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## AUTOMATED METHOD TO ENABLE SCHEDULED RESTARTS WITH PRE-CHECKED LISTS, AND SAFETY ALARMS WITH BY-PASSES

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## **Automated Method to Enable Scheduled Restarts with Pre-check Lists, and Safety Alarms with By-Passes**

This disclosure relates to commercial press restart management

A method is disclosed to allow commercial press operators and managers to schedule the restart of a commercial press during the off-hours of use. This method includes a checklist that must be performed and accepted to indemnify the press manufacturer of failures caused by lack of preparation or pre-restart setup. In a typical embodiment, the press user determines the press should be restarted before work the next day (or wants to have it scheduled for every Sunday, Tuesday, Thursday morning before work). For the restart to occur, the operator must indicate the press will restart the following morning. The press operator is asked to confirm the time of the restart, the substrate is installed (or not), and what actions the device should take upon restart. If necessary, safety functions may result in the press sending an audible notification at or just before the restart, to alert all people in the vicinity that the press is restarting (to avoid suspect behavior of the press to the night crew, for example.). In such a case, a flashing light, audible noise/alarm, and screen by-pass may be displayed. If the screen by-pass is enabled, the restart will not occur. Such may be the case, when a press is in use overnight.

Many customers have, as part of their daily routines, a restart process at the beginning of the day, to prevent unnecessary duration type errors related to memory and or longevity of the press being online. The disadvantage to this, is that it spends time they could be using to print sellable products, in restarting the press. Press uptime is often measured in days, but the reality is that uptime, by a customer, is measured in the press being "up and ready" when the customer needs it. During uptime at night, when nothing is occurring, this invention can be used to refresh the press's memory, avoid duration-type errors, or prevent failures from occurring. It keeps the customer's real "up-time" much higher. While sleep modes exist to reduce the likelihood of software/firmware corruption. The disadvantage is that sleep-mode does not eliminate it

This disclosed method has the following aspects to function as a full method/solution to allow automated restarts, with Checklists, Confirmations, and By-pass. This method has four functions, which are required to operate the restart. 1) Software to manage the restart solution, confirmations, checklists and by-pass setup. 2) Checklist management. 3) User Confirmation and Digital Signing of the user authorizing the restart. 4) By-pass solution, enabling the restart to be delayed or turned off.

Regarding 1) Software to manage the restart solution, confirmations, checklists and by-pass setup. This function allows the user to identify/login for tracking and maintaining a database of restart authorizations. It has two-step authorization – some solutions may require the press operator to authorize the restart, which is confirmed by a floor manager, or other manager. In this two step method, software is created to allow remote requests for restart to be authorized by a manager. Data may be collected and sent to the authorizing manager (such as checklist results, and user data, along with a time stamp). Methods of sending and receiving authorization may include software controlling e-mails sent, direct access and authorization (at the press), or mobile device authorization (such as through PrintOS mobile). Included in the software to manage the restart solution are checklists display and management

– software to show the steps necessary to authorize the restart (such as press cover closed, tanks filled, errors removed, substrate installed etc.) For events that require a bypass, software allowing the user to select the by-pass method, and possible entry of a security code to stall or stop the device restart. Options may include turning on the flashing light on the press warning of a pending restart, an audible alarm to notify users of a pending restart, a screen configuration with time-out for stopping a restart (the by-pass). Users can set this configuring timing to a 30-minute countdown, a 10-minute countdown, or scheduled for a specific time to countdown and display the by-pass screen. For the two-step authentication of the restart process. For events surrounding the restart, this method includes notifications management: Press will send notifications via e-mail or through mobile of pending/completed events, with a distribution list that can be setup within the press restart software.

Regarding 2) Checklist management, in a typical embodiment the checklists are managed through an internal databased which is populated by the Press Software. As press software updates are installed, the checklist may be automatically updated by the software to provide the most relevant checklist for restart. During checklist use, if a checklist item is mandatory and not completed, the software will not allow the restart to occur. During checklist use, if a checklist item is optional and not completed, the software may require digital confirmation (or digital signature) of the user by-passing the optional item. Optional items may come with warnings of possible consequences, which are displayed to the user, in the event of a failure to complete. When possible, the checklist items will utilize press-sensors to determine if the checklist item is complete. For example, the press cover may be required to be closed. The checklist may automatically pull the sensor data to determine cover closure, as well as optionally require the user to provide visual verification of some items (even with sensor data).

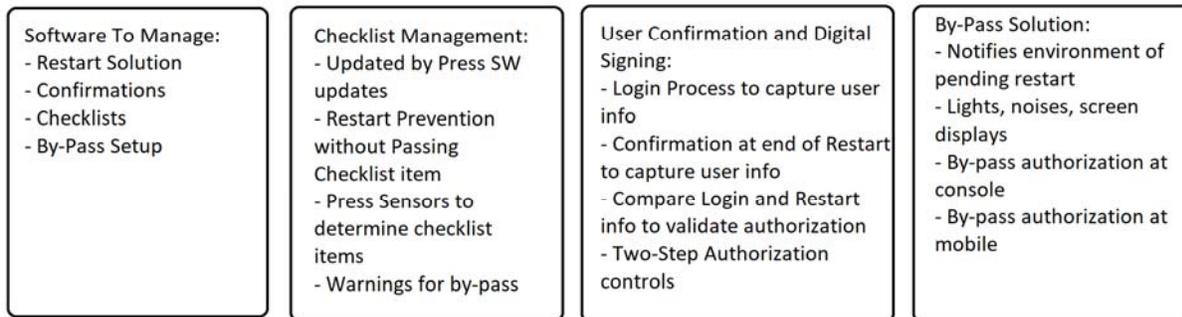
Regarding 3) User Confirmation and Digital Signing of the user authorizing the restart, in a typical embodiment, user data is stored in the restart request. The user is required to login during the beginning of the restart process to digitally sign the restart (such as a badge swipe). Additionally, a picture may be taken of the operator notifying the user of the operator's picture being stored. At the completion of the checklist, the user again must digitally sign-off on the restart, with another digital signature (such as a badge swipe), and/or a picture taking. For two-step authentications, the user may finish the sign-off of the restart, and a secondary manager (input at the time of install and selected from a drop-down menu of available authorizers) is notified requiring either physical approval (with an entry code, badge swipe or face capture), mail authorization, or managed through the software connected to the mobile app. Notifications management: Users may be included on a distribution list, of an outgoing email notifying of the request and pending restart.

Regarding 4) By-pass solution, enabling the restart to be delayed or turned off, in a typical embodiment, the by-pass solution notifies the environment of imminent restart according to timing authorized in the software collection. Lights, noises, screen notifications, or mobile notifications may be displayed indicating the restart is imminent, as well as provide (in the case of mobile notifications or screen by-pass notifications) the opportunity to by-pass the restart. In the event of a by-pass, the press remains in a sleep-state, or on-state, until further events dictate otherwise. In some embodiments a timed "delay" may be selected (with authorization codes required), for delaying the press for a specified time. Some delays may require authorization, while others (such as in the event of a cleaning crew having problems), may be delayed indefinitely. Capture of the person delaying the restart may be done.

In a typical use case, the press user sets up the press to restart at the beginning of the week, on Sunday. The press is scheduled to restart in the early hours of the morning, before work. The user accesses the press dashboard, and accesses the software controlling the restart process. The user logs into the system and then conducts the full checklist, noting that the press is operating still, but authorizing the restart, knowing the press will be finished within an hour of the workday being complete. The user then clicks the final button allowing the restart process to be engaged, and logs in again, confirming the identity of the request. The user’s manager receives an e-mail notification only (not authorization required). The user leaves for the day. Then, on Sunday, an hour before the workday begins, the press begins its restart process. Lights turn on, and an audible beeping is heard for 5 minutes. A screen display shows a by-pass screen allowing the restart to be turned-off. No one is around to turn it off. The restart happens on time, and the press solution fully reboots. Upon completion of the restart, and the known good state of the solution, the software sends out an “all clear” notification to an email distribution that the press has been restarted. Upon receipt of the solution the press manager, still at home, logs into the PrintOS mobile application and identifies the jobs to be printed on the press for the day. 15 minutes after restart, the press-operator comes in, double checks all settings, looks for the report of the restart, and noting that all went well, begins processing jobs for the day.

## FIGURE

Required Components for Automated Press Restart



*Disclosed by Jerry Shelton and Freddy Perez, HP Inc.*