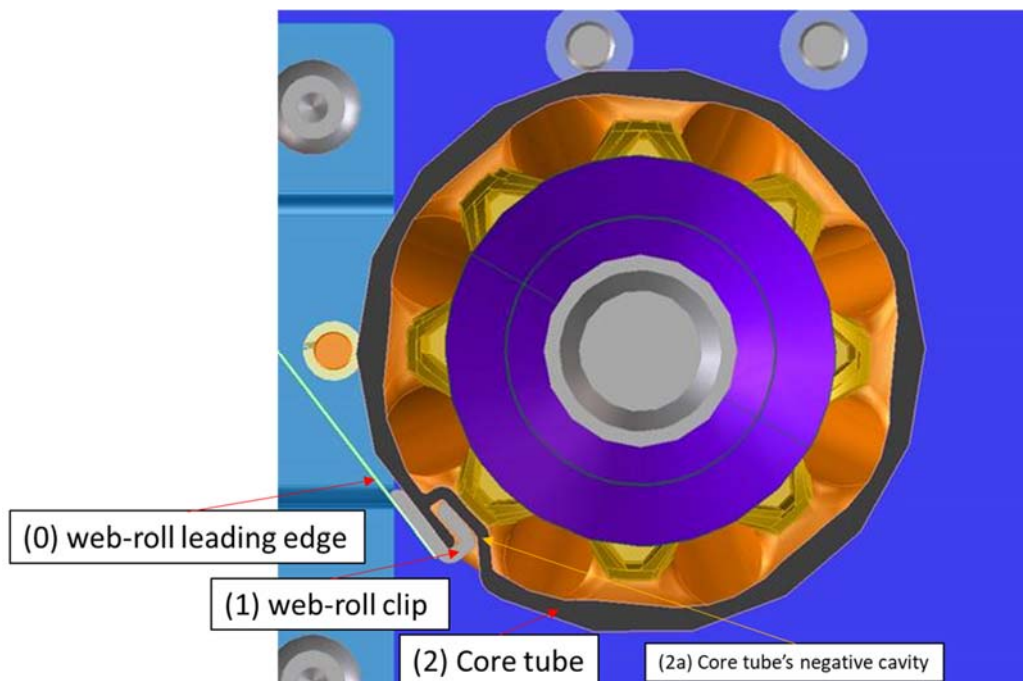


Figure 2

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This design allows to easily thread the new cleaning roll through the top part of the assembly (see Figure 3), this snap also provides some weight to the cloth of the cleaning roll, what helps ensuring that the roll is better aligned and well placed.

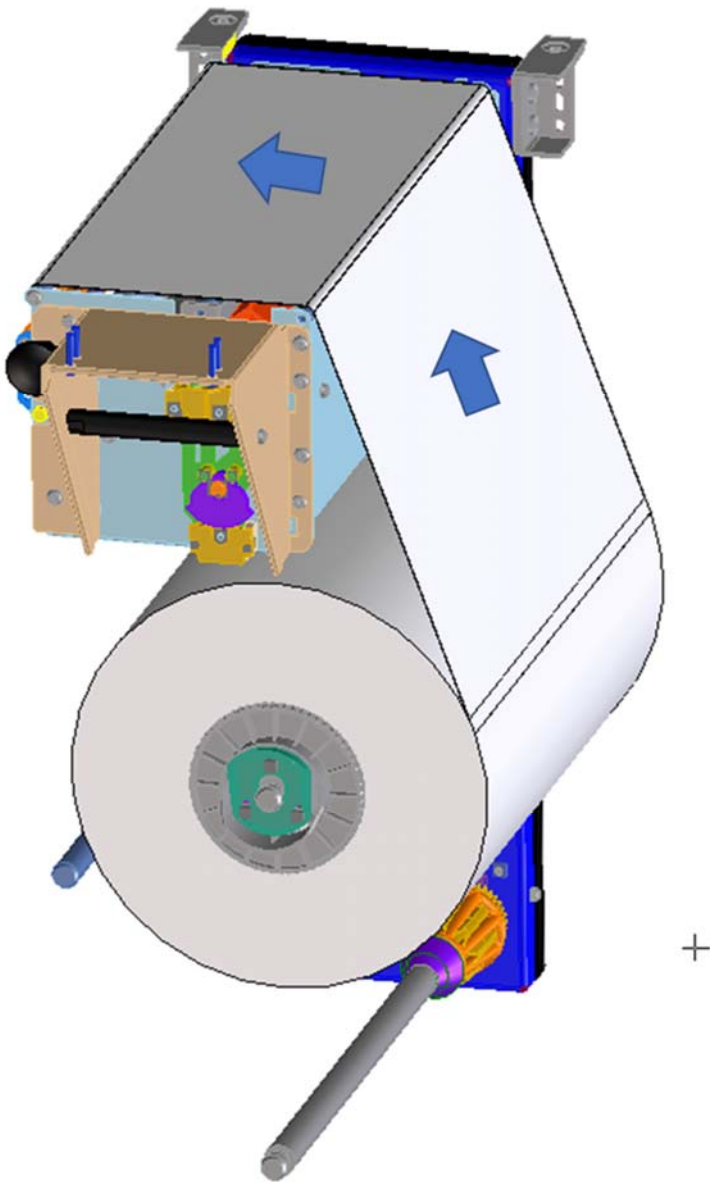


Figure 3

Finally, the old core of the cleaning roll (what has the negative of the snap geometry) enables a fast and robust clipping with the snap that comes with the cleaning roll, allowing a comfortable clipping from the front of the assembly (see Figures 2 and 4).

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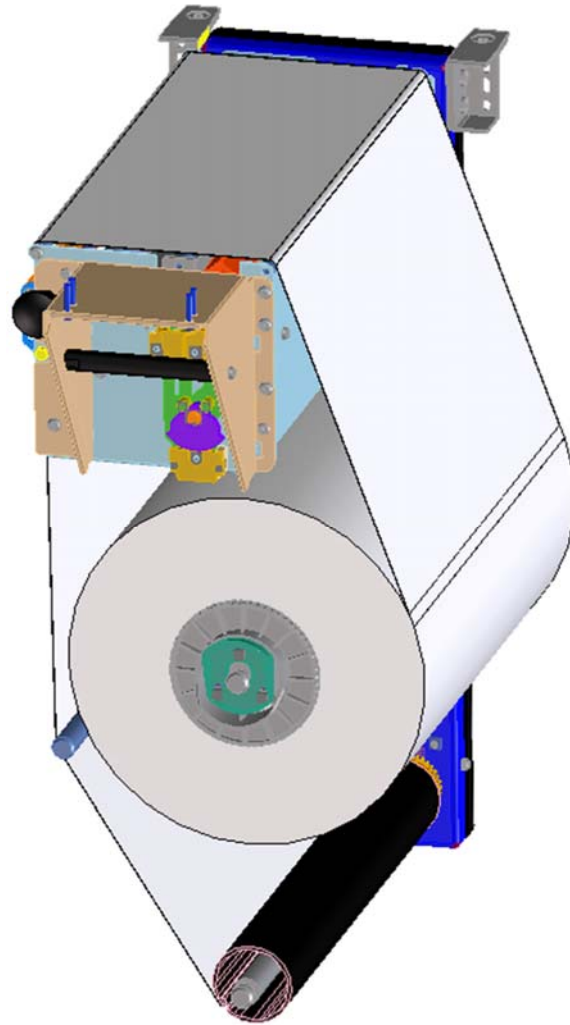


Figure 4

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4. Advantages

It allows all types of operators to install web wipes regardless of their size and flexibility. Rigidity of the new leading edge is making the threading easier and the core design to snap the edge in many positions reduces human error making the operation more consistent.

It keeps the operator clean and safe.

Web wipe installation becomes faster and more robust to possible errors or fails

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