



Competition
Commission
SINGAPORE

Section 57 of the Competition Act (Cap. 50B)

Grounds of Decision issued by the Commission

Notification for Decision: Anticipated Merger Involving Acquisition by Air Liquide Electronics U.S. LP of certain of the assets of the Chemical Management Division of Edwards Vacuum, Inc.

08 July 2008

Case number: CCS 100/1302/08

Confidential information in the original version of this Decision has been redacted from the published version on the public register. Redacted confidential information in the text of the published version of the Decision is denoted by [X].

I. INTRODUCTION

1. On 30 May 2008, the Commission received a notification for decision under Section 57 of the Competition Act (Cap. 50B) that is made jointly by the acquiring party, Air Liquide Electronics U.S. LP (“Air Liquide”), a Delaware limited partnership, and the vendor, Edwards Vacuum, Inc. (“Edwards”), a Delaware corporation. Air Liquide and Edwards are collectively referred to as “the parties”.
2. The notification for decision relates to a transaction which involves the acquisition by Air Liquide of certain of the assets of the Chemical Management Division of Edwards (“Edwards CMD”) by way of an asset purchase agreement.
3. The Commission has concluded that the notified transaction, if carried into effect, will not infringe the Section 54 prohibition.

II. THE PARTIES

4. The Air Liquide group of companies (“Air Liquide Group”), which

includes Air Liquide, carries out a diverse range of business activities, that relate to the production and supply of industrial gases and related services globally.

5. The relevant business¹ of the Air Liquide Group is carried out in Singapore through an indirectly owned subsidiary of Air Liquide S.A., Singapore Oxygen Air Liquide Pte Ltd (“SOXAL”). SOXAL manufactures and sells industrial, medical and electronic gases, medical and safety equipment and accessories, project engineering and installations and total gas management and related services.²

6. Edwards CMD carries out business activities such as bulk chemical dispense and blending equipment and systems, bulk slurry dispense and blending equipment and systems, wet process subsystems for Original Equipment Manufacturers (“OEMs”) and associated installation and after sales services (including operations and maintenance) of such equipment.³

III. THE MERGER

7. The notified transaction is a cash offer by Air Liquide for certain of the assets together with the business of Edwards CMD.

8. The Commission is satisfied that the notified transaction constitutes a merger falling within section 54(2)(c) of the Act, being:

‘.....an acquisition by one undertaking (the first undertaking) of the assets (including goodwill), or a substantial part of the assets, of another undertaking (the second undertaking) ... to place the first undertaking in a position to replace or substantially replace the second undertaking in the business or, as appropriate, the part concerned of the business in which that undertaking was engaged immediately before the acquisition.’

IV. RELEVANT MARKETS

Background

9. Broadly, chemical management equipment and systems (“CMES”) are

¹ Relevant as per the parties’ submission under Form M1.

² [X]

³ Edwards is a leading global supplier of integrated vacuum and abatement solutions for the manufacture of semiconductors, flat panel displays, LEDs and solar cells and a leader in vacuum technology for industrial, scientific, process and R&D applications. The company employs about 3000 people worldwide in the design, manufacture and support of high technology vacuum and exhaust management equipment. Edwards CMD (a division of Edwards) is involved in chemical equipment, and is focused on designing, manufacturing and selling chemical and slurry dispensing equipment, installations and services to leading semiconductors as well as Original Equipment Manufacturers (OEMs) worldwide. Edwards CMD has its production based in Chanhassen, Minnesota, in the US and employs about 120 people (including 20% in Asia and Europe) and has annual sales of approximately 50million USD.

equipment that blend and distribute/ dispense chemicals (e.g. acids.) for use in manufacturing applications. For example, within the semiconductor industry, CMES are used to make specific chemical blends⁴ and distribute them from one location to another within a fabrication plant for certain applications/processes such as chemical-mechanical planarization, post chemical-mechanical planarization and electrochemical deposition.

10. The Commission's enquiries have revealed that CMES are used in a wide range of industries, including the electronics/semiconductor, pharmaceutical and solar power industries. However, as different industries have different requirements for chemical blending and distribution, CMES are custom-made to meet the specific requirements of an industry using various types of technology. This explains why suppliers of CMES usually focus on serving specific industries. Typically, suppliers of CMES work closely with the end-customers or intermediaries, who act on behalf of end-customers to understand their requirements and are involved in the design, manufacturing and installation of the equipment/system.

11. The Commission's enquiries have further revealed that the notified transaction does not involve any business activity relating to different but complementary levels in the production or distribution chain. Hence, the Commission has assessed there are no vertical aspects to the transaction. This is further confirmed by respondents⁵ who have indicated that the parties essentially compete with each other in Singapore in areas relating to the supply of CMES to the semiconductor industry and the provision of other services for such equipment/system.

Product market

Parties' submission

12. The parties state that the relevant business of Air Liquide carried out in Singapore (through SOXAL) relates to the provision of chemicals, distribution equipment, and associated services to support the requirements of the Singapore manufacturing industry. This includes the following areas of activity:

- a. supplying chemical blend and dispense equipment;
- b. supplying slurry blending and distribution equipment; and
- c. associated installation and after sales services (including operations and maintenance) of such equipment.

⁴ Slurry is one such example. It is a form of corrosive and abrasive colloid used in chemical-mechanical polishing/planarization process to make wafers flat/even in the semiconductor industry.

⁵ Customers, intermediaries and competitors, as the case may be.

13. The parties state that , for Edwards CMD, the areas of activity are:
- a. bulk chemical dispense and blending equipment and systems;
 - b. bulk slurry dispense and blending equipment and systems;
 - c. wet process subsystems for OEMs; and
 - d. associated installation and after sales services (including operations and maintenance) of such equipment.
14. Accordingly, the parties submit that the areas of overlapping business affected by the notified transaction and the relevant product markets are:
- a. provision and installation of CMES; and
 - b. provision of other services (including after-sale services, maintenance and operation) of such equipment.

The parties state that they are primarily involved in supplying the relevant products to the electronics/semiconductor industry.

Commission's assessment

15. The Commission notes that the relevant product markets are dependent on the overlapping areas of activity, that will be affected by the notified transaction. The Commission agrees with the parties' submission that the overlapping areas are (i) the provision and installation of CMES, and (ii) the provision of other services (e.g. after sale service, operation and maintenance) of such equipment/system.

16. As the Air Liquide Group and Edwards CMD primarily serve the electronics/semiconductor industry, the Commission examined whether narrower relevant product market definitions, which relate specifically to the electronics/semiconductor industry could be arrived at, i.e.:

- a. provision and installation of CMES to the electronics / semiconductor industry; and
- b. provision of other services (including after-sale services, maintenance and operation) of such equipment/system.

17. The parties have also said that suppliers of CMES for other industries, such as the pharmaceutical and solar power industries, are able to, and in reality, have been able to enter the market for the supply of such equipment and services to the electronics/semiconductor industry, for example, Puerstinger GmbH (a German supplier).⁶ Views from respondents are generally consonant with the

⁶ The parties have submitted that suppliers of chemical management equipment and systems for other

parties' submission that, increasingly, suppliers of CMES to non-semiconductor industries (e.g. the pharmaceutical industry) are able to also supply CMES to the semiconductor industry. The respondents generally noted that although it is still common for suppliers of CMES to focus on serving specific industries, there appears to be considerable mobility in supply given that some suppliers have been able to switch from serving one industry to another.

18. The Commission also examined whether a product market definition narrower than that stated in paragraph 16 is appropriate by further differentiating the various types of equipment comprising CMES in the semiconductor industry (e.g. slurry blending equipment, slurry blending and distribution equipment, chemical bulk distribution equipment, chemical bulk blending and distribution equipment, etc). However, respondents have indicated they usually procure the entire chemical management system comprising various equipment and they do not view each equipment in isolation because the equipment must be compatible and integrated. Hence, the Commission is of the view that it is not necessary to regard the various equipment comprising CMES used for the semiconductor industry as separate product markets.

19. In addition, respondents have indicated that the provision and installation of CMES and the provision of other services for such equipment/system are two distinct and separate product markets. This is borne out by information that market shares for these two product markets are vastly different, suggesting that there is no or very limited synergy effect (see Table 1 and Table 2 below).

20. In summary, views from respondents support the parties' submissions on the relevant product market definition.

21. As information on the turnover figures for the markets for the provision and installation of CMES and the provision of other services for CMES were available for the electronics and semiconductor industry but not for the other industries, the Commission used these figures and found, on assessment, that there were no competition concerns. (Please see Part V below for the competition assessment.) As such, it is unlikely that there would be competition concerns in the broader market for the provision and installation of CMES and other services relating thereto.

Geographic market

Parties' submission

22. The parties submit that the relevant geographic markets for the provision

industries, such as the pharmaceutical and solar power industries, are able to, and in reality, has been able to the enter the market for the supply of such equipment and services to the electronics/semiconductor industry. One example the parties have given is Puerstinger. According to the parties, Puerstinger managed to enter into the Singapore market as the slurry equipment supplier for the Siltronics project worth [S\$] in 2006. The parties' submissions have been confirmed by the respondents.

and installation of CMES as well as the provision of other services (including after-sales services, operation and maintenance) in relation to such equipment/systems are worldwide.

23. The parties claim that substitutes from outside Singapore may easily enter the market in Singapore and customers tend to switch their sources of supply between global suppliers. The parties further submit that transportation costs are insignificant in comparison to the value of the equipment/systems.⁷

Commission's assessment

24. The Commission's enquiries have revealed, in relation to the purchase and installation of CMES, that customers in Singapore are generally prepared to consider suppliers of CMES on a worldwide basis, although there is a general preference for suppliers who have a Singapore base or a Singapore-based service provider. Similarly, suppliers of CMES are international entities that operate globally. The respondents have expressed the view that cost advantages, state-of-the-art-technology and proven track record (particularly in meeting reliability and safety standards) are among the crucial factors they consider in selecting their suppliers of CMES.

25. Views of the respondents also support the parties' submission that transportation costs are small relative to the purchase value of the equipment/systems.

26. As for the market for the provision of other services relating to CMES, respondents have stated that competition in this market is even more intense than the market for the provision and installation of CMES as there are many global players, who are strong competitors of Air Liquide and Edwards CMD.

27. In summary, findings from the Commission's enquiries and respondents' views are generally consonant with the parties' submission that the geographic market is worldwide. Notwithstanding this, the Commission has assessed the parties' market shares both worldwide as well as within Singapore. The Commission's competition assessment yields the same conclusion regardless of whether the geographic market is defined as Singapore or worldwide (please see Part V below for the competition assessment).

⁷ Edwards submitted that the CMES it supplies worldwide is shipped from the United States and the logistic/transportation cost involved is estimated to be [X] of the total project costs for each project. Air Liquide has estimated the logistics/transport cost for each project to be [X] of the total project costs.

V. COMPETITION ASSESSMENT

Market concentration

28. Table 1 and Table 2 below show the estimated worldwide and local market shares of the parties, under the narrower relevant product market definitions (as stated in paragraph 16).

Table 1: Estimated market Share (%) by revenue in relation to the provision and installation of CMES to the electronics/electronics/semiconductor industry

	Worldwide			Within Singapore		
	2005	2006	2007	2005	2006	2007
Air Liquide	Not available	[0-10%]	[0-10%]	[50-60%]	[40-50%]	[20-30%]
Edwards CMD	Not available	Not available	[0-10%]	[30-40%]	[10-20%]	[10-20%]
Others	Not available	Not available	[90-100%]	[10-20%]	[30-40%]	[60-70%]

Source: Information supplied in relation to Form M1 by notifying parties.

Table 2: Estimated market share (%) by revenue in relation to the provision of other services (e.g. after sale service, operation and maintenance) for CMES for the electronics/electronics/semiconductor industry

	Worldwide			Within Singapore		
	2005	2006	2007	2005	2006	2007
Air Liquide	Not available	Not available	Not available	[0-10%]	[0-10%]	[0-10%]
Edwards CMD	Not available	Not available	[0-10%]	[0-10%]	[0-10%]	[0-10%]
Others	Not available	Not available	Not available	[90-100%]	[90-100%]	[90-100%]

Source: Information supplied in relation to Form M1 by notifying parties.

29. Based on the parties' estimated combined market share in 2007, it may be estimated that the post-merger Singapore market share of the merged entity, for the provision and installation of CMES to the electronics/semiconductor industry, could be [3%]. This would cross the indicative threshold as set out in the CCS Guidelines on Merger Procedures ("CCS Guidelines"). As for the aftermarket (i.e. the provision of other services for CMES to the electronics/semiconductor industry), the Commission is of the view that the merged entity will not pose competition concerns, as the estimated post-merger

Singapore aftermarket share of the merged entity (based on the 2007 figures) is likely to be well below the indicative threshold.⁸

30. The Commission notes that while the estimated local market share of the merged entity for the provision and installation of CMES to the electronics/semiconductor industry has crossed the indicative threshold in the CCS Guidelines, this does not necessarily imply that the notified transaction will substantially lessen competition. The Commission took into account the competition dynamics in the market in making their assessment (as set out in subsequent paragraphs).

Non-coordinated effects

31. Although the estimated Singapore market share of the merged entity for the provision of CMES to the electronics/semiconductor industry could cross the indicative thresholds as set out in the CCS Guidelines, the Commission is of the view that the notified transaction is unlikely to give rise to non-coordinated effects because of the following reasons:

a. Adequate alternative suppliers to choose from, post-merger

Although respondents have indicated that they tend to have one or two 'preferred suppliers' with whom they foster long-term relationship(s) (primarily due to the supplier's proven track record)⁹, they have also generally expressed that, post-merger, there exist enough alternative suppliers who can compete with the merged entity and whom the respondents are generally prepared to consider;

b. Diminishing barriers of entry

Although respondents have generally expressed the view that the barriers to entry tend to be high due to capital intensity and technological know-how, they also point out that there is considerable mobility of supply as more suppliers of CMES to non-electronics/semiconductor industries (e.g. the pharmaceutical industry) are increasingly able to also supply CMES to the electronics/semiconductor industry. This suggests that switching cost, as a major deterrent for entry into the market for supply of CMES to the electronics/semiconductor industry, is gradually diminishing;

⁸ This is also in addition to the fact that all respondents have indicated to us that market relating to the provision of other services for CMES to the electronics/electronics/semiconductor industry is very competitive as there exists many suppliers whom they can choose from.

⁹ Typically, the customers would invite their 'preferred suppliers' to participant in a closed tender for each project. A project will typically have approximately 3 competing bidders.

c. Indication of increasing rivalry

As seen in **Table 1**, the market shares of the parties have declined sharply since 2005. Respondents have explained that they have been awarding some contracts to smaller companies so as to build them up into 'viable players' in the market. This suggests increasing rivalry in the market as buyers are gradually willing or prepared to try out suppliers whom they have not established long-term relationship with;

d. Market share may not be good indication of market power

The Commission notes that the nature of the market is one, where the purchase of CMES for new electronics/semiconductor facilities constitutes the bulk of major projects/contracts of customers. Such purchases are infrequent and lumpy, i.e. there are relatively few significant orders placed in a given year in any one country;¹⁰ hence, market share estimates may not a good indication of any market power; and

e. Countervailing buyer power

The Commission's enquiries have revealed that buyers generally have buyer power to negotiate prices with suppliers of CMES. Besides having the ability to negotiate prices, these large buying entities (some of whom are intermediaries, that act on behalf of end customers. to purchase CMES from suppliers) generally have adequate competing bidders to keep prices from suppliers competitive despite an expressed preference to work with certain suppliers. This is unlikely to change post-merger.

32. In view of the above considerations, the Commission is of the view that the notified transaction is unlikely to give rise to non-coordinated effects.

Coordinated effects

33. The Commission is also of the view that co-ordination by suppliers would be made difficult by the following:

- a. As mentioned in paragraph 31(d), the demand for CMES tends to be lumpy, with few significant orders placed for in a given year in any one country¹¹;

¹⁰ Customers have indicated a large project is one where the contract value is US\$2 to 3 million or more. Respondents have also opined that there has been consolidation among worldwide electronics/semiconductor producers in the last 10 years and relatively few new plants have been constructed worldwide, including Singapore. Singapore typically manages to attract one or two new investment(s) in fabrication plants annually.

¹¹ The lumpiness and infrequent nature of orders placed can be likened to a one-off game where the winner takes all and the rest are left with nothing and there is no repeated game. In such a situation, there is a

- b. Views of respondents, generally reflect that there is a limited degree of price transparency in the market (e.g. information on the winning bidder for a project and the value of the project are usually confidential)¹²; and
- c. CMES is a differentiated product because each CMES is tailor-made to meet the specific needs and requirements of the end customers¹³.

34. In light of the above, the Commission is of the view that the notified transaction is unlikely to give rise to coordinated effects.

VI. ANCILLARY RESTRAINTS

35. The parties have also notified ancillary restraints to the Commission, comprising a non-compete clause:

[REDACTED].

36. The parties explain that the restriction are necessary for the implementation of the notified transaction in order to allow Air Liquide to benefit fully from the goodwill acquired as part of the transaction and to provide assurance that Edwards will not set up a competing business post merger and thereby reduce the value of the assets. The Commission has considered the non-compete clauses in light of brand loyalty by customers. From the Commission's enquiries, the respondents have stated that buyers generally tend to work with 'preferred suppliers' with whom they have established long-term relationships. Thus, the Commission is of the view that that the non-compete clauses are directly related and necessary to the implementation of the anticipated merger. Consequently, they fall under the exclusion in paragraph 10 of the Third Schedule of the Act.

VII. CONCLUSION

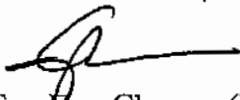
37. For the reasons stated above and based on the information available to the Commission, the Commission has assessed that the notified transaction if carried into effect, will not infringe the Section 54 prohibition.

strong incentive for cheating. In contrast, in a repeated game (e.g. where frequent significant orders have been placed), players can each 'take turns' to 'win' the projects (e.g. bid rotation).

¹² Price transparency is important for the monitoring and enforcement of a cartel, particularly for maintaining high prices. Unless there is effective monitoring and enforcement, there is an incentive by the participants in the cartel to cheat by 'cutting' prices below the agreed level to increase one's market share.

¹³ Product differentiation would make it difficult for parties set an 'agreed' price level as the production costs for the product would vary, depending on the degree of customization/differentiation. Having many different 'agreed' prices is also untenable as that would make monitoring and enforcement of cartel difficult.

38. In accordance with Section 57(7) of the Competition Act, this decision shall be valid for a period of 1 year from the date of this decision.



Teo Eng Cheong (Mr)
Chief Executive
Competition Commission