Three AMR sensors are integrated on a Silicon interposer and a carrier device developed by Fraunhofer ENAS. Both the 3D interposer and the carrier device are fabricated on 6 inch Silicon wafer substrates by using common semiconductor technologies. In respect to the small size of the Silicon devices (3D interposer – 4 mm x 5 mm; carrier device – 2.5 mm x 0.83 mm) an efficient production on 150 mm substrates is possible due to the parallel processing on wafer level. PVD and ECD is used to metallized the interposer and carrier device. The carrier device is inserted into a dry etched through Silicon hole. Copper pads (ECD grown and 50 µm thick) connect the carrier device to the 3D interposer. The electrical connection between both devices is done by soldering.

The advanced connection principle is developed for narrow alignment. The interposer technology can be used for a variety of MEMS devices, which have to be aligned 90° and connected perpendicularly to a substrate (3D integration). Using these technologies also other sensor systems could be mounted for 3D measurement.