ASM AMICRA

www.amicra.asmpt.com

ASM AMICRA
Inside Photonics

ENABLING THE DIGITAL WORLD

ASM AMICRA Microtechnologies GmbH

Inside Photonics

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ASM AMICRA Microtechnologies GmbH

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

2001 — Establishment of AMICRA Microtechnologies by Rudolf Kaiser and Horst Lapsien

2003 — Development of AFC Flip Chip

2008 — Company HQ is moved to Wernerwerkstr. 4 Regensburg, Germany

2010 — Product Launch of NOVA^{Plus}

2013 — Second location is added in Regensburg, as well as branch offices in the USA and Singapore

2011 — Product Launch of AFC^{Plus}

2017 — Opening of new HQ at Marie-Curie-Str. 6 Regensburg, Germany and launch of NANO

2018 — Acquired by ASM Pacific Technologies and renamed ASM AMICRA Microtechnologies GmbH

About
ASM Pacific Technologies

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**

ASM AMICRA

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

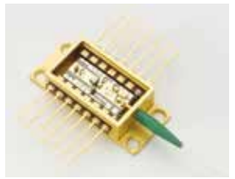
10
Significant manufacturing operations worldwide

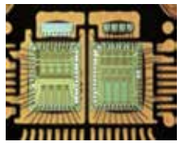
2018 THOMSON REUTERS
TOP100
GLOBAL TECH LEADER

Packaging for Photonics

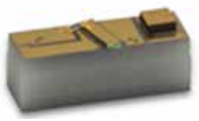
With more than 40 years experience, extensive R&D capabilities and a full product portfolio, ASM provides innovative solutions across all Photonics applications including:

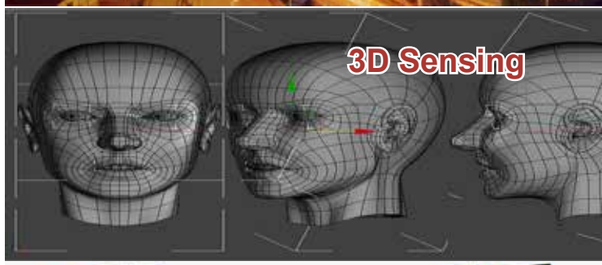
Chip on Submount (COS)
Chip on Chip (COC)
USB
HDMI
COB
Butterfly
BOX
TO-can
Silicon photonics





NANO
Ultra-Precision
Die Bonder

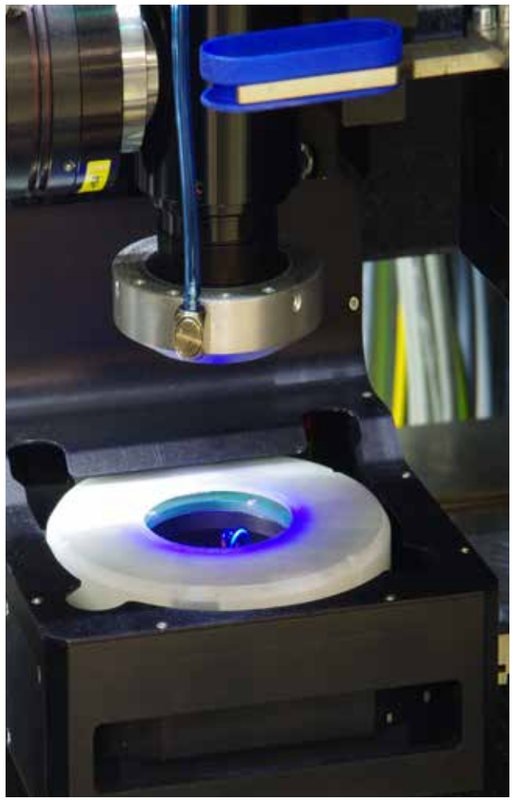
NANO is our ultra-precision die and flip chip bonder for highly demanding assembly tasks billed as the highest-precision placement system in its class. The NANO supports a **± 0.3µm** placement accuracy at full speed and at 3 sigma.

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

HIGHEST PLACEMENT ACCURACY IN ITS CLASS!

MARKETS

Single Mode/SiPhotonics/PIC/AOC/WLP

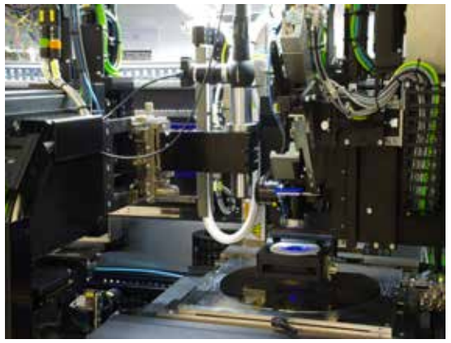
Optical Device Packaging

Direct Bond Interconnect

AFC^{Plus}
Fully Automatic
Sub-Micron Die Bonder

AFC^{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 Bonders 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^{Plus} OVERVIEW

The **AFC^{Plus} Die Bonder/Flip Chip Bonder** is fully automatic, with exceptionally high precision and placement accuray 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!

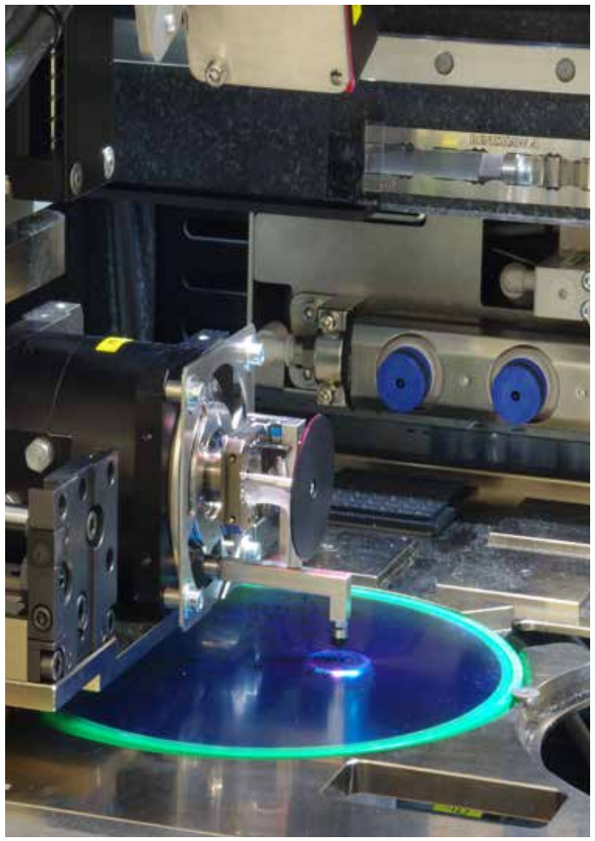
MARKETS

AOC/VCSEL/Multi Mode/Lidar

Silicon Photonics

Laser Bar and MEMS Assembly

Semiconductor Advanced Packaging (3D, Stack Die, etc.)

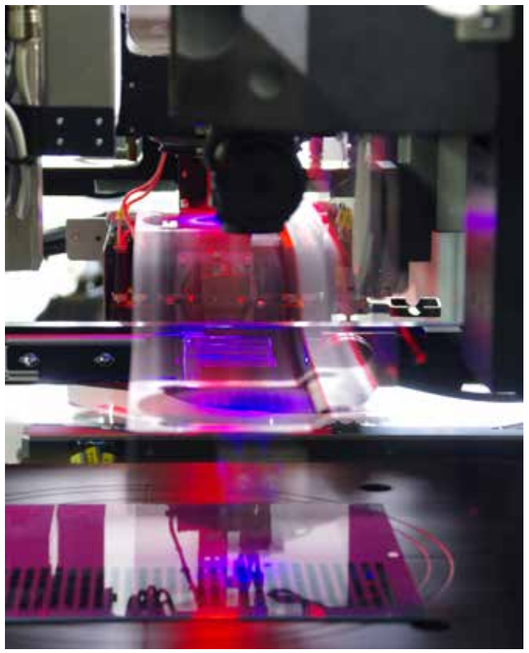


NOVA^{Plus}
High-Speed Dual Head Die Bonder

NOVA^{Plus} offers the same basic die bonding technology as the AFC^{Plus} 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 NOVA^{Plus} 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 NOVA^{Plus} 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.



NOVA^{Plus} OVERVIEW

The **NOVA^{Plus} High Speed Dual Head Die Bonder & Flip Chip Bonder** offers a wide range of features including:

- High precision die bonder/flip chip bonder
- Accuracy +/- 2.5µm @ 3 sigma
- Cycle-time of < 3 sec*
- Modular machine concept for all micro assembly applications
- Eutectic bonding via diode-laser, a heating plate or epoxy stamping and dispensing
- Multi flip chip bonding
- Wafer mapping
- Post bond inspection/measurement
- Substrate working area of 550x600mm
- Active bond-force-control

Autoloading for up to:
- 12“ wafers
- 300mm wafers
- 450mm substrate wafers
- 600x600 panels

Optional:
- UV-Curing
- dispensing ... and more!

MARKETS

Optoelectronic Device Packaging

AOC/VCSEL/Lens Assembly

Semiconductor advanced packaging
(TSV, eWLB, Fan-Out, WLP, 3D, Stack Die)

Large Paneled FanOut

MEMS/Automotive Sensors

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

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

NOVA^{Plus} 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

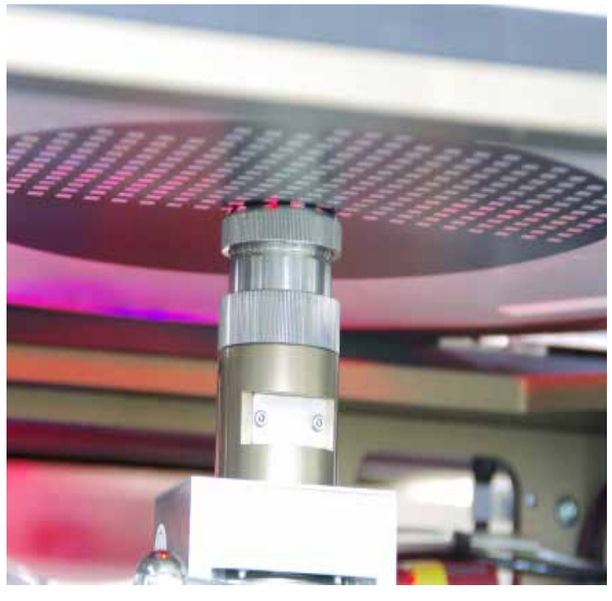
We primarily serve the high volume production segment of the TCB market.

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

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

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

Meeting the needs of advanced packaging



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

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

NOVA^{Plus} 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.

NOVA^{Plus} 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

Additional Products

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

Wire Bond

AERO Series
Horizontal Platform Wire Bonder

Eagle60AP-LD
0-90° Rotary Platform Wire Bonder

Package Inspection

SeaHawk
2D AOI

SkyHawk
3D AOI

Die Attach Systems

NANO
Ultra High Precision Bonder

AFC^{Plus}
High Precision Bonder

NOVA^{Plus}
High Precision Bonder

Photon/AD280 Plus
High Precision Bonder

AD211 Plus Series
Eutectic Die Bonder

AD838L Series
Epoxy Die Bonder

AD819 Series
To-can Bonder

Lens Attach & Active Alignment

AD280 Plus
Lens Attach System

IS600GT
Active Alignment Optical Lens Bonder

ASM AMICRA

Ultra high precision die attach solutions to address the fast-growing silicon photonics market

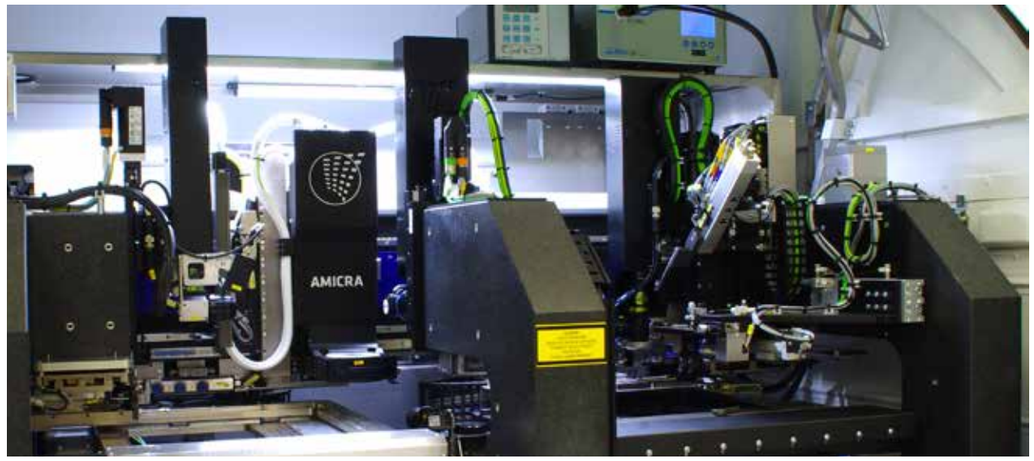
Service & Contact

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!



CONTACT

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