



DETERMINATION OF MERGER NOTIFICATION M/16/001 - LAM / KLA

Section 21 of the Competition Act 2002

Proposed acquisition of sole control of KLA-Tencor Corporation by Lam Research Corporation

Dated 12 February 2016

Introduction

1. On 7 January 2016, in accordance with section 18(1) of the Competition Act 2002, as amended (“the 2002 Act”), the Competition and Consumer Protection Commission (“the Commission”) received a notification of a proposed transaction whereby Lam Research Corporation (“LAM”), through its wholly-owned subsidiaries Topeka Merger Sub 1, Inc. (“Topeka 1”) and Topeka Merger Sub 2, Inc. (“Topeka 2”), would acquire sole control of KLA-Tencor Corporation (“KLA”).

The Proposed Transaction

2. The proposed transaction is to be implemented pursuant to an agreement, dated 20 October 2015, between LAM, Topeka 1, Topeka 2 and KLA.¹ The effect of the proposed transaction will be that LAM will acquire a 100% shareholding in KLA, which will become a wholly-owned subsidiary of LAM.

The Undertakings Involved

The Acquirer – LAM

3. LAM, headquartered at Fremont, California, USA, is a public company listed on the NASDAQ stock exchange. LAM, through its various subsidiaries, is involved worldwide in the semiconductor sector, in particular, the manufacture and supply of semiconductor processing systems, particularly for the fabrication of wafers, which are used by its customers to manufacture semiconductors. LAM also supplies related services such as installation, spare parts and maintenance services.
4. Semiconductor manufacturing involves multiple steps. The process starts with a base semiconductor material, typically silicon. A wafer is a small and round polished disc with a thickness of less than 1 mm and a diameter of 300 mm. The end result of the wafer fabrication process is the creation of a large number of

¹ The agreement is called the Agreement and Plan of Merger and Reorganization.



integrated circuits on the wafer, which are then “packaged” (e.g., with the addition of a plastic shell) and diced into individual semiconductors (or “chips”).²

5. LAM is involved in the supply of equipment for “deposition” (i.e. the placing of various different materials on a wafer) and “etching” (i.e., the removal of material from the wafer selectively in order to create specified patterns for electronic circuitry) and cleaning (i.e., the removal of residues or other small particles from the wafer that could adversely impact manufacturing and degrade device performance).
6. LAM’s customers, located in the USA but also in other countries including the State, are mainly involved in the production of semiconductors, which are used in electronic products such as mobile phones, tablets, computers, electronic storage devices and networking equipment.
7. LAM does not carry out the manufacture of semiconductor processing systems within the State. Rather, all of LAM’s products supplied to customers in the State are imported from outside the State. Within the State, Lam Research (Ireland) Limited (“LAM Ireland”) and Novellus Systems Ireland Ltd. (“Novellus Ireland”), both of which are wholly-owned subsidiaries of LAM, supply after-sales support services to LAM customers, including installation, servicing and maintenance services.³
8. For the financial year ended 28 June 2015, LAM’s worldwide turnover was approximately €4.396 billion, of which approximately €[...] million was generated in the State.

The Target – KLA

9. KLA, headquartered at Milpitas, California, USA, is a public company listed on the NASDAQ stock exchange. KLA, through its various subsidiaries, is involved in semiconductor sector, in particular, the manufacture and supply of process control equipment and related services, particularly with respect to wafer fabrication. Process control equipment is primarily used in semiconductor manufacturing to monitor and ensure quality control. KLA also supplies related services such as installation, spare parts and maintenance services.
10. KLA’s customers, located predominantly in the USA but also in other countries including the State, are mainly involved in the production of semiconductors.⁴
11. KLA does not carry out the manufacture of process control equipment within the State. All of KLA’s sales to customers within the State are of products imported from outside the State. Within the State, KLA-Tencor Ireland Ltd (“KLA Ireland”),

² Correspondence from LAM and KLA to the Commission dated 28 January 2016.

³ LAM states, in correspondence to the Commission dated 5 February 2016, that it is involved to a very small degree in [...].

⁴ KLA is involved, to a lesser degree, in other high technology industries, including the light emitting diode (“LED”) and hard disk data storage industries.



a wholly-owned subsidiary of KLA, supplies after-sales support services to KLA customers, including installation, servicing and maintenance services.⁵

12. For the financial year ended 28 June 2015, KLA's worldwide turnover was approximately €2.352 billion, of which €[...] million was generated in the State.

Rationale for the Proposed Acquisition

13. The parties state in the Notification:

*"Among other reasons, the Proposed Transaction will enable Lam to increase and accelerate innovation and reduce costs."*⁶

14. LAM also states that:

*"The pairing of Lam Research and KLA-Tencor brings industry leadership in process and process control together, accelerating our capability to address our customers' most difficult challenges as they scale to meet the market demands of lower power, higher performance, and smaller form factors."*⁷

Third Party Submissions

15. No submission was received.

Competitive Analysis

Market Definition

16. The Commission defines markets to the extent necessary depending on the particular circumstances of a given case. In this instance, it is not necessary for the Commission to define precise relevant product markets. The Commission's conclusion concerning the competitive effects of the proposed transaction would be unaffected whether:
- (a) there is a single market for both of (i) the supply of semiconductor manufacturing equipment and related services and (ii) the supply of process control equipment and related services,
 - (b) there are separate markets for each of (i) the supply of semiconductor manufacturing equipment and related services and (ii) the supply of process control equipment and related services, or
 - (c) the market for the supply of semiconductor manufacturing equipment and related services is further distinguished into separate markets for the

⁵ Optical Metrology Patents Limited, a second wholly-owned subsidiary of KLA in the State, [...].

⁶ Notification page 5.

⁷ See <<http://investor.lamresearch.com/releasedetail.cfm?ReleaseID=937569>>.



various steps in the wafer fabrication process (e.g., deposition and etching).

17. Similarly, it is also not necessary for the Commission to define precise relevant geographic markets in this instance since the choice of geographic market will not materially alter the competitive impact of the proposed transaction in the State.

Competitive Effects

Horizontal Effects

18. Both LAM and KLA are involved in the semiconductor sector. They both manufacture and supply equipment for use in the production of semiconductors, in particular equipment for use in the wafer fabrication process. The products supplied by LAM and KLA are, however, quite different in terms of functionality. LAM manufactures equipment that is used by its customers for the fabrication of semiconductors. KLA supplies process control equipment to its customers, the purpose of which is to monitor quality and accuracy at each stage of the manufacturing process and to identify any defects in the wafer or circuitry. The parties state that there is no significant demand-side substitutability between these types of equipment. The functional differences between the products supplied by LAM and KLA indicate that there is no significant horizontal overlap in the activities of LAM and KLA.
19. Furthermore, given the global scale of the operations of LAM and KLA, and their customers, commercial decisions regarding the purchase of semiconductor manufacturing equipment and related services (by companies such as Intel and HP) are not typically made in the State (i.e., do not typically involve LAM Ireland, Novellus Ireland or KLA Ireland).

Vertical Effects

20. The proposed transaction does not give rise to vertical competition issues within the State. KLA is not a customer of LAM in the State and LAM is not a customer of KLA in the State.

Conglomerate Effects

21. LAM's products and KLA's products can be considered complementary, which could potentially provide the merged entity with the ability and incentive to tie the purchase of manufacturing equipment and related services with the purchase of process control equipment and related services.



22. Chapter 5 of the Commission's Merger Guidelines⁸ sets out the framework for the Commission's analysis of non-horizontal effects, including conglomerate effects:

*"Conglomerate mergers are neither horizontal nor vertical, i.e., there is no vertical relationship and no overlap in the products or services supplied by the merging parties."*⁹

*"The Commission's analysis of unilateral effects, in the context of conglomerate mergers, includes an examination of (i) the strength of competitive constraints and/or consumer behaviour, (ii) the ability of the merged entity to bundle or tie products, (iii) the merged entity's incentive to bundle or tie products, and (iv) the effect on competition, particularly whether bundling or tying would result in an SLC."*¹⁰

23. In this instance, there is no support for a theory of harm based on the merged entity seeking to tie the purchase of manufacturing equipment and related services to the purchase of process control equipment and related services for the reasons set out below.
24. After the completion of the proposed transaction, the merged entity will continue to face competition both globally and within the State from:
- LAM's current competitors, including Applied Materials Inc., Tokyo Electron Ltd., ASML, Screen Semiconductor Solutions Ltd, SEMES Ltd, Hitachi High-Technologies Ltd., and
 - KLA's current competitors, including Hitachi High-Technologies, Applied Materials Inc., ASML, Hermes Microvision Ltd, Nanometrics Inc., and Nova Measuring Instruments Ltd.
25. Tender processes are a significant feature in the semiconductor sector and, due to the technical complexity of the equipment and services being purchased, supply contracts are often of between [...] years in duration. It does not appear likely that the merged entity would be in a position to require its customers to coordinate tenders for manufacturing equipment and related services with the purchase of process control equipment and related services.
26. It is also the case that [...] is by far the largest customer of the parties in the State (with over [...]% of LAM's and KLA's sales revenues within the State).¹¹ Post-transaction, [...] will continue to be a powerful customer of the merged entity in the State and would be in a position to resist any attempt by the merged entity to implement a tying strategy, particularly given the availability of competing suppliers.

⁸ Guidelines for Merger Analysis, adopted by the Competition and Consumer Protection Commission on 31 October 2014 (the "Merger Guidelines"). See

<http://www.cpc.ie/sites/default/files/CCPC%20Merger%20Guidelines_1.pdf>.

⁹ *ibid* page 24.

¹⁰ *ibid* page 28.

¹¹ Correspondence from LAM and KLA to the Commission dated 28 January 2016.



Conclusion

27. In light of the above, the Commission considers that the proposed acquisition will not substantially lessen competition in any market for goods or services in the State.

Ancillary Restraints

28. No ancillary restraints were notified.



Determination

The Competition and Consumer Protection Commission, in accordance with section 21(2)(a) of the Competition Act 2002, has determined that in its opinion the result of the proposed acquisition whereby Lam Research Corporation, through its wholly-owned subsidiaries, Topeka Merger Sub 1, Inc. and Topeka Merger Sub 2, Inc., would acquire sole control of KLA-Tencor Corporation will not be to substantially lessen competition in any market for goods or services in the State and, accordingly, the acquisition may be put into effect.

For the Competition and Consumer Protection Commission

Isolde Goggin
Chairperson
Competition and Consumer Protection Commission