



## SEAL SP3 – A2D2 Advanced Vacuum wafer Drying for TLS Dicing

### AT A GLANCE

Evaluation of a cleaning  
method for diced wafers  
Integration and assessment  
of vacuum drying module in a  
TLS dicing tool

### PARTNERS

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Fraunhofer IISB  
Jenoptik Automatisierungstechnik

### Advances in A2D2

Objectives: laser based wafer dicer, successfully demonstrated by Jenoptik, was enhanced with vacuum drying process to remove water residues from diced wafers (side effect of the TLS approach).

### Activities performed :

- Definition of requirements for assessment
- A vacuum drying module was designed, prepared & manufactured
- Technical assessment was prepared & performed
- All developments done to have industrial prototype ready (mechanics; communication & electrics) and compatible with industrial assessment.
- Study of different industrial applications
- Dissemination including an international workshop



*Figure 1: Calibrated droplets on various wafers /materials for frame and tape for experimental drying tests*



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### Project Results

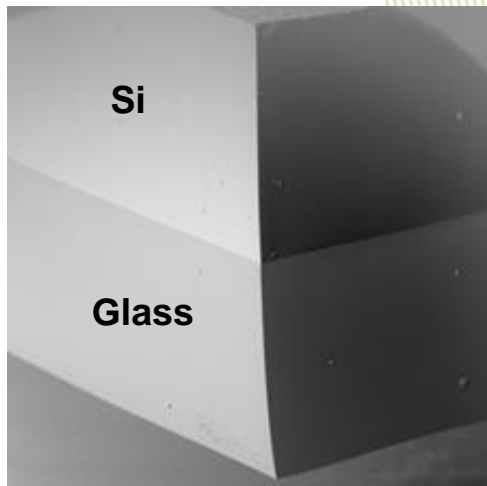
- Vacuum drying module demonstrated as an efficient and competitive alternative for short drying process after TLS dicing step.
- Obtain a fully efficient, high quality and short clean drying process.
- Providing increased functionality, yield and separation of thinner and more flexible products and enhanced dicing speed.
- Various industrial applications identified.

### **SEAL PROJECT MANAGEMENT**

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*Figure 2: Versatile demonstrator for drying process.*



*Figure 3: Topographic SEM images of exemplary TLS result (here: Si on glass with a total thickness of 950  $\mu\text{m}$ ) - smooth interface between silicon and glass, no chipping, no micro cracks.*

### **SP3 – CONTACT**

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