General optimization of electrical enclosures at ABB
The electrical enclosures: large boxes with external ventilation or sealed completely or partly for several years.

The enclosures host several electrical components - conductors, cables, support materials, etc. These electrical cabinets have electric current passing through, an electromagnetic field and a fluid flow induced by the excess heat generated by the conductors and components or other sources.

The challenge is how to optimize the enclosure in a way to fulfill properly its electrical functionality with the minimum losses and ensure that the excess heat is properly cooled to guarantee the appropriate operating conditions.

Multi-physics: Maxwell equations, strongly coupled with the Navier-Stokes equations

Objective: minimizing the losses and the cost as well as cooling efficiently.

Task: focus on a relatively simple case and build a methodology to optimize it.

--------> The problem is of interest for ABB and we expect to collaborate on the project.

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