Abstract: Soon renewable energy sources such as wind and solar will be responsible for mainstream power generation. As a result, there is great interest in developing the technology necessary to bring renewable energy to the forefront. Micro-grids allow renewable energy systems to be integrated into the power system, which makes them an essential component of future power systems. There are three types of micro-grids: AC micro-grids, DC micro-grids and hybrid micro-grids. AC micro-grids have been an active research topic because the current grid infrastructure is based on AC power delivery. Therefore, AC micro-grids can be integrated into the current infrastructure for the purpose of integrating renewable energy sources into the power system. However, the exponential growth of DC sources/loads (e.g., solar power, batteries, LEDs, smartphones, chargers, computers, servers, etc.) make the development of DC micro-grids desirable. This is because DC sources/loads are most efficiently used in a DC power architecture. DC micro-grids will be the building blocks of future power systems due to their superior performance in terms of efficiency and reliability. This research seminar will describe the challenges related to DC micro-grids and the research solutions that will make them a viable option for future power systems.

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