Study on the Method of Recycle and Reuse of Ground Coils for Maglev

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Because ground coils that are enormous in number in maglev systems will be updated after the end of the predetermined period, it is necessary to consider the treatment of the removed ground coils. If the components of the ground coil can be recycled, there is a possibility of finding merit in terms of environmental loads and costs. Therefore, we studied a recycling method for the ground coil composed of a metal conductor and mold resin, and calculated environmental loads in the application of the recycling method. In addition, we studied a reuse method by partial repair. As a result, we found conditions under which a metal conductor can be separated from mold resin in the ground coil by the normal pressure melting method, and established a chemical recycling method. And based on the application of this recycling method, we estimated environmental loads by LCA (Life Cycle Assessment) and showed that it has advantages in terms of CO_2 emissions. In addition, the improvement of the fatigue strength of the mold resin of the ground coil was anticipated by proper repair treatment using thermosetting resin, and we got a prospect of the reuse of the ground coils.