Application Note

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Enabling Automated Plate Sealing and Automated Plate Labeling with the Agilent BenchCel Workstation

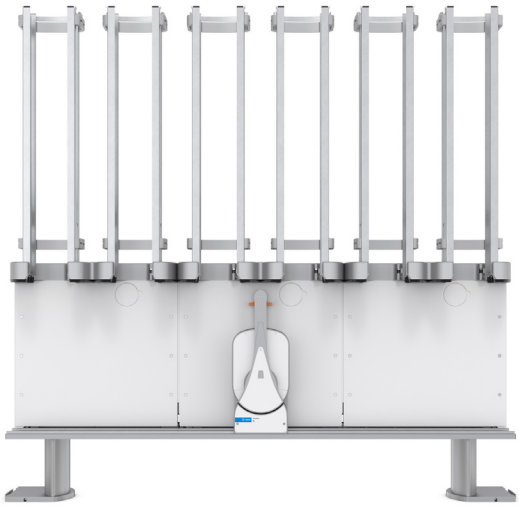

Figure 1. Agilent BenchCel Microplate Handler.

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Introduction

High-throughput screening research facilities routinely handle large batches of microplates that require sealing for storage and transport or have a readable barcode label for traceability. While these processes can be completed manually, the tasks are quite tedious and demand significant hands-on time. Additionally, there is the possibility of making problematic errors with label or seal adhesion that affect downstream processes. Automation of these routine microplate workflows provides an opportunity to increase throughput while maintaining consistency when working with a large number of samples.

This Application Note describes how the Agilent BenchCel Workstation platform can provide a complete workflow to enable automated plate sealing or automated barcode labeling in a research laboratory environment. This is achieved by integrating the Agilent BenchCel Microplate Handler with the Agilent PlateLoc Thermal Microplate Sealer or Agilent Microplate Barcode Labeler to build a complete BenchCel Workstation. Instrument control is designed to be intuitive and straightforward using protocols created with the Agilent VWorks Automation Control Software.

Experimental

Automated Plate Sealing

Equipment

- Agilent BenchCel 2R Microplate Handler with 660 mm Front Loading Racks
- Agilent PlateLoc Thermal Microplate Sealer with Peelable Aluminun thermal seal roll
- 96 well polystyrene, clear flat bottom microplates (Greiner 655101)

Protocol workflow

Instrument setup

1. Open VWorks Automation Control Software and load the BenchCel 2R Plate Sealing System Form (Figure 3).
2. Load the desired labware into BenchCel Stacker 1.
3. In the PlateLoc Setup submenu, enter the seal time and temperature, based on product recommendations.
4. In the Run Setup submenu, enter the number of plates to be sealed, and select the type of labware (preloaded into VWorks software).
5. Select Start Run to begin automated workflow.

Instrument workflow

1. Microplates are transferred from BenchCel Stacker 1 to the PlateLoc Sealer.
2. The PlateLoc seals the microplates according to the set parameters.
3. Microplates are transferred from the PlateLoc to the BenchCel Stacker 2 for storage.

Figure 2. Agilent BenchCel Workstation for Automated Plate Sealing.

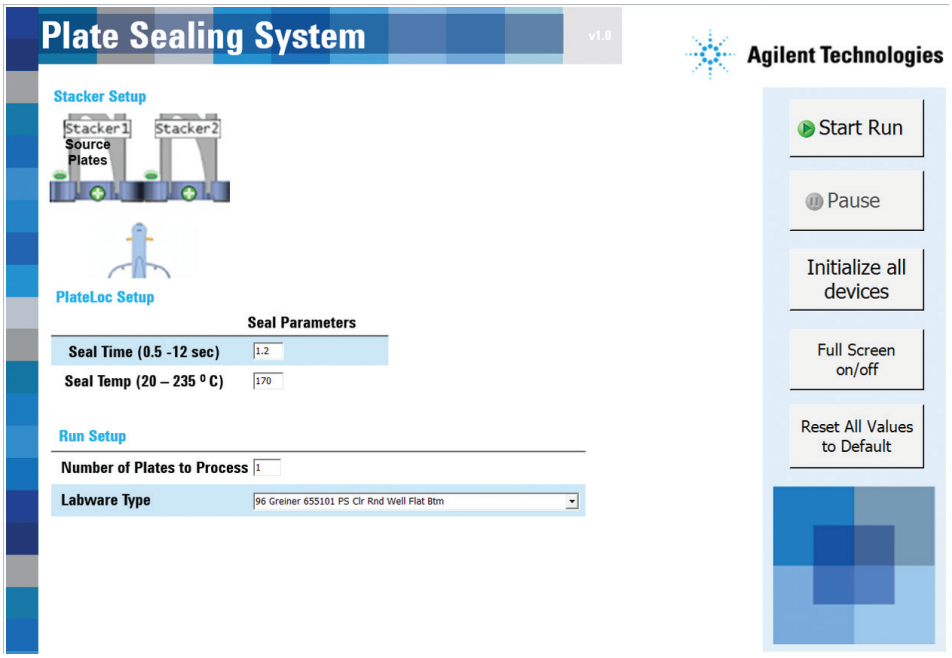

Figure 3. Agilent VWorks Protocol Form for Automated Plate Sealing.

Automated Plate Labeling

Equipment

- Agilent BenchCel 2R Microplate Handler with 660-mm Front Loading Racks
- Agilent Microplate Barcode Labeler
- 96-well polystyrene, clear flat bottom microplates (Greiner 655101)

Protocol workflow

Instrument setup

1. Open VWorks Automation Control Software and load the BenchCel 2R Plate Labeling Protocol
2. Load the desired labware into BenchCel Stacker 1.
3. Select the Plate Labeling task in the Main Protocol window, and configure the desired plate type under Task Parameters.
4. Select the Print and Apply task in the Main Protocol window, and configure the label format and orientation under Task Parameters.
5. Click Compile to check protocol for errors and warnings.
6. Click Start to run the VWorks Plate Labeling protocol.
7. Enter the number of microplates to be processed in the Run Configuration Wizard.

Instrument workflow

1. Microplates are transferred from BenchCel Stacker 1 to the Microplate Barcode Labeler.
2. The Microplate Barcode Labeler creates user-designed labels and applies them to each desired side of the microplate.
3. Microplates are transferred from the Microplate Barcode Labeler to BenchCel Stacker 2 for storage.

Figure 4. Agilent BenchCel Workstation for Automated Plate Labeling.

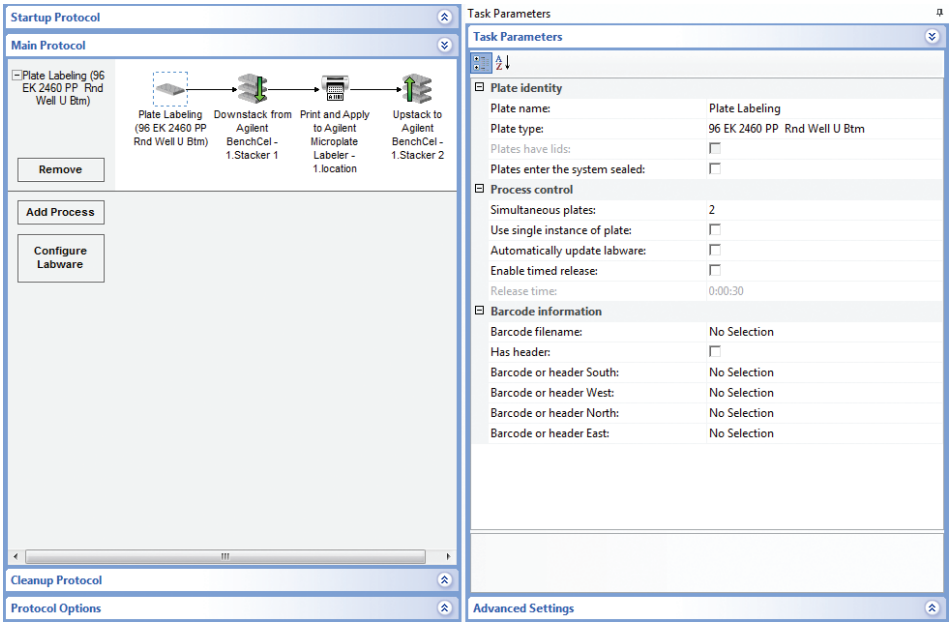

Figure 5. Agilent VWorks Protocol for Automated Plate Labeling.

Conclusion

The Agilent BenchCel Workstation provides a single, compact solution to enable automated plate sealing and microplate barcode labeling for high-throughput research environment. The inclusion of predesigned protocols with Agilent VWorks Automation Control Software helps new users get started faster, and allows them to become more confident after the initial run. These protocols can easily be customized to meet individual labs' needs. Depending on the sealing or labeling parameters, up to 50 microplates can be processed in less than 30 minutes. Overall, the BenchCel Workstation platform is constructed to provide a complete solution for everyday microplate tasks.

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