



Project #	Project Name	Project Track	Project Family
P08501	Roller User Test Bed	Printing and Imaging	Printing Systems
Start Term	Team Guide	Project Sponsor	Doc. Revision
2007-1	Dr. Marcos Esterman	Hewlett-Packard	6

Project Description

Project Background:

Fusing, the final step in the laser printing process, fixes toner to the page using heat and/or pressure. The majority of modern systems utilize a heated roller setup to accomplish this. The actual process of how this system transfers heat and applies pressure is not completely understood and is designed in an empirical manner, requiring large investments of time and resources. This is especially true as the market moves to faster product development cycles and printers.

Problem Statement:

Previously, a stamp based fusing system was developed to allow precision control and measurement of the process variables. Even though the stamp based system is precise, it does not replicate roller based fuser systems in form. Therefore, a roller based test bed is required which closely simulates actual fusing systems in use today. The objective of closely simulating the real process, places a constraint on the accuracy of measurements made from this roller-based system. Even though the data from this system is less accurate, compared to the stamp based system, it is more representative of the real fusing process.

By studying the data from the stamp-based system (more accurate) in conjunction with the roller-based system (more real) an optimal set of fusing parameters, for the best print quality, can be determined.

Objectives/Scope:

1. Develop and produce roller based fuser test bed the mimics the output of an actual fuser system.
2. Ability to run pressure and temperature profiles that are close approximations of the stamp based system.
3. Sense process variables (temperature, pressure, speed, etc.) accurately.
4. If possible integrate roller based system user interface with stamp based system.

Deliverables:

- Roller Based Test Bed
- Accurate and Precise control and sensing of process variables
- Dynamic model of the system
- Research oriented user interface
- Integration with existing test bed
- User manual

Expected Project Benefits:

- Insight into the fusing process
- Empirical and mathematical model of the fusing process
- Improvements in print quality
- Faster printers
- Shorter development times

Core Team Members:

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Strategy & Approach

Assumptions & Constraints:

1. Roller-Based system
2. Accurate sensing
3. Can integrate with stamp based system

Issues & Risks:

- System Integration
 - Unknown if systems are compatible
 - May only be an approximation for the roller system
- Sensor accuracy
 - Cannot be as accurate as stamp-based system
 - Needs calculations and models for complete accuracy