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(54) Title: CONTROL SCHEME FOR A REVERSE OSMOSIS SYSTEM USING A HYDRAULIC ENERGY MANAGEMENT INTEGRATION SYSTEM

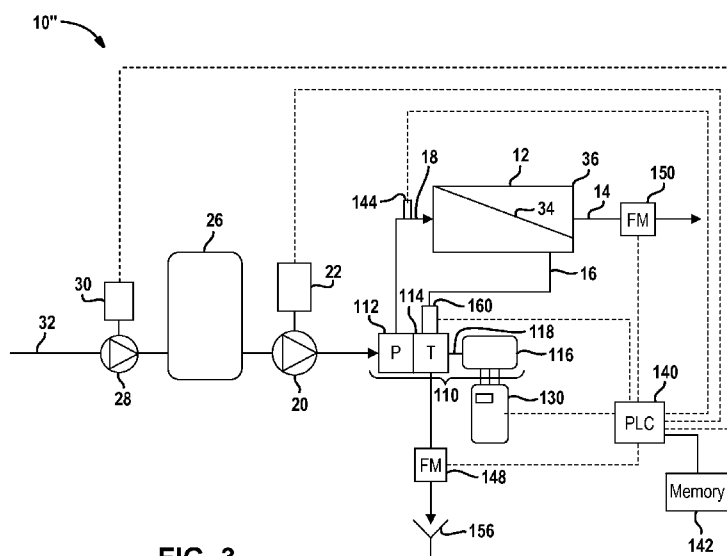


FIG. 3

(57) Abstract: A reverse osmosis system and method of operating the same includes a first pump (28) receiving feed fluid at a first pressure and increasingly pressurizing the feed fluid to a second pressure higher than the first pressure and comprising hydraulic energy management integration system (HEMI) having a turbine portion (114), a pump portion (112) and a motor (116). The brine outlet fluid is in fluid communication with the turbine portion. The reverse osmosis system also includes a second pump (20) and a controller controlling the motor to retard rotation of the HEMI while the first pump increasingly pressurizes the feed fluid to the second pressure. The controller (140) also increases a HEMI speed so that feed fluid pressure increases above the second pressure, and, when a feed fluid reaches the second pressure at the fluid inlet, controls the second pump to increase the feed fluid pressure to a third pressure. The controller to reduces the HEMI speed after the third pressure and changes the HEMI speed based on a membrane pressure.