LYON, France – November 22, 2018: The overall semiconductor equipment market is today worth several billion dollars. By contrast, the permanent bonding, temporary bonding and debonding and lithography equipment market for the MtM industry is a small niche representing millions of dollars. However, megatrend markets push MtM devices to new levels of complexity, resulting in big investments. Consequently, the total equipment market for these process steps generated revenue of more than US$500 million in 2017. It is then expected to peak at almost US$900 million by 2023, with a 10% CAGR over this period. This is mostly driven by lithography market segment, showing a 10% CAGR between 2017 and 2023, to reach about US$600 million at the end of the period.

Yole Développement (Yole) releases this month its technology & market report dedicated to bonding and lithography equipment market for MtM devices. In its new edition, the market research and strategy consulting company proposes a comprehensive overview of the bonding and lithography equipment for MtM devices with an accurate update of the 2017-2023 equipment market forecasts. This report points out the technology trends across MtM devices and details the related technology roadmap. The 2018 edition reveals a valuable analysis based on competitive landscape as well as a detailed comparison between new brand and refurbished equipment by MtM device.

Megatrend markets are pushing MtM devices to new levels of complexity, resulting in big investments. Behind these markets, the lithography equipment ecosystem is directly impacted. Yole’s analysts
invite you to discover today the latest technology trends and understand the market evolution.

Driven by megatrend applications, MtM devices could disrupt lithography technology adoption. Therefore megatrend applications like 5G wireless technologies, electric vehicles, and advanced mobile devices demand miniaturization and extra functionality. Fabricating the next MtM device generation requires tools with new technical specifications.

“These are very different to the "More Moore" mainstream semiconductor industry with respect to resolution, overlay, DOF, wafer bow and backside alignment”, explains Amandine Pizzagalli, Technology & Market Analyst, Semiconductor Manufacturing at Yole. MEMS, sensors and power devices have more relaxed specifications, so that mask aligner tools are sufficient at lower cost. However, megatrend applications are pushing devices with more stringent requirements, with lithographic features below 1μm. This would pave the way towards greater adoption of stepper tools.

Today, the new lithography equipment market for MtM devices is mostly driven by advanced packaging. This sector accounts today for almost 60% of the overall MtM lithography tools market and will continue dominating this industry with stepper technology.

Meanwhile, a high percentage of lithography equipment revenue for MEMS and sensors, CIS and power devices comes is generated by retrofitted tools coming from the legacy semiconductor industry. Nevertheless, new lithography systems will be shipped to meet smaller alignment and feature sizes, where older tools will face limitations.

The lithography equipment landscape for MtM devices is fragmented in different ways since it is served by two main company types:

- Specialist equipment vendors like Veeco, EVG, SUSS MicroTec, SMEE, who offer brand new lithography tools specifically for the MtM industry.
- Top-tier semiconductor equipment suppliers like ASML, Canon, Nikon, mostly supporting refurbished equipment.

For decades, Canon has offered lithography equipment for the front-end area. And as a key lithography equipment vendor, Canon leads the refurbished equipment market for power and

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3 DOF : Depth Of Focus
CIS devices. In order to capture additional market share in MtM devices, Canon has developed a strategy aimed at improving its product portfolio with brand-new MtM tools, available at a lower cost than its front-end lithography tools. Moreover, Canon is attempting to leverage their PVD deposition capabilities in the bonding business to launch a permanent bonding tool based on a metal interface.

Amandine Pizzagalli had the opportunity to share her vision of the lithography equipment industry with Doug Shelton, Marketing Manager at Canon. Both experts reviewed the technical challenges and market evolution during a dedicated interview. This discussion is today available on i-micronews.com. More.

A detailed description of the Bonding and Lithography Equipment Market for More than Moore Devices report is available on i-micronews.com, manufacturing reports section.
ABOUT THE REPORT:

**Bonding and Lithography Equipment Market for More than Moore Devices**

More than Moore devices fueled by megatrend applications will strongly drive the growth of the lithography, permanent bonding, and temporary bonding and debonding equipment market. – Produced by Yole Développement (Yole).

Companies cited in the report:

AGC, AML, AustriaMicrosystems (AMS), Amkor, ASE Group, ASML, ASM Pacific, AST, Ayumi industry, Applied Materials, Broadcom/Avago, BondTech, Canon, Corning, Delphi Laser, ERS, EVG, EO Technics, Infineon, Georgia Tech, ITRI, LAM Research, KLA Tencor/Orbotech, Kulicke & Soffia, JCET/Statschippac, Micron, Mitsubishi Heavy Industries, Murata, Nepes, Nikon, Qorvo, Qualcomm, On Semiconductor, ORC, PlanOptik, PowerTech Technology (PTI), Screen, Samsung, Shin Etsu, SK Hynix, Skyworks, SOITEC, SPIL, ST Microelectronics, SUSS MicroTec, Shanghai Micro Electronics Equipment Co (SMEE), SUMCO, SunEdison, Kingroup Optronics, Rudolph, Tazmo, Okmetic, TOK, Tokyo Electron Limited (TEL), TSMC, Ushio, Veeco, Via Mechanics... Full list

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Amandine Pizzagalli is a Technology & Market Analyst in Equipment & Materials - Semiconductor Manufacturing, at Yole Développement (Yole). Amandine is part of the development of the Semiconductor & Software division of Yole with the production of reports and custom consulting projects. She is in charge of comprehensive analyses focused on semiconductor equipment, materials and manufacturing processes. Previously, Amandine worked as Process engineer on CVD and ALD processes for semiconductor applications at Air Liquide. Amandine was based in Japan during one year to manage these projects. Amandine graduated from CPE Lyon (France), with a technical expertise in Semiconductor & Nano-Electronics and has a master focused on Semiconductor Manufacturing Technology, from KTH Royal Institute of Technology (Sweden). She has spoken in numerous international conferences and has authored or coauthored more than 10 papers

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The “More than Moore” market research, technology and strategy consulting company Yole Développement, along with its partners System Plus Consulting, PISEO and KnowMade, support industrial companies, investors and R&D organizations worldwide to help them understand markets and follow technology trends to grow their business. For more information, visit www.yole.fr and follow Yole on LinkedIn and Twitter.

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