

SYSTEMS FOR REMOVING AND REPLACING CONSUMABLE PARTS FROM A SEMICONDUCTOR PROCESS MODULE IN SITU

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ABSTRACT

A cluster tool assembly includes a vacuum transfer module, a process module having a first side connected to the vacuum transfer module. An isolation valve having a first side and a second side, the first side of the isolation valve coupled to a
10 second side of the process module. A replacement station is coupled to the second side of the isolation valve. The replacement station includes an exchange handler and a part buffer. The part buffer includes a plurality of compartments to hold new or used consumable parts. The process module includes a lift mechanism to enable
15 placement of a consumable part installed in the process module to a raised position. The raised position provides access to the exchange handler to enable removal of the consumable part from the process module and store in a compartment of the part
buffer. The exchange handler of the replacement station is configured to provide a replacement for the consumable part from the part buffer back to the process module. The lift mechanism is configured to receive the consumable part provided for
20 replacement by the exchange handler and lower the consumable part to an installed position. The replacement by the exchange handler and the process module is conducted while the process module and the replacement station are maintained in a vacuum state.

Figure 1