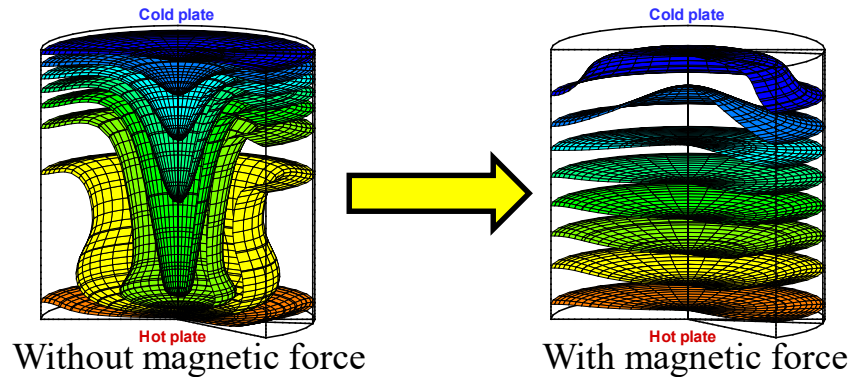


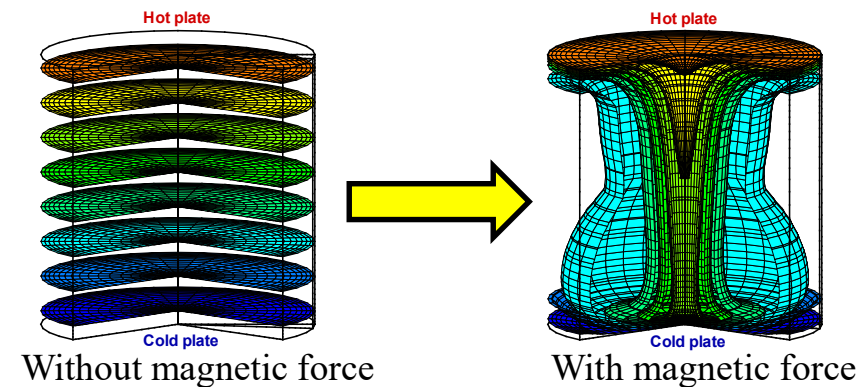
# Heat transfer control of non-ferrous fluid by magnetic force

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## Effect of magnetic force on natural convection of air



## Effect of magnetic force on density stratification of air



**Content :** The magnetic force is a body force as well as a gravitational buoyant force and is generated only under an inhomogeneous magnetic field. Although this force acts on all substances, the magnetic force acting on a non-ferrous fluid can usually be disregarded. However, it is not possible to disregard the effect of a magnetic force under the steep magnetic gradient generated by a super-conducting magnet. Recently, a superconducting magnet that does not require liquid helium has been developed. At present, it is possible for this superconducting magnet to generate a strong magnetic field of 10 T or more. Therefore, research into the effect of magnetic force on all kinds of substances are being carried out in various fields. The generation of a magnetic force inside the bore space of a super-conducting magnet has produced many interesting phenomena.

**Appealing point:** In order to clarify the fluid flow and heat transfer characteristics of the magnetothermal convection of non-ferrous fluid created by a magnetic force inside the bore space of the super-conducting magnet and to consider its possible engineering applications, we have been carrying out the research by means of both the numerical simulation and experiment.

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