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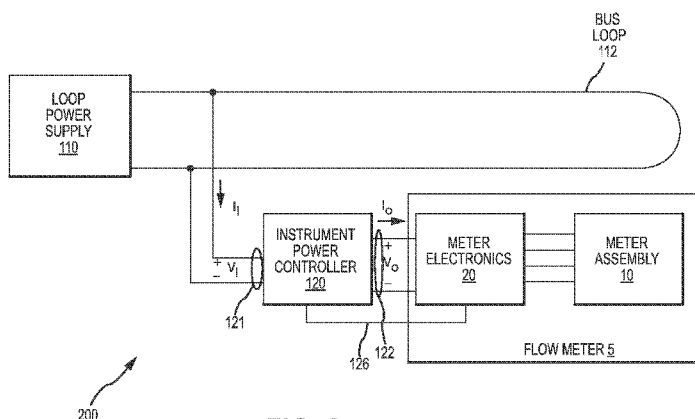


FIG. 2

(57) Abstract: An instrument power controller (120) for adaptively providing an output voltage V_O and an output current I_O that together maintain a substantially constant electrical output power P_O is provided. The controller (120) includes inputs (121) for receiving an input power P_I , outputs (122) for providing the substantially constant output power P_O to a variable impedance load L , and a communication path (126) for receiving a load voltage V_L . The instrument power controller (120) is configured to determine an input voltage V_I and an input current I_I , determine an effective resistance R_L of the load L and set the output voltage V_O and the output current I_O based on the input voltage V_I , the input current I_I , and the effective resistance R_L . The output voltage V_O is substantially independent from the input voltage V_I . The output voltage V_O and the output current I_O are varied to maximize a load power P_L while maintaining the substantially constant electrical output power P_O .