

Thermal management of power electronic converters

Lecturer: **Hamid Reza Salehi, Nian electronic company R&D department**

Description: The hazards imposed to systems caused by the power losses of different converter components in the form of heat are major challenges in power electronic systems, making the cooling or heat removal a key factor in design optimization.

Heat transfer control is a highly effective solution to the above problem. Technically speaking, evaluating the heat dissipations and designing a proper heat transfer scheme for power electronic systems is called **thermal management**.

Putting in mind that the chosen cooling method has a direct impact on the component temperature and noticing that by reducing the electronic device temperatures, their reliability and system life-time will increase considerably. This workshop shows the importance of taking control of power electronic components temperature and it is aimed on presenting the brand new practical approaches to cool-down and manage the heat dissipated from the switching components.

This workshop ends with an introduction to the environmental cooling systems and some hands on, and real problems and also a comparison between different thermal simulations.

The main topics are listed below:

- Abstract and Introduction
- The effect of device temperature on expected lifetime and system reliability
- Different Cooling methods in Power Electronics



Hamid Reza Salehi was born in Ahvaz, Iran, in 1984. He received his B.Sc. degree of Mechanical engineering in Solid design from Azad university of Ahvaz Iran, in 2008. He was a technician in Karoon Industrial Shed Company and Mahshar-Ahvaz Piping Company respectively from 2006 to 2008. He used to work as a mechanical engineer in building Casting-Concrete industrial machines in Foom Boton Machine Company from 2011 to 2012. In 2012 he joined the R&D department of Nian electronic company as a mechanical engineer where he designed and executed various projects in the field of renewable energies etc. wind and solar. He is the mechanical designer of a 100 KW Wind Converter Rack and the artificer of 1.5 to 60 KW solar inverter structures. He also fabricated the DC air conditioner of Outdoor Telecom Cabines in miscellaneous power ranges of 0.5 to 3KW. He is now the lecturer of DC air conditioner products in Nian electronic company. a member of Iran's best R&D department from Iran's Ministry of Industry, Mining and Business in 2014, a member of Khorasan province best R&D department from Khorasan Construction of Industries and also a member of Khorasan province best R&D department from the fourth festival of Research and Innovation both in 2015. Currently he still is a member of R&D department in Nian electronic company