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Construction status of the superconducting magnet system for the COMET experiment

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The COMET experiment, which is being prepared at the Japan Proton Accelerator Research Complex (J-PARC) in Tokai-mura, Ibaraki Prefecture, aims to explore the rare decay phenomenon of muons.
This phenomenon is not allowed in the Standard Model of elementary particles but is expected to occur due to new physics beyond the Standard Model.
In the COMET experiment, superconducting magnets are used throughout the muon beamline.
One is the pion capture solenoid to focus the pions generated by the injection of proton beams into the target.
Since this magnet surrounds the target, it is designed to operate in a high radiation environment.
The second is the muon transport solenoid to guide the muons generated by the decay of pions.
This magnet maximizes the muon yield and reduces the other background particles.
The third is the detector solenoid to track the electrons generated by the decay of muons.
These superconducting magnets are now being developed and manufactured.
And the current lead box is also manufactured to supply high currents to the magnets, with a thermal gradient from the room-temperature part of the power supply to the low-temperature part of the coil.
It is designed to provide a large thermal gradient over a short distance using high-temperature superconductors.
Thanks to the current lead box, all magnets, including the high-temperature superconducting leads, are cooled by conduction cooling.
In this talk, the construction status of the COMET superconducting magnet system will be reported.

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