

Magnesium as an engineering material: expectations, problems, research, and use in German aircraft construction between the middle of the 19th century and the end of World War II

Since 1909, the *Chemische Fabrik Griesheim-Elektron* (which merged to *IG-Farbenindustrie AG* in 1925) had promoted magnesium as the lightest engineering material for practical use. As the density of magnesium is lower than that of aluminium, using the same volume of magnesium instead of aluminium enables weight savings of 30 to 50 percent.

The present dissertation is on the history of the magnesium-producing and -processing industries, magnesium research, and the use of magnesium in the aviation industry in Germany between 1850 and 1945. Furthermore, it assesses the benefits of the use of magnesium.

In order to identify where the use of magnesium alloys in the aircraft industry made sense both in terms of quantity and quality, various cases were analysed. Based on this case study, areas were identified in which the use of magnesium components typically was a success, or in which using magnesium usually failed. To this end, written sources were used and materials testings were conducted with items from the holdings of the Bundeswehr Museum of Military History – Berlin-Gatow Airfield.