ASM AMICRA Microtechnologies GmbH

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ASM AMICRA Microtechnologies is a world-wide leading supplier of ultra-high precision Die Attach Equipment specializing in submicron placement accuracy (±0.3µm @ 3 sigma). Our equipment offering supports:

- Die Attach and Flip Chip Bonding
- High Speed Wafer Inking and Inspection
- High Speed Dispense System

We continuously strive to provide our valued customers with extraordinary, high-technological engineering services & products for the whole industry field of microelectronics. With our dedicated team of highly experienced, creative technical and manufacturing professionals, we have collected more than 15 years of knowledge in all kinds of advanced micro assembly solutions.

Throughout the years we have developed advanced features and capabilities to support specific Advanced Packaging Markets in the backend assembly arena. ASM AMICRA’s Die Attach solutions continue to enable the advanced packaging market to push the boundaries forward and beyond. These unique innovative solutions enable our customer base to achieve some of the most accurate die placement performance in the world today while maintaining bonding rates that are 2x and 3x faster than our closest competitor in the markets we serve, resulting in a value proposition that is second to none.

Dr. Johann Weinhändler
Managing Director – Sales, Marketing, Business Development and Quality Management
- Responsible for Worldwide Business Development and the internationalization of ASM AMICRA
- Success in attracting internationally renowned clients
- Serves the role of the “visionary” and the “internationaliser” with strong experience in the semiconductor industry

Rudolf Kaiser
Managing Director – Finance, Administration, Software and Application
- Was a co-founder of AMICRA Microtechnologies GmbH
- Played an essential part in the development of control software and customer applications for ASM AMICRA
- He is the generalist of the management team

Horst Lapsien
Managing Director – Design & Production
- Was a co-founder of AMICRA Microtechnologies GmbH
- The technology platform of ASM AMICRA is mainly the result of Horst Lapsien’s development of precision mechanics
- Has a decisive role in the decisions and overall technical concepts of the ASM AMICRA systems

Stefan Wolf
Commercial Director – Finance & Administration
- Commercial Director of the Finance and Administration division, serves as the CFO
- Responsible for the expansion of controlling, human resources, purchasing and IT
- Brings a strong expertise in auditing in the field of accounting, finance and controlling, as well as provides the data basis for ASM AMICRA’s management decisions


Establishment of AMICRA Microtechnologies by Rudolf Kaiser and Horst Lapsien
Development of AFC Flip Chip
Company HQ is moved to Wernerwerkstr. 4 Regensburg, Germany
Product Launch of NOVA™
Second location is added in Regensburg, as well as branch offices in the USA and Singapore
Product Launch of AFC™
Opening of new HQ at Marie-Curie-Str. 6 Regensburg, Germany and launch of NANO
Acquired by ASM Pacific Technologies and renamed ASM AMICRA Microtechnologies GmbH
ASM Pacific Technology Limited (ASMPT) is a leading integrated solutions provider in semiconductor and electronics industries. The three business segments with leading market positions include:

- Back-end Equipment
- Materials Business
- SMT Solutions Business

Solutions include:
- Advanced Packaging
- Advanced Fine Pitch
- Copper Bonding
- Encapsulation
- Image Sensor
- Leadframe
- LED/Opto
- Low Pin Count & Discrete Applications
- Smart SMT Factory
- Display
- COB
- Photonics

**ASMPT at a Glance**

ASMPT is a world leader in the supply of semiconductor assembly and packaging equipment and materials as well as surface mount technology solutions.

**1975**
Incorporated

**Present in 30+ countries**

**#1 Assembly & Packaging Equipment Market**

**17,500**
Employees Worldwide

**8**
R&D Centers Worldwide

**10**
Significant manufacturing operations worldwide

**Packaging for Photonics**

With more than 40 years experience, extensive R&D capabilities and a full product portfolio, ASM provides innovative solutions across all Photonics applications including:

- Chip on Submount (COS)
- Chip on Chip (COC)
- USB
- HDMI
- COB
- Butterfly
- BOX
- TO-can
- Silicon photonics

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**2018 THOMSON REUTERS TOP100 GLOBAL TECH LEADER**

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NANO is our ultra-precision die and flip chip bonder for highly demanding assembly tasks billed as the highest-precision placement system in its class. The NANO supports a ±0.3µm placement accuracy at full speed and at 3 sigma.

It offers a host of outstanding features: quantitative parallelism calibration for large panel handling (up to 300 x 300mm), eutectic, as well as epoxy and UV bonding, UV dispensing, and in-situ curing.

The available dispensing options support all common dispenser technologies, and material traceability. Additionally, it offers three different heated options and is equipped for laser soldering and active bond force control. It is built on a vibration-free, high-quality granite platform.

Aiming at today’s, and future placement demands, NANO enables the reliable handling of ultra-small and very thin die.

The NANO Die Bonding system’s capabilities are perfect for optical device packaging, such as silicon photonics and semiconductor (TSV, DBI) applications.

NANO OVERVIEW

NANO is our ultra-precision die and flip chip bonder for highly demanding assembly tasks, which includes the following features:

- Supports ±0.3µm @ 3 sigma placement accuracy
- Supports all Die attach and Flip Chip applications
- High precision alignment optics
- Vibration Damping System
- Automatic Placement Off set Tuning System
- High resolution 300mm Bonding Station
- Dynamic Alignment System
- Quantitative Parallelism Calibration
- In-situ Eutectic Bonding Capability
- 3x Different Heated Options incl. Laser Soldering System
- Active Bond Force Control form 0.1 to 20N
- Epoxy Stamping and Dispensing capability
- UV Curing capability at the Bond Station
- Post-bond Inspection and Wafer Mapping Software
- Clean Room Inside with HEPA Filter and Ionizer
- Modular Machine Concept

MARKETS

- Single Mode/SiPhotonics/PIC/AOC/WLP
- Optical Device Packaging
- Direct Bond Interconnect
AFC\textsuperscript{Plus} is one of the most advanced die bonding systems on the market today. It is uncommon to find a precision die bonder that can maintain a placement accuracy down to ±1µm @ 3 sigma while bonding with temperatures exceeding 350°C and while also applying high bonding forces.

In many cases this type of die bonding can be classified as thermocompression bonding or TCB. And in other cases, these capabilities are also required for through silicon via or TSV. As a larger category of Advanced Packaging Die Attach, the AFC Plus is considered one of the most flexible Die Bonder on the market today. This capability makes the AFC Plus Die Bonding system perfect for optical device packaging, and semiconductor (TSV, DBI, CtW, CtC) applications.

**AFC\textsuperscript{Plus} OVERVIEW**

The AFC\textsuperscript{Plus} Die Bonder/Flip Chip Bonder is fully automatic, with exceptionally high precision and placement accuracy and includes the following:

- Accuracy ±1µm @ 3 sigma
- Cycle-time < 15 sec
- Assembly of chip and micro-optics (WDM, optoelectronic components, micro-lenses, micro-mechanics)
- Auto loading for substrate wafers
- Epoxy stamping and dispensing
- Eutectic bonding via diode-laser or heating plate
- Passive alignment

Optional:

- Flip chip bonding
- Wafer mapping
- Post bond inspection/measurement
- UV-Curing
  ... and more!

**MARKETS**

- AOC/VCSEL/Multi Mode/Lidar
- Silicon Photonics
- Laser Bar and MEMS Assembly
- Semiconductor Advanced Packaging (3D, Stack Die, etc.)
NOVAPlus offers the same basic die bonding technology as the AFCPlus but with the additional capabilities: High Speed Assembly, Large Die Bonding area, accommodating WLP Gen 4 and eWLP for the Fan-out (FOWLP) and Fan-in die bonding processes.

The NOVAPlus is truly unique to the Advanced Packaging Die Bonding market because of its ultra large substrate working area, (550x600mm and larger) all while maintaining a ±2.5µm @ 3 sigma placement accuracy. It can bond at high speed because of its dual bonding head system.

The NOVAPlus Die Bonding system is perfectly suited for the low end optical device packaging (VCSEL, Pin, Lens Attach) and semiconductor (TSV, FanOut, eWLB, Flipchip, etc.) applications.
Customer specific solutions

PIC/SiPhotonics

We offer two die attach solutions to address the SiPh/PIC market segment, primarily serving the high-volume production segment of the SiPh/PIC market.

NANO supports:
Accuracies down to ±0.3µm @ 3 sigma offering best in class placement accuracy

AFCPlus supports:
Die placement accuracies down to ±1µm @ 3 sigma with cycle-times down to 20 to 30 seconds/bond or 180 to 120 UPH

NOVAPlus supports:
Die placement accuracies down to ±2.5µm @ 3 sigma with cycle-times down to 3 seconds/bond or 1,200 UPH

Optoelectronics

We offer three die attach solutions to address the AOC market segment. We primarily serve the high volume production segment of the AOC market.

NANO supports:
Accuracies down to ±0.3µm @ 3 sigma offering best in class placement accuracy

AFCPlus supports:
Die placement accuracies down to ±1µm @ 3 sigma with cycle-times down to 20 seconds/bond or 180 UPH

NOVAPlus supports:
Die placement accuracies down to ±2.5µm @ 3 sigma with cycle-times down to 3 seconds/bond or 1,200 UPH

Automotive Sensors/LiDAR

We primarily serve the high volume production segment of the TCB market.

NANO supports:
Accuracies down to ±0.3µm @ 3 sigma offering best in class placement accuracy

AFCPlus supports:
Die placement accuracies down to ±1µm @ 3 sigma with cycle-times down to 20 to 30 seconds/bond or 180 to 120 UPH

NOVAPlus supports:
Die placement accuracies down to ±2.5µm @ 3 sigma with cycle-times down to 3 seconds/bond or 1,200 UPH

FanOut

ASM AMICRA offers a die attach solution dedicated to the FanOut process with additional features and options to support today’s known process and future variations that inevitably evolve as the FanOut process matures. ASM AMICRA serves the high-volume production segment of the FanOut market.

NOVAPlus supports:
Large bonding area of 600x600mm while maintaining die placement accuracies down to ±2.5µm @ 3 sigma with cycle-times down to 1.2 seconds/bond or 3,000 UPH
Our Comprehensive Photonics Product Portfolio

Front of Line
- LASER1205 Laser Dicing System
- ES101 Full color wafer AOI
- MS90 Wafer to Wafer Map Sorter
- AT420P Waffle/Gel-pak Die Handler

Die Attach Systems
- NANO Ultra High Precision Bonder
- AFC Plus High Precision Bonder
- NOVA Plus High Precision Bonder

Wire Bond
- AERO Series Horizontal Platform Wire Bonder
- Eagle60AP-LD 0-90° Rotary Platform Wire Bonder
- SeaHawk 2D AOI
- SkyHawk 3D AOI

Lens Attach & Active Alignment
- AD280 Plus Lens Attach System
- IS600GT Active Alignment Optical Lens Bonder

Ultra high precision die attach solutions to address the fast-growing silicon photonics market
In June 2017 the ASM AMICRA headquarter in Regensburg, Germany, moved locally to a new industrial site and was substantially enlarged to now encompass 5000 m² of work space, of which 1500 m² are equipped as its main production floor, including:

- 600m² cleanroom
- demo space for its AFC and NOVA systems.

In addition, our sales representatives are available worldwide in Asia, Europe and throughout the USA.

Do not hesitate to contact us!