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(54) Title: INTEGRATED PANEL DESIGN

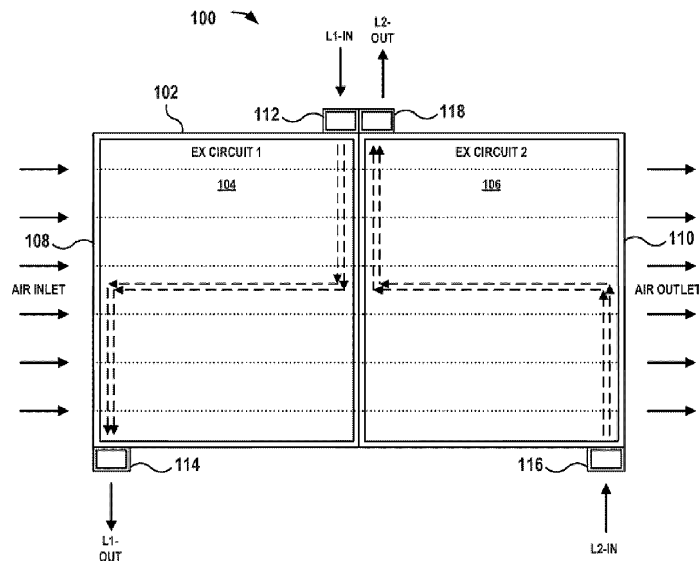


FIG. 1A

(57) Abstract: A conditioning system includes a liquid-to-air energy exchanger (LAEE) having a plurality of energy exchange (EX) circuits. The LAEE includes a single liquid panel, an air channel, and a plurality of membranes. The single liquid panel has a 5 plurality of liquid circuits through each of which a liquid is configured to flow. Each of the plurality of liquid circuits has a plurality of closed liquid channels through each of which a liquid is configured to flow without mixing with the liquid flowing through other of the plurality of closed liquid channels. Each of the liquid circuits corresponds to each of the plurality of EX circuits. The air channel is adjacent the 10 liquid panel and air is configured to flow through the air channel from an inlet of the LAEE to an outlet of the LAEE. The air channel extends adjacent all of the plurality of liquid circuits. The plurality of membranes is connected to the liquid panel. At least one of the plurality of membranes corresponds to each of the plurality of liquid circuits. Each one of the plurality of membranes is disposed

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between the respective 15 liquid circuit and the air channel. Each of the plurality of EX circuits is configured to exchange at least one of latent and sensible energy between a liquid flowing through the respective liquid circuit and the air.