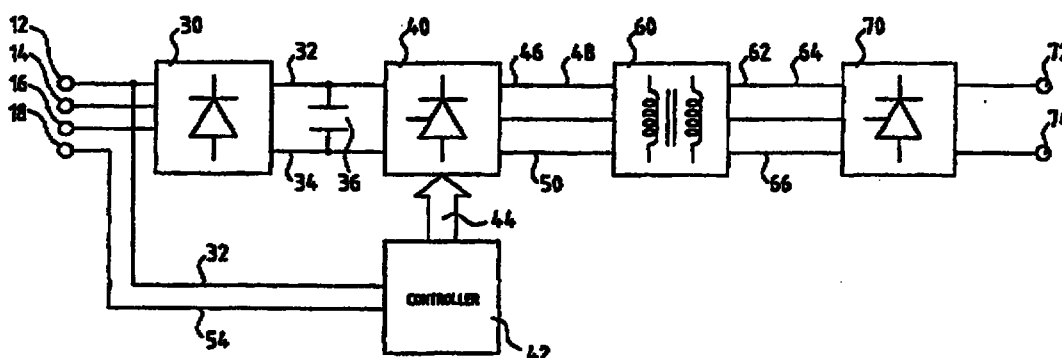


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(54) Title: AN AC-DC POWER SUPPLY**(57) Abstract**

This invention provides an AC-DC power supply for receiving a three phase mains supply and outputting a transform DC supply. The power supply unit has a rectifier circuit providing an output to a controlled three phase inverted circuit to generate a pseudo-AC three phase output of higher frequency than the AC supplied to the rectifier circuit. A three phase transformer is provided to receive the pseudo-AC three phase output and transform the output and provides us to a three phase rectifier circuit to generate the toutput DC supply. The inverter circuit may provide a three leg bridge structure with each leg having a controlled switching device one of which is used to provide a phase reference. The switching devices of the other two legs may control the relative phase shift on each leg to reduce the phase shift relative to the phase reference on one leg and increase the phase shift relative to the phase reference on the other leg. This is used to control the output voltage level of the inverter circuit. The entire AC-DC power supply may be linked to a gas generator for the electrolysis of water to liberate hydrogen and oxygen.