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On the use and certification of lithium-ion batteries in Norwegian military aircraft

A lithium-ion battery is a type of rechargeable battery which uses the reversible reduction of lithium ions to store energy. It is the predominant battery type used in portable consumer electronics and electric vehicles, and the recent years there has been a major increase in the use of lithium-ion batteries in aviation.
Lithium-ion batteries has a significantly higher energy density than previous commercially available batteries and can be a safety hazard if not properly engineered and manufactured since the battery cells have flammable electrolytes. Damage or incorrect charging of the batteries can lead to explosions and fires which can cause a significant risk to both personnel and the aircraft itself.
There has been much development on the safety regarding manufacturing and handling of these batteries and this MAIB serves as a guideline from the MAA-NOR on the considerations that should be made when introducing lithium batteries or components containing lithium batteries as part of an introduction of non-installed equipment or a modification/change to the aircraft type design.

It is a desire from the MAA-NOR that Design Organizations or other applicants use the MIL-HDBK-516 or the European Military Airworthiness Certification Criteria (EMACC) when introducing new or updating non-installed equipment, or designing a change to an aircraft. The MIL-HDBK-516 and EMACC are a certification handbook and certification criteria, respectively, which are closely linked and overlapping, and serves as a foundation for establishing the correct certification criteria to be evaluated when introducing changes to a military aircraft.
A benefit of these handbooks/certification criteria is that they are referencing commercial certification specifications such as the EASA CSs and FAA FARs, and that their Means of Compliance (MoC) and standards can be tailored, if approved by the national airworthiness authority.
It is a desire from the MAA-NOR that when introducing new lithium batteries in Norwegian military aircraft, the Design Organizations or other applicants should at least use:

- Certification Criteria 12.1.6.1 in the MIL-HDBK-516C
- US Air Force LCMC Advisory Circulatory AC-21-01, AW Certification Criteria, and/or the
- US Navy NAVSEA S9310-AQ-SAF-010, Technical Manual for Navy Lithium Battery Safety Program Responsibilities and Procedures

References/links:

https://en.wikipedia.org/wiki/Lithium-ion_battery
MIL-HDBK-516C, Airworthiness Certification Criteria
AC-21-01, AW Certification Requirements for Lithium Batteries
NAVSEA S9310-AQ-SAF-010, Technical Manual for Navy Lithium Battery Safety Program Responsibilities and Procedures