

New power optical microscope for EFA Laboratory
<http://onpy.onsemi.com/efa/>

Even before announcement of ONPY FAB closure, project on application of rejected Leica microscope for analytical purposes in EFA Laboratory was started. Previously broken microscope was used as a source of replacement parts for production. The microscope was found cannibalized in storage area and it was completely out of order. Practically speaking what could be used was used and the only non-serviceable parts were remaining including broken electronics, missing optics and the incomplete wafer handler robot.



The figure above shows the microscope before entering into ONPY2 clean room. During this time the microscope passed through numerous repairs and modifications. Broken electronics was repaired on an IC level which kept costs at a minimum. Remaining parts of wafer handler, not needed for analytical purposes, were uninstalled and replaced by a steel platform for samples. A new 5 megapixel CMOS camera with 2D measurement software was purchased and installed. Reused PC from IT department was applied for image acquisition and storage. The original TV monitor was replaced by a new LCD panel with self designed holder. Finally, the microscope stage was designed to hold not only wafers but also SEM holders as well as assembled ICs and other types of samples.

The stage surface was hard anodized in order to create appropriate abrasion resistant surface (50um, Al₂O₃). Missing objectives were replaced by Leitz objectives from previous TESLA stock. In order to adapt these Leitz objectives adaptation rings were designed and produced in ONPY. The microscope nowadays presents power optical microscope with magnifications up to 1500x within the visible light spectra. It offers five apertures, dark field and UV inspection modes as well. High resolution image is grabbed through USB port offering high optical resolution and user friendly interface. Dimensions of a sample can be measured directly in imaging software by help of 2D measurement utility.



Regarding financial point, direct costs for bringing this great tool to life were below 3.5 k USD, what is in negligible investment compared to similar new or refurbished tool. In the future it is possible to extend this microscope with laser scanning (confocal), which offers a marginal increase of the microscope resolution but fills the gap between optical and SEM systems.

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Dalibor Mikulas for technical support, Jozef Janiska, Juraj Kubatka for IT support. However ONPY FAB is planned to be closed next year, there are still ongoing activities in EFA laboratory focused on expansion of available analytical techniques. EFA laboratory is continuing to offer FA support for internal customers as can be reviewed in numerous reports located in folder \\Bezovec\efa.

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