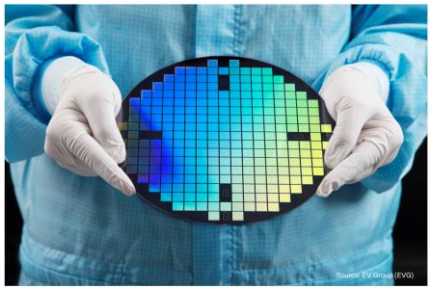
Fabrication of Sensor Packages enabled by Additive Manufacturing - TINKER

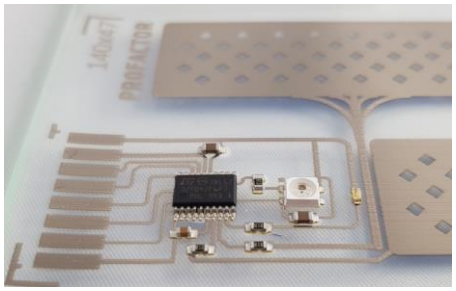
Introduction:

Autonomous driving and self-driving cars represent one prominent example for the use of microelectronics and sensors, most importantly RADAR and LiDAR sensors. Their respective markets have a big potential, e.g. it is estimated that the market size of LiDAR in automotive will double itself in the next two years (within 2020 to 2022). The public awareness and the industrial need for further miniaturization of such sensor packages is the main driver of ongoing efforts in the automotive sector to be able to integrate such devices into the car body like in the bumpers, grilles and exterior lamps (headlights & rear lamps) instead of attaching them (e.g. on top of the car in case of LiDAR device). Safety (for the driver and others) is the most important key aspect of the automotive sector. Therefore, highly-value and high-performance RADAR and LiDAR systems are required for advanced driver-assistance systems (ADAS) as well as autonomous cars. Current bottlenecks are relevantly large size of such sensor devices, their weight and power consumption. Since these factors are highly limited within cars, further miniaturization and improving functionality and efficient use of resources is highly demanded.

Project description:

The project TINKER targets the development of a new reliable, accurate, functional, cost-affordable and resource-efficient pathway for RADAR and LiDAR sensor package fabrication, following 2 main objectives: Establishing the TINKER platform based on Additive Manufacturing {AM} and Fabrication of RADAR and LiDAR sensor packages as use cases. TINKER's approaches to nanoimprint lithography, as disruptive and flexible manufacturing techniques in micro-part assembling is in alliance with the overall scope of the call "Transforming European Industry". The proposed TINKER pilot represents a high degree of flexibility and reliability due to its modular character.





Project facts:

Start date: 01/10/2020
End date: 30/09/2023

Duration in months: 36

Project EU funding: €10,2M

H2020 Research & Innovation Action
Grant Agreement no.: 958472

Call (part) identifier:
H2020-NMBP-TR-IND-2018-2020 submitted for H2020-NMBP-TR-IND-2020-singlestage / 05 Feb 2020

Topic:
Assembly of micro parts (RIA)

Keywords:
LiDAR, RADAR, 3D printing, NIL, RF antenna, inkjet

Expacted Impact:

According to the work program, TINKER addresses the expected impacts, such as decrease of production time, measurable increase of automation level, higher or similar precision level and reduction in rejection rates during the production process. The main purposes of this project is to widen the range of available miniaturization and microelectronic fabrication possibilities including the novel approaches in assembly processes directly in production steps.

The project includes top EU innovation performers – 10 the most excellent industrial companies, 3 research specialists, 1 consultancy and a service association from 8 European countries, all cooperating together under the roof of TINKER as major players in the field of microelectronic manufacturing and processing and industrial fields applying or interested in applying AM for their needs and defending the European pole position in miniaturization, also by gaining new know-how and skills for involved SMEs and R&D companies.

Consortium:

PRO	Austria
AMI	Czech Rep
BOS	Germany
MAR	Italy
BESI	Austria
LETI	France
NOT	Germany
IFAG	Germany
EVG	Austria
SEN	Germany
FRT	Greece
PVN	Israel
TIG	Austria
IKR	Finland
ASI	Austria

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