EUV Pellicle Update

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Over the past years, ASML has taken the EUV pellicle from the concept level to pilot production and subsequently to a product that is being shipped to EUV customers, and being used in EUV scanners. Tooling is available to mount and demount pellicles to EUV masks.

To enable defect free imaging today's pellicles have zero defects larger than 25um, and single digit defects in the 10-25um range, as is shown in Figure 1. Several pellicles with zero defects > 10um have been manufactured

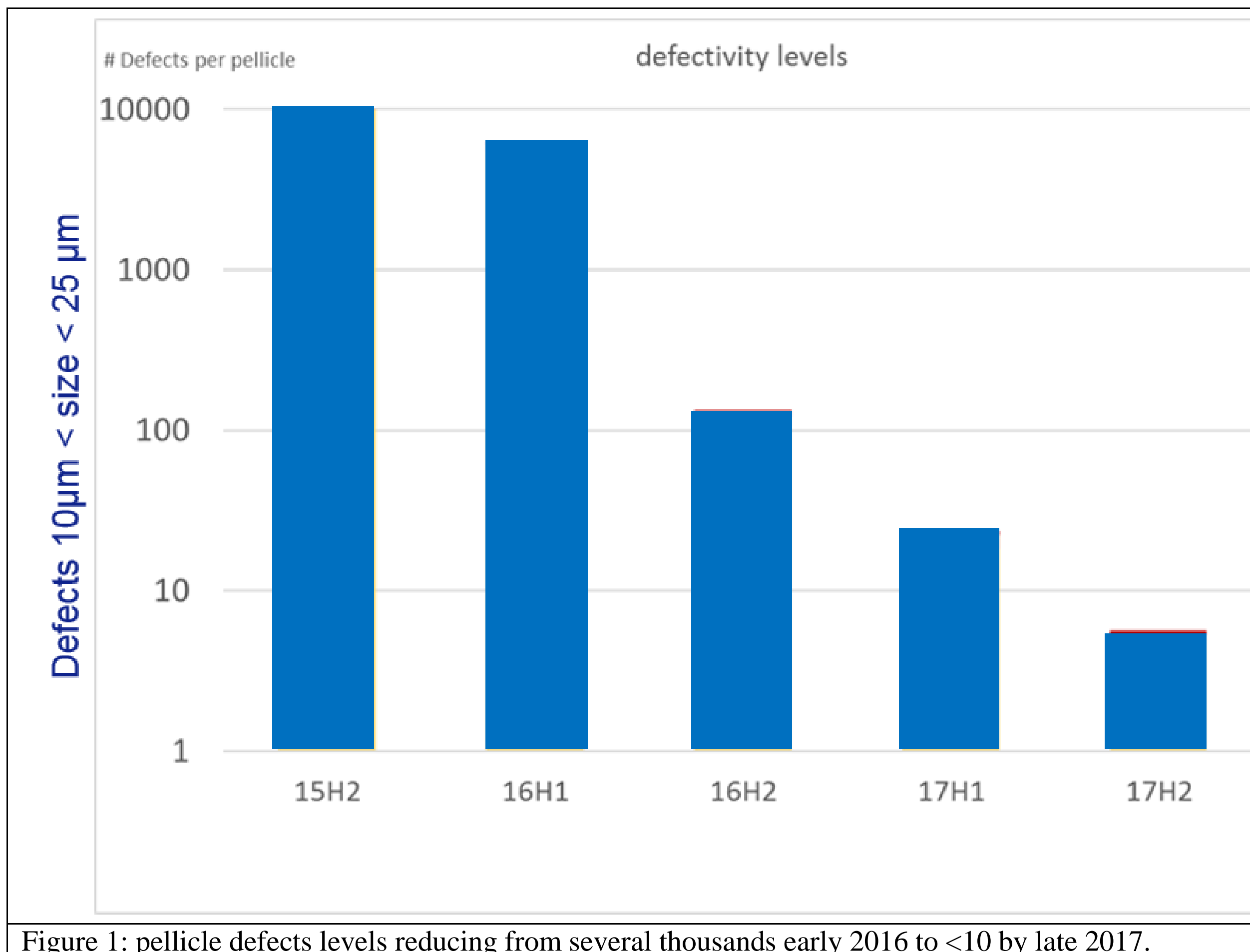

Figure 1: pellicle defects levels reducing from several thousands early 2016 to <10 by late 2017.

Full size pellicles with single pass transmission in the 78-80% range are regularly available and testing of >83% transmission pellicles has started. Pellicle stack selection for the next generation > 88% has started.

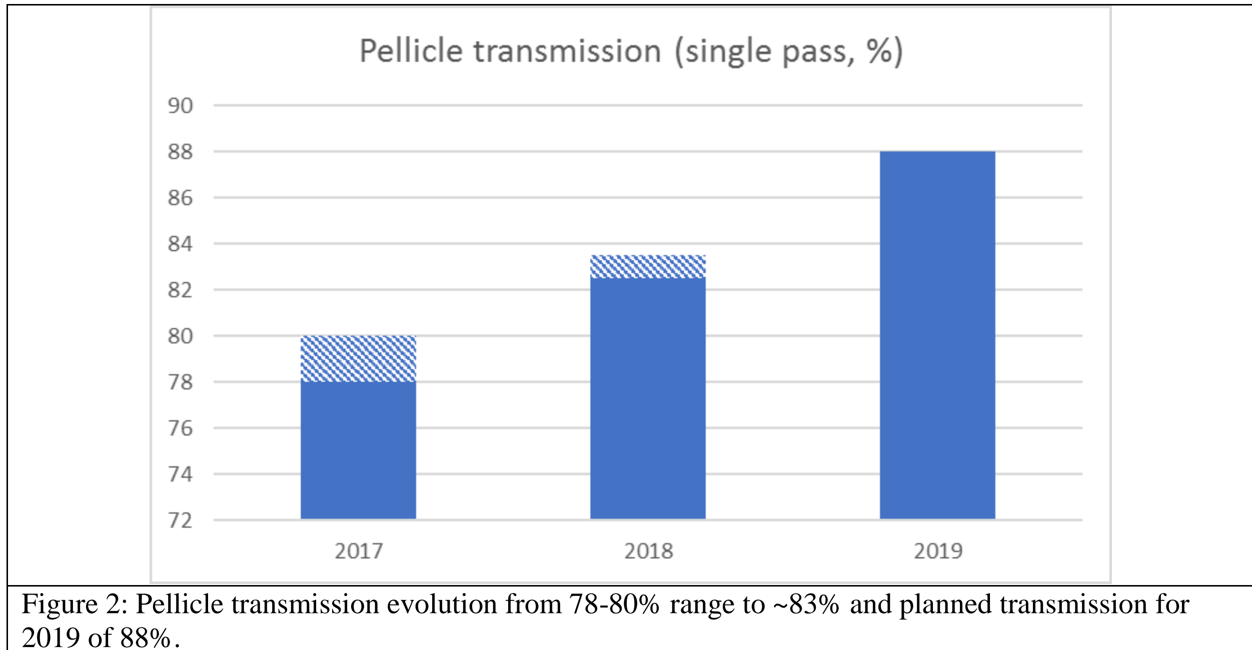

Figure 2: Pellicle transmission evolution from 78-80% range to ~83% and planned transmission for 2019 of 88%.

Apart from pellicle-level performance, we will also show in-scanner performance, such as CD uniformity impact of the pellicle, and pellicle endurance test results.