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(54) Title: INDUSTRIAL CLEANING SYSTEMS, INCLUDING SOLUTIONS FOR REMOVING VARIOUS TYPES OF DE-
POSITS, AND COGNITIVE CLEANING

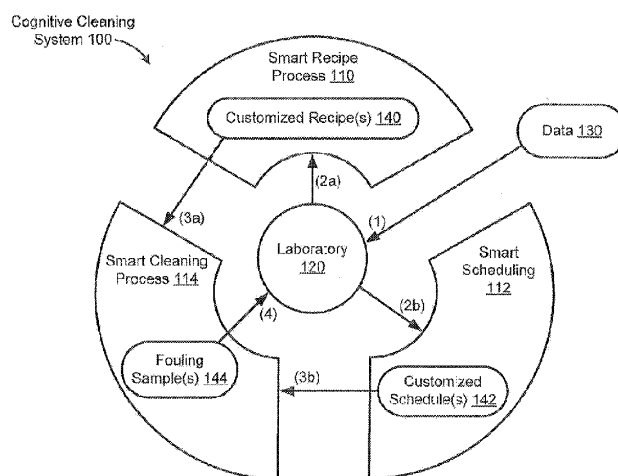


FIG. 1

(57) Abstract: A method is used for cleaning heat exchanger systems. The method is performed at a computer system having one or more processors and memory storing one or more programs configured for execution by the one or more processors. The method determines component percentages of a cleaning solution based, at least in part, on operational parameters of a heat exchanger system. The operational parameters include chemical composition of fluids passing through the heat exchanger system and operating temperatures of the fluids passing through the heat exchanger system. The component percentages of the cleaning solution include: (1) hydrogen peroxide, 2 - 90 wt. %; (2) a complexing agent, 3 - 30 wt. %; (3) water-soluble calixarene, 0.01 - 10 wt. %; and (4) water. The complexing agent includes a polybasic organic acid or a sodium salt thereof, or a derivative of phosphorous acid.

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