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DYNAMIC AND CUSTOMER TAILORED CONSUMABLE LIFE PROJECTION MESSAGING

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Dynamic and Customer Tailored Consumable Life Projection Messaging

Abstract: A technique calculates, based on a customer's own typical printing profile, the approximate number of remaining pages that can be printed using the current remaining level of individual consumables in the printer, informs the customer when replenishment is needed, and enables the customer to reorder consumables more cost-effectively.

This disclosure relates to the field of printers.

A technique is disclosed that calculates, based on a customer's typical printing profile, the approximate number of remaining pages that can be printed using the current level of consumables and informs the customer when replenishment is needed.

Customers constantly use printing consumables (such as toner, ink, etc.) at different print vectors (coverage/pages), resulting in different yields of the same consumable. Some printer vendors currently display to the customer the percent of consumables remaining. However, it is difficult for a customer to equate the percent toner remaining to the actual number of print pages that can be generated with the consumable remaining, especially when printing conditions change frequently. With these print vectors constantly changing, customers must make an educated guess as to when to buy consumables for replacement. The associated inaccuracies often result in customers stockpiling cartridges, which can waste a customer's resources (money, space, etc.) that could be better utilized elsewhere.

According to the present disclosure, and as understood with reference to the Figure, the user select specific time periods to be used to estimate the life of their consumables based on identified intervals. For example, customers might need to print colorful flyers one month, but only business documents another month. In such situations where printing needs vary throughout the year, the customer can forecast their printing cost using their own set time periods - as detailed as day by day, or as broad as year by year. Then based on the projections, customers can identify when they need to replace their consumable cartridges. To achieve this, a low setting is customer-defined depending on their print vector over their specified time frame. Each consumable has its own customer-defined low setting based on color, coverage, and specified settings from the projection. A message is generated to the customer when the remaining amount of a consumable corresponds to the low setting. The message gives the option to purchase the low consumable, or a full new set of consumables. The customer only needs to reply yes, and their order is placed and sent to their desired physical address.

In operation, the customer accesses the web service connected to the printer. Interval options are then chosen by the customer for the specific time periods upon which the customer wants to base other estimations. The projection time frames can be split up or strung together. The technique also provides approximate coverage over the specified time frames to give the customer usage data at those selected timeframes.

The selected intervals estimate the remaining life of a consumable, in pages, based on linear algebra of the selected print vectors. An example 10 illustrates an estimate for a customer who has printed products in periods 1-4, which correspond to print vectors a-d respectively. The customer prints as was done in a, b, and c often, but d was an atypical period in which ordinary printing was not performed. So for projecting the number of pages remaining from the percent of the consumable (toner, in this example) remaining,

the customer selects print vectors a, b, and c, but not print vector d. Then when the low setting for that consumable occurs, the message 20 is issued to the user.

These projections help customers identify when new cartridges need to be purchased based on their own dynamic printing needs. Providers of printing supplies can use this technique to provide a tailored messaging experience to each of their customers, reducing the cost to provide this service.

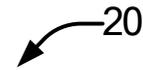
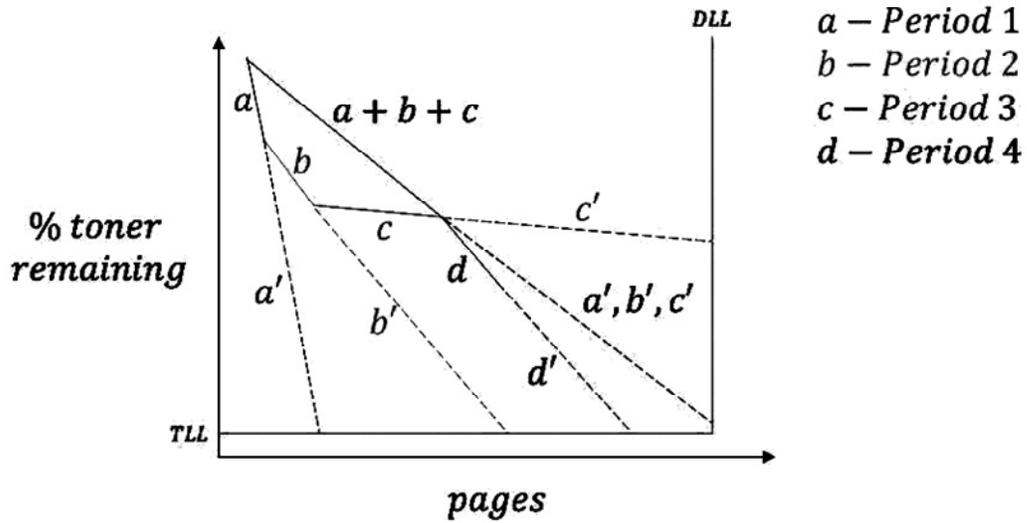
The disclosed technique advantageously improves a customer's forecast for printing consumable requirements, making the customer more efficient and reducing their costs. It makes new consumable supplies one message away by using techniques that customize the user messaging experience. It can further optimize the number of printing consumable supply provider visits made to the customer, which equates to a lower cost for the provider as well.

Disclosed by Justin Pettingill, Hp Inc.

The estimated page yield uses vector algebra to compute projections based on the user defined time frame.

$$V = a + b + \dots + n = \sum_{i=1}^n (a_i + b_i + \dots + n_i) e_i$$

$$\alpha, \beta, \dots, n = \frac{V \cdot e_i}{\|V\|} \text{ for } i = 1, 2, \dots, n$$



NEW message from Print Supply Provider

Your Magenta Cartridge has reached your low setting of 10%:

Magenta = 10%
 Black = 25%
 Yellow = 20%
 Cyan = 15%

Based on your printing from 06/2018 - 07/2018, you have approximately 200 pages left to print

Message "YES" to order a new Magenta Cartridge.
 Message "YES ALL" to order all new Cartridges