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ENABLING CUTTER BEFORE HEATING ELEMENT COOLDOWN TO IMPROVE PAGE RETRIEVE TIME

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Enabling cutter before heating element cooldown to improve page retrieve time

Abstract

The following document describes a novel invention that reduces the page retrieve time by enabling the cut of the material before the heater cooldown.

Problem Solved

In Latex ink printers, heating sources are needed to dry and fix the ink into the media. They usually consist of a heating element that needs to be warmed up before each job and cooled down after the printing process, leading to higher preparation time over its main competitors (Solvent and UV printers). Consequently, latex technology is usually perceived as non-productive technology for short runs.

Contrary to solve this issue, as the portfolio evolves, there has been a focus in improving the print velocity (throughout) instead of the end-to-end productivity.

The time from the job submit until the user can have the print in his hand considers a lot of stages. In this invention we focus to the page retrieve; the time after the job is printed until we can get it from the printer. The present invention enables the cut of the job before the cooling down of the printer avoiding the user to wait until the printer is again in ready mode and has finished all the stages.

Prior Solutions

Prior solution consists of enabling the cut of the job after all the stages of the printing process forcing the user to wait until the printer is in ready state. Even if the printing process is intended to be composed of different copies that are cut one after the other, the current workflow enables the cut always after the cooldown of the heating element. This forces the user to wait until the cooldown ends to get the first copy and repeat a Warmup process in between all the copies. As commented before productivity is optimized to print 1 long job instead of multiple short runs.

Description

In the *sketch1* we can see all the typical steps we can see in a traditional workflow of the page retrieve time of a latex printer:



Sketch1: traditional workflow of a latex page retrieve

Cure end page: Time where the last printed part of the job passes through the heating element

CoolDown Standby: Cooldown of the media, usually with some media movements to avoid the material deformation. Time is up to 100s

Rewind Media: Backward movement of the media until it is placed to the cutting position. Time is up to 30s

Servicing: Routine of printhead spitting and cleaning after the job. Time is up to 10s

Cut: Moment where the carriage gets the cutting blade and cuts the material.

The total time of the CoolDownStandby + Rewind Media + Servicing is about 140s

Our proposal is to allow two different moments for the cut of the job; after the cure-end-page process (moment where we have all the job finished) or once the printer is fully in ready mode. This two moments are shown in the *sketch2*.



Sketch2: E2E optimized workflow

The implementation for this workflow is:

- 1) Cut Pos 1 can be automatically set up in the Rip so the cut of the element automatically happens after each job or between copies. No warmup process is needed if a subsequent job is waiting in the printing list adding an additional time saving of up to 160s
- 2) Cut Pos 1 can be automatically set un in the Rip so a group of plots are cut after they're finished to be printed.
- 3) Cut Pos 1 can be manually set up during the printing process so the printer will automatically cut the job after it is finished
- 4) Cut Pos 1 can be edited directly in the job queue of the printer in case it is wanted a different setting from what has been specified in the rip.

Advantages

This invention has the following advantages:

- Reduce Page Retrieve time up to 140 seconds because of the enabling the cut before the cooldown.
- Reduce the overall end to end productivity of multiple “short runs jobs” because there won’t be a cooldown and a warmup in between the jobs. Page retrieve between copies can be shortened up to 300 seconds.
- Reduce of end-to-end power consumption when printing multiple “short runs” as we don’t cool down and heat up the heating element every time in between the jobs.

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