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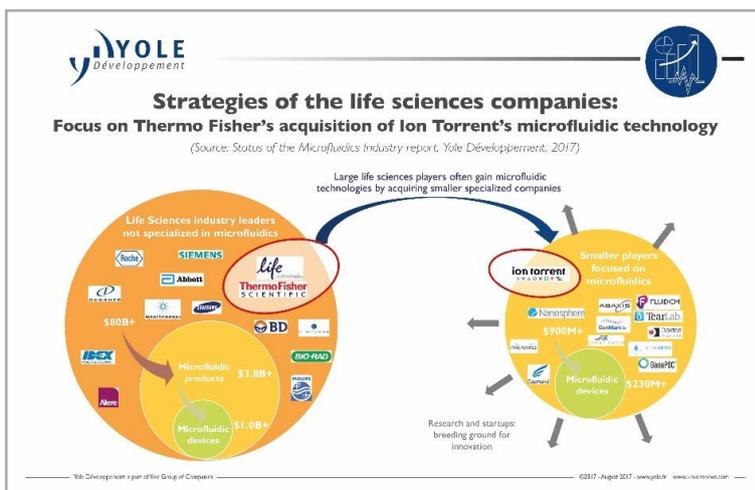
Thermo Fisher Scientific develops a unique solution based on Ion Torrent® technology, with a manufacturing process entirely CMOS compatible

Thermo Fisher Ion 520 DNA Sequencing Chip report from System Plus Consulting – July 2017

LYON, France – August 1, 2017: Thermo Fisher Scientific, holding 8% of the microfluidic product market, is one of the leading companies in sequencing technologies. Thermo Fisher Scientific’s strategy is based on a reduction of analysis time with fast throughput and short single-end reads. To deliver fast reading, Thermo Fisher Scientific develops a unique solution based on Ion Torrent® technology, which relies on technology similar to an image sensor.

[System Plus Consulting](#) releases today a [complete analysis of the Ion 520 chip from Thermo Fisher](#) featuring disassembly and die analyses, processes and cross-sections, including a full cost analysis and selling price estimation. Under this new reverse engineering and costing report, the company highlights the complexity of Ion Torrent® technology that presents an impressive 3D architecture, mixing of wells and canals.

What is Ion Torrent® technology? What are the benefits of Thermo Fisher Scientific’s chip? What are the manufacturing processes and related costs?... System Plus Consulting offers you a relevant technology overview of one of the latest sequencing product of Thermo Fisher Scientific. What is inside?



Thermo Fisher Scientific is showing a US\$18.3 billion sales revenue in 2016. Created in 1956 as a laboratory product and services supplier, the company has grown to become a leading player within the microfluidics industry with the development of innovative technologies as well as multiple acquisitions. Ion Torrent acquisition was part of them, through the acquisition of Life Technologies in 2013.

Pharmaceutical and life science research remain the fastest growing segment in the microfluidics market, with a 20% expected growth

between 2017 and 2022¹. **Sébastien Clerc, Technology & Market Analyst at Yole Développement** confirms: “This industry is driven by silicon/glass chips for genomics and proteomics applications, in particular high-end consumables for next-generation sequencing”.

“Thermo Fisher Scientific’s product, based on Ion Torrent’s technology is a powerful and cost-effective sensor chip”, comments **Stéphane Elisabeth, Cost Engineer at System Plus Consulting**. “The manufacturing process is entirely CMOS compatible. Surprisingly it uses well proven standard packaging with a proprietary flow chamber design.”



The innovative Ion 520 DNA sequencing chip uses this Ion Torrent technology. It includes a multiwell array, in which spherical particles that have DNA attached are trapped. The particles are sequentially flooded with solutions of nucleotides, which changes the charge in the wells when the introduced nucleotide is complementary to the leading unpaired nucleotide on the DNA strand. This results in pH change in

the concerned well which is detected by the circuit and allows the DNA sequencing. With several materials involved in the chip manufacturing, 3D silicon design, polymers for microfluidic processing and its special assembly, the component appears to have a very high level of complexity.

Thermo Fisher Scientific relies on TSMC’s expertise on silicon substrate to develop the Ion Torrent® chips.

System Plus Consulting’s report includes a complete analysis of the Ion 520 chip from Thermo Fisher, featuring chip disassembly and die analyses, processes and cross-sections. It contains a full cost analysis and a selling price estimation of the component. A detailed description of this analysis is available: [Thermo Fisher Scientific](#).

Yole Group of companies including System Plus Consulting and Yole Développement is part of [Lab-on-a-Chip & Microfluidics World Congress 2017](#) program with a booth and a comprehensive presentation focused on the status of microfluidics industry. This presentation will highlight market figures, technology trends and use cases. To meet our analysts, please contact: [Maureen Peron](#).

¹ Source : [Statut of the Microfluidics Industry report](#), Yole Développement, 2017



About [Thermo Fisher Ion 520 DNA Sequencing Chip](#) report:

Next generation of silicon/polymer microfluidic technology for fast throughput DNA sequencing from Thermo Fisher Ion Torrent®...

Produced by System Plus Consulting, part of Yole Group of Companies.

About [Status of the Microfluidics Industry 2017](#) report

Diagnostics, point-of-care, and pharmaceutical research will drive the rapidly-expanding microfluidic products industry to a potential value of \$23B by 2022. What will trigger the next growth spurt?

Produced by Yole Développement (Yole) part of Yole Group of Companies.



About System Plus Consulting:

System Plus Consulting specializes in the cost analysis of electronics, from semiconductor devices to electronic systems. Created more than 20 years ago, System Plus Consulting has developed a complete range of services, costing tools and reports to deliver in-depth production cost studies and estimate the objective selling price of a product. System Plus Consulting engineers are experts in Integrated Circuits - Power Devices & Modules - MEMS & Sensors - Photonics – LED - Imaging – Display - Packaging - Electronic Boards & Systems.

Through hundreds of analyses performed each year, System Plus Consulting offers deep added-value reports to help its customers understand their production processes and determine production costs. Based on System Plus Consulting's results, manufacturers are able to compare their production costs to those of competitors.

System Plus Consulting is a sister company of Yole Développement. More info on www.systemplus.fr



About Yole Développement :

Founded in 1998, Yole Développement has grown to become a group of companies providing marketing, technology and strategy consulting, media and corporate finance services. With a strong focus on emerging applications using silicon and/or micro manufacturing, the Yole Développement group has expanded to include more than 50 collaborators worldwide covering MEMS, Compound Semiconductors, RF Electronics, Solid-state lighting, Displays, Image Sensors, Optoelectronics, Microfluidics & Medical, Advanced Packaging, Manufacturing, Nanomaterials, Power Electronics and Batteries & Energy Management.

The "More than Moore" company Yole, along with its partners System Plus Consulting, PISEO, Blumorpho and KnowMade, support industrial companies, investors and R&D organizations worldwide to help them understand markets and follow technology trends to grow their business.

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