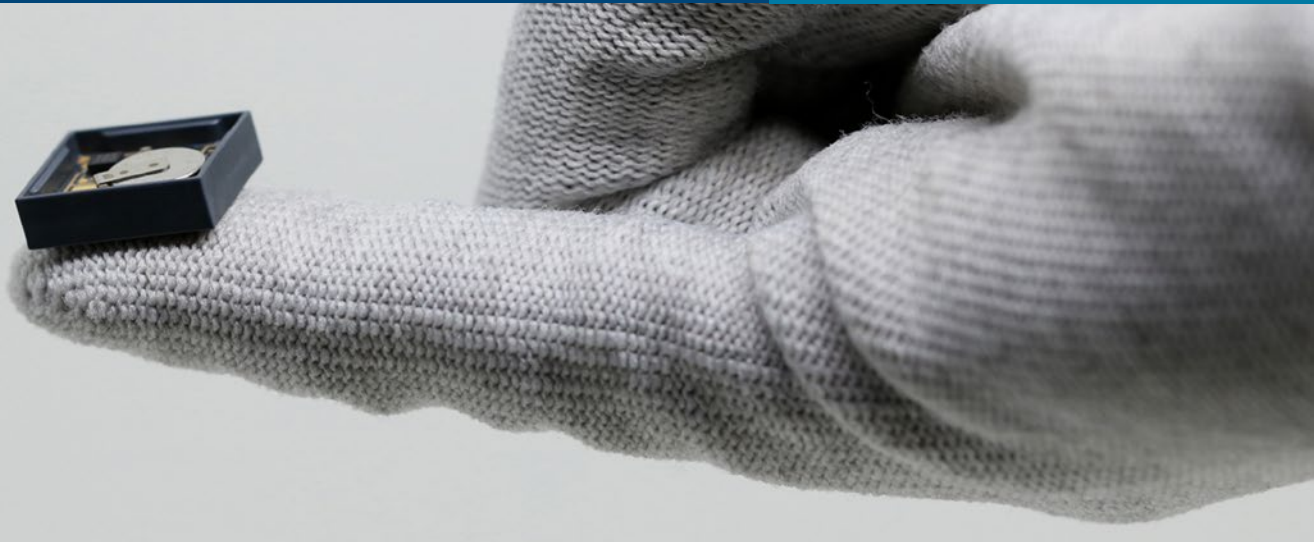




Best practice example

for lightweighting in Germany

3D MID technology



RFID communication module

Functional integration in lightweight structures

Fields of application



Automotives



Electronics industry



Medical technology

In this example, lightweighting allowed for the following reductions compared to a conventional model:



Weight approx. -9 %



Energy approx. -10 to -30 %

Application

3D MIDs (moulded interconnect devices) are injection-moulded, multi-functional, three-dimensional circuit carriers.

Plastic components and other carrier materials are refined by means of electrical or mechanical functional elements and can thus be used as mechatronic components.

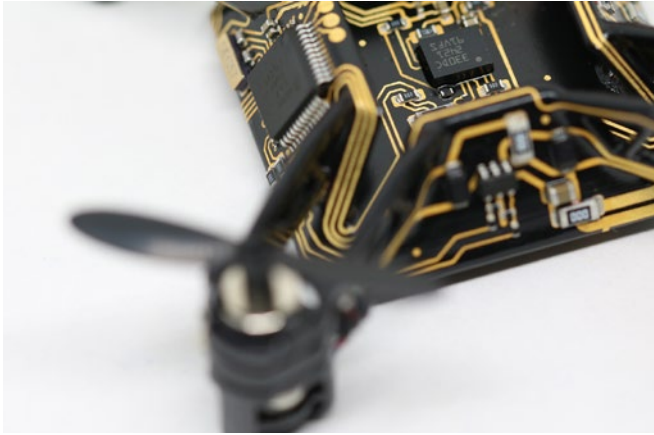
Challenge

In order to save weight and to meet the requirements of limited assembly space, new solutions have to be devised in order to further miniaturise the modules. In many cases, replicating a smaller version of the status quo is not enough. What is often needed is for further functions to be integrated as well.

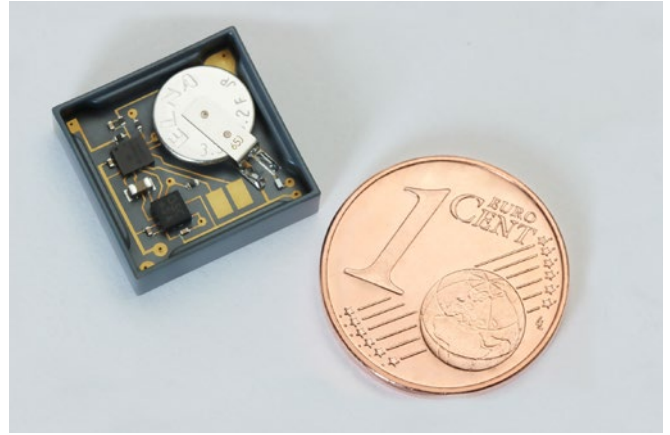
Solution

In order to respond to the increasing need for miniaturisation, 3D MID technology allows electronic and mechanical functions to be integrated into existing components. With the help of special additive processes, existing lightweight elements can thus be expanded to incorporate smart functions.

Best Practice Example | 3D MID technology



MIDCopter



3D MID RFID communication module

Other potential applications



Aircraft construction



Commercial vehicle manufacturing



Spacecraft construction



Manufacture of other vehicles

3D MID technology also enables a reduction in the number of individual product components, which can make product assembly a lot easier.

In this way, the costs of final assembly can be reduced and risks along the manufacturing chain minimised. Given the broad spectrum of polymeric materials used, 3D MID technology also

lends itself to applications with high requirements regarding mechanical stability, temperature resistance, chemical resistance, high-frequency properties and other characteristics.

Various thermoplastic, i.e. mouldable polymers, are used as materials for 3D MIDs: ABS, PC, PC/ABS, PBT and PA. Also, high-performance thermoplastics

with liquid crystal properties (LCP) or high temperature resistance (PEEK) can be processed.

Compliance with all requirements relevant for the sector is being ensured. Research activities are being conducted so as to further improve health and safety, environmental protection and recycling.



The LIGHTWEIGHTING ATLAS

The LIGHTWEIGHTING ATLAS is an interactive web portal that pools information on those active in lightweighting and their skills across different industries and materials. The atlas is free to use and entries into the atlas are also free. You can find the LIGHTWEIGHTING ATLAS at www.leichtbauatlas.de

The Lightweighting Initiative

Modern lightweighting is of pivotal importance for German industry and its competitiveness. Federal Ministry for Economic Affairs and Climate Action has established the Lightweighting Initiative to support lightweighting in Germany. The Lightweighting Initiative Coordination Office in Berlin, which is financed as part of the initiative, pools all activities relevant to lightweighting and supports German companies, especially SMEs, as they implement lightweighting.

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