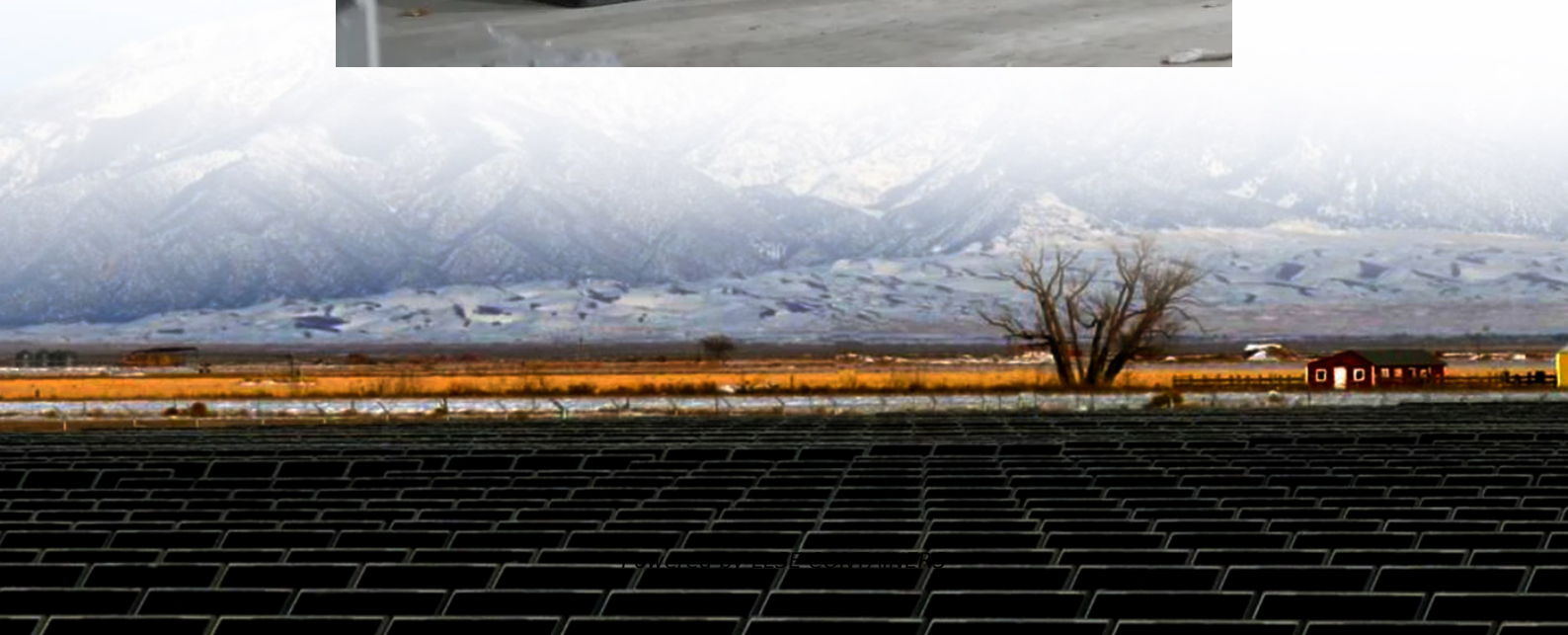


# **Vienna wind power system import**





## Overview

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Can a Vienna Rectifier be used for a 5 MW wind turbine?

The purpose of this thesis is to design and evaluate a Vienna rectifier for a 5 MW wind turbine with a PMSG, to estimate the efficiency and the maximum power extraction using this rectifier. Moreover, an objective is to choose the suitable power electronic switches for the rectifier.

Can a Vienna Rectifier be used with a PMSG?

The main focus of this thesis has been on the behavior of the Vienna rectifier with a PMSG for a 5 MW wind turbine system. The Vienna rectifier has been simulated in the Simplorer software with a low switching frequency. It might be interesting to design a real PMSG and connect the Vienna rectifier to it.

How is the Vienna Rectifier setup simulated?

The system is simulated in the Ansys Simplorer software and calculations have been done by Matlab. In Chapter 3, the Vienna rectifier setup with a PMSG has been explained and the analytical relation between electrical power and dc-link voltage has been proposed.

How many MW output power can a Vienna Rectifier extract?

As described before, the Vienna rectifier has an ability to operate on a wide range of dc link voltages. The results show that there is a possibility to extract 5 MW output power from the system at 9100 V dc where there is no need for compensation. The aim of this part is to calculate the size of the output capacitors for the Vienna rectifier.



## Vienna wind power system import

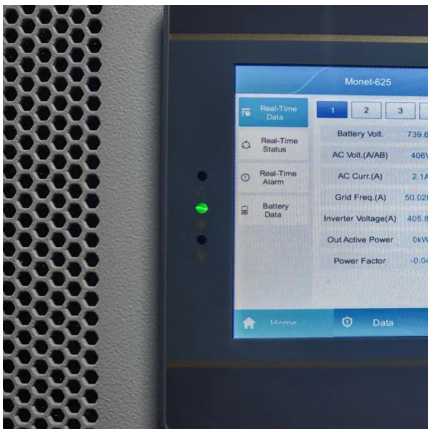


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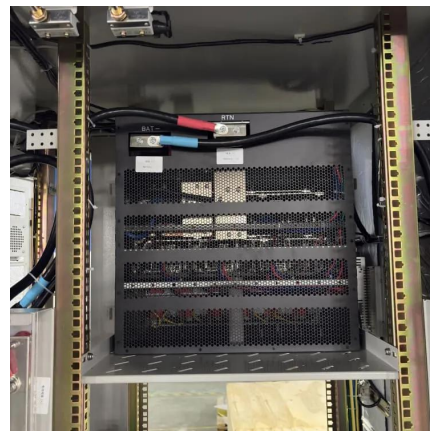
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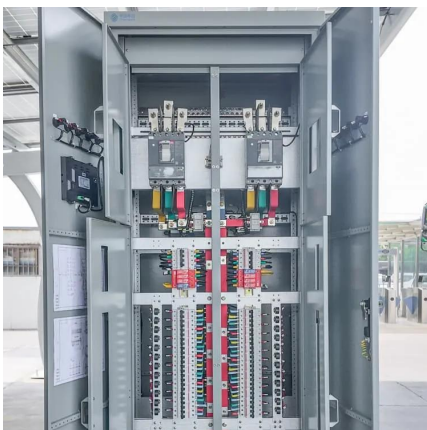
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