DUTY BASED MODULATING HYDRONIC CIRCUIT TECHNOLOGY METHOD AND APPARATUS FOR OPTIMIZED CONFIGURATION OF MULTIPLE HEAT PUMPS

ABSTRACT

A hydronic system that can co-ordinate heat pumps, valves, and load circuits based on load-based and condition based factors to assess the optimal operating hydronic circuit configuration. In an example, the hydronic system includes: an air to liquid heat pump hydronically connected to a first load circuit; a liquid to liquid heat pump interfacing with a second source circuit and hydronically connected to a second load circuit; a water storage hydronically connected to the second load circuit, and hydronically connected to a water consumption circuit having a water supply input and a water consumption output; at least one 3-way valve which hydronically connects the air to liquid heat pump to the liquid to liquid heat pump; and at least one controller configured to co-ordinate control of the at least one 3-way valve, the air to liquid heat pump, and the liquid to liquid heat pump.

[FIG. 1]