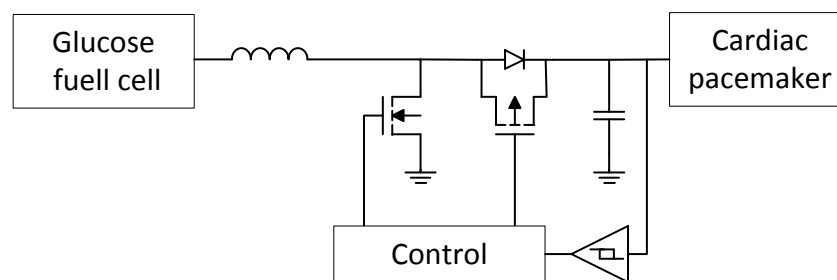


Master Thesis

Development and Implementation of a DC-DC Converter for Glucose Fuel Cell

The power supply for cardiac pacemakers is usually provided by batteries. However, these batteries have to be replaced by means of surgeries since their lifetime is limited. Glucose fuel cells are considered as a promising means to overcome this inconvenience. They use glucose within the human body to generate energy which results in an unlimited lifetime. For these glucose fuel cells, a highly efficient, low-power and low-voltage integrated dc-dc converter is needed.



The task of this master thesis is the development of an integrated dc-dc converter which is able to operate under ultra-low power and ultra-low voltage conditions. Moreover, a low-power control circuit is to be developed in order to achieve high efficiency since only some microwatts are transferred from the glucose fuel cell to the cardiac pacemaker. A low power consumption of the circuit is thus of utmost importance.

During the thesis, analog and digital control concepts as well as the dc-dc converter have to be analyzed and implemented using the CADENCE Virtuoso design suite.

What we expect:

Interest in the design of electronic circuits, independent and well documented work.

What we offer:

Intensive supervision of the thesis, nice work environment in a team, latest simulation software tools, electronic design automation tools, excellent lab equipment, and free space for own ideas.

Starting Date: As soon as possible.

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