



Special Plastic Module for
semiconductor industry

S.P.M. s.r.l.

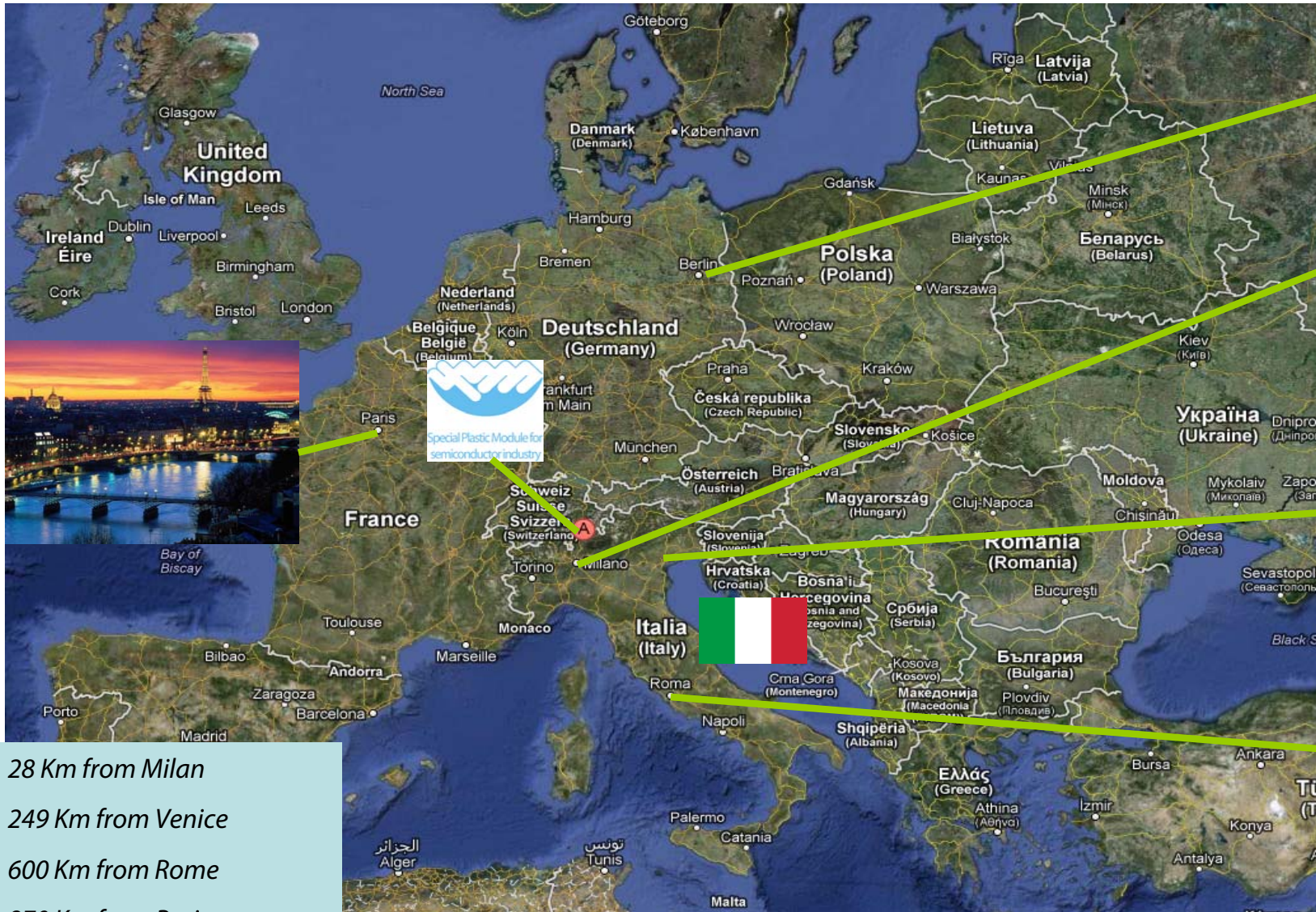
NEW Laguna Model



- ▣ SPM, acronym of Special Plastic Module for semiconductor industry, is an Italian company engaged to provide help to semiconductor and solar cell industries, universities, medical , chemical and research labs
- ▣ Combining expertise and latest technology with extreme cleanness, SPM obtain some of the most highly qualified equipment performances.
- ▣ SPM has 25 YEARS of experience in this sector and is every day up to date spending much time founding new technology and innovative solutions to perform better things at lower possible costs.
- ▣ The company spirit is to build machines perceiving real needing, to completely satisfy our customers.



Where we are



28 Km from Milan
249 Km from Venice
600 Km from Rome
870 Km from Paris
1000 Km from Berlin





- ▣ Long term experience in CDS (Chemical Delivery System), premixing unit and microfiltration;
- ▣ Complete manufacturing of wet benches in different version completely tailored according with customer requirements;
- ▣ Automation robot and handling ecc.
- ▣ Innovated quartz cleaning systems and storage;
- ▣ Carrier and box for wafer clean up machines to perform a fully cleaned process;
- ▣ Special filling system to distribute chemicals;
- ▣ Installation of double piping line;
- ▣ Service and complete assistance;
- ▣ Plasma etch (cleaning unit in vertical or horizontal version)



▣ SPM started to operate into the semiconductor backend market since 2011 with a project of an automatic chemical deflashing with **FAIRCHILD** Philippines in Cebu.

▣ Next experience was developed with **AMKOR** Philippines in Manila with a full automatic equipment with waterjet section too.



Starting with these experience SPM studied a new equipment with better performances, reliability, flexibility and cost reduction.



Both project (FAIRCHILD and AMKOR) has been developed with a totally new approach comparing our competitors.



We want to create a new way to deflash leadframes forgetting carousel types, and realizing a flexible machine with easy maintenance operation and high reliability.

We developed “Laguna Model” with the intention to provide to our customer maximum flexibility on timing of chemical and rinse process. Every parameter is under control and modifiable with a touch screen trough an easy software. From load to unload leadframes are handled with care and with the warrant of a perfect deflash.

NEW LAGUNA MODEL is the evolution that brings a lot of new features thanks to our matured experience with back end world.



LOAD SECTION:

Load section is kept as original Laguna Model. Now there is an optional that detect leadframe format and helps operator to select the exact recipe. With that optional the equipment can also determine the side of leadframe and rotate it before loading into carrier according to conveyor nozzles.

- ❑ OPT: special camera to automatically detect leadframe format and strips orientation detection





CHEMICAL SECTION:

Chemical section is kept as original Laguna Model. We introduced some upgrades to help maintenance operations, reduce chemical and water consumption and warrant a better environment for operators in terms of safety.

- ▣ New process tanks with reduces volumes -> chemical consumption reduction
- ▣ Process tanks with condenser to reduce chemical evaporation -> chemical consumption reduction
- ▣ NEW tanks automatic cover with a better design that helps to reduce chemical evaporation and reduce exhaust needed flow.
- ▣ NEW robot in front position to warrant a better exhaust extraction and facilitate maintenance operations.
- ▣ OPT: NEW process tank heater “solution contact free” to warrant less heating time and a cleaner process.



WATERJET SECTION:

Waterjet section is completely redesigned: a new conveyor helps to perform a better hi-pressure deflashing without any damage on leadframes and with an higher throughput and flexibility of formats dimensions.

- ▣ NEW conveyor with special gripper chain
- ▣ Waterjet pump controlled by INVERTER to reduce water and power consumption.
- ▣ Waterjet pressure settable by recipe
- ▣ NEW independent nozzle blocks activated by recipe
- ▣ Waterjet pressure continue monitor for every nozzle block to determine nozzles wear
- ▣ Separated conveyor section for drying



UNLOAD SECTION:

Unload section changed because of new waterjet section. With new conveyor we studied new solutions to unload leadframes with improvements in term of reliability and performance.

- ▣ OPT: advanced camera to detect damages on leadframes and deflashing quality

Visual inspection of the surface of plated lead frames and plate position inspection are accurately performed during transfer.





With Laguna Model productivity is:

400 SPH for SOIC, MLF and PSOP3



500 SPH for TSSOP.



Our target with NEW Laguna Model is to reach 600 SPH for every formats.

The limit of OLD Laguna Model was the waterjet section design.

With the new gripper chain based on our tests and calculations we are quite sure to reach our objective.



Since waterjet section is already built in our laboratories we can ensure to provide the fully functional NEW LAGUNA MODEL in **4 working month**.

That can be accomplished thanks to our store that contains more than 10.000 articles.

Our man power is fully trained and we can realize in very short period a complete equipment thanks to our experience.

The equipment is composed on several modules that can be shipped separately. That helps transportation procedure and reduce costs.





Features	Performance (MIN)
Up-time	99.98%
MTBA	3 hrs
MTBF	168 hrs
First Pass yield	99.99 %

Product quality ensured:

- ▣ NO scratch, chipout or cracks on the package
- ▣ NO strips deformation
- ▣ NO Flash
- ▣ NO Package Cosmetic defect
- ▣ NO Abrasion on package body



OLD Laguna Model	NEW Laguna Model
Conveyor chain with PINs.	Conveyor with gripper chain
Tanks robot in rear position with pneumatic Z axys.	Tanks robot in front position with servomotor controlled X and Z axys.
Productivity up to 400-500 strips/h	Productivity up to 600 strips/h
Waterjet pump with constant RPM	Waterjet pump with RPM controlled by an inverter to save power and warrant a better deflash uniformity
High volumes of exhaust needed	Reduced exhaust facility requirement tanks to new process tanks and cover design.
Capability to handle leadframes up to 80x250mm	Capability to handle leadframes up to 100x300. OPTIONAL: single chip deflash.
Process tanks with high volumes of chemicals	Process tanks with reduced voulmes of chemicals and reduced evaporation.



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