

**8. INDEPENDENT MARKET RESEARCH REPORT**

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# SMITH ZANDER

Date: 17 JAN 2024

The Board of Directors

**Crest Group Berhad**

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 Seksyen 13  
 46200 Petaling Jaya  
 Selangor, Malaysia

Dear Sirs / Madams,

**Independent Market Research Report on the Imaging, Analysis and Testing Industry in Malaysia, China, Thailand, Singapore and Vietnam (“IMR Report”)**

This IMR Report has been prepared by SMITH ZANDER INTERNATIONAL SDN BHD (“**SMITH ZANDER**”) for inclusion in the draft Prospectus in conjunction with the proposed listing of Crest Group Berhad (“**Crest**”) on the ACE Market of Bursa Malaysia Securities Berhad.

The objective of this IMR Report is to provide an independent view of the industry in which Crest and its subsidiaries (“**Crest Group**”) operate and to offer a clear understanding of the industry dynamics. Crest Group is principally involved in the provision of imaging, analytical and test solutions, operating in Malaysia, China, Thailand and Singapore, and plans to expand its business presence to Vietnam. Thus, the scope of work for this IMR Report will address the following areas:

- (i) The imaging, analysis and testing industry in Malaysia;
- (ii) Key industry drivers, risks and challenges of the imaging, analysis and testing industry in Malaysia;
- (iii) Competitive landscape of the imaging, analysis and testing industry in Malaysia; and
- (iv) The imaging, analysis and testing industry in China, Thailand, Singapore and Vietnam.

The research process for this study has been undertaken through secondary or desktop research, as well as detailed primary research when required, which involves discussing the status of the industry with leading industry participants. Quantitative market information could be sourced from interviews by way of primary research and therefore, the information is subject to fluctuations due to possible changes in business, industry and economic conditions.

SMITH ZANDER has prepared this IMR Report in an independent and objective manner and has taken adequate care to ensure the accuracy and completeness of the report. We believe that this IMR Report presents a balanced view of the industry within the limitations of, among others, secondary statistics and primary research, and does not purport to be exhaustive. Our research has been conducted with an “overall industry” perspective and may not necessarily reflect the performance of individual companies in this IMR Report. SMITH ZANDER shall not be held responsible for the decisions and/or actions of the readers of this report. This report should also not be considered as a recommendation to buy or not to buy the shares of any company or companies mentioned in this report.

For and on behalf of SMITH ZANDER:



**DENNIS TAN**  
 MANAGING PARTNER

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The research for this IMR Report was completed on 15 January 2024.

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**About SMITH ZANDER INTERNATIONAL SDN BHD**

*SMITH ZANDER is a professional independent market research company based in Kuala Lumpur, Malaysia, offering market research, industry intelligence and strategy consulting solutions. SMITH ZANDER is involved in the preparation of independent market research reports for capital market exercises, including initial public offerings, reverse takeovers, mergers and acquisitions, and other fund-raising and corporate exercises.*

**Profile of the signing partner, Dennis Tan Tze Wen**

*Dennis Tan is the Managing Partner of SMITH ZANDER. Dennis Tan has over 26 years of experience in market research and strategy consulting, including over 21 years in independent market research and due diligence studies for capital markets throughout the Asia Pacific region. Dennis Tan has a Bachelor of Science (major in Computer Science and minor in Business Administration) from Memorial University of Newfoundland, Canada.*

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## 1 THE IMAGING, ANALYSIS AND TESTING INDUSTRY IN MALAYSIA

### Overview

The imaging, analysis and testing industry refers to a sector providing equipment and services for the imaging, inspection, analysis, testing and measurement of various parameters and characteristics of materials, components and samples for different applications, catering towards companies, institutions and/or organisations from various fields and industries for their manufacturing operations, quality control processes and/or research and development (“R&D”) activities, amongst others. The imaging, analysis and testing industry serves a wide range of fields and industries including electrical and electronic (“E&E”), semiconductor, automotive, aerospace, healthcare, life science, material science, oil and gas, and research (e.g. academic and clinical).

The imaging, analysis and testing industry can be broadly segmented into equipment and services, as follows:

### Equipment

The equipment segment entails the production and distribution of imaging, analytical and test equipment that are used to qualitatively and/or quantitatively test, measure, display, record and/or analyse information from images, data or responses of various parameters and characteristics of materials, components and samples whereby these information, data or responses are then utilised to perform further analysis and investigation on a particular experiment or observation; assess the performance, quality and/or functionality; and/or to identify and detect faults or defects of the material, component or sample of interest, amongst others.

Some examples of equipment types used in the imaging, analysis and testing industry are:

- (i) **Microscopes and X-ray related equipment** – used for magnifying tiny objects or specimens that are not visible to the naked eye or used for imaging, analysing, examining, inspecting and/or characterising composition of materials, structures, electronic components, semiconductor samples, biological samples and others. Examples include optical microscopes, scanning electron microscopes, X-ray fluorescence analysers and X-ray inspection machines.
- (ii) **Mechanical testing, physical and/or chemical analysis equipment** – used for examining, characterising, testing, quantifying and/or assessing the mechanical, physical and/or chemical properties or compositions of various substances, materials and samples. Examples include universal testing machines, pendulum impact testers, refractometers and spectrometers.
- (iii) **Test and measurement equipment** – used for testing, inspecting and/or measuring various parameters and applications such as electrical quantities, ionising radiation, semiconductor application and others. Examples include oscilloscopes, spectrum analysers and analytical probing stations.

Imaging, analytical and test equipment are generally manufactured by product principals (i.e. equipment manufacturers), generally based in countries such as Japan, United States of America and United Kingdom.

### Services

Other than equipment, the imaging, analysis and testing industry offers a range of related support services, with some common services offered as follows:

- (i) **Consulting and implementation services** – Consulting involves assessing and analysing a customer’s imaging, inspection, analysis, testing and/or measurement needs and budget as well as guiding the customer in selecting the ideal equipment for its manufacturing operations, quality control processes and/or R&D activities.

Consulting is an essential step before the implementation of imaging, analytical and test equipment. Each customer has distinct requirements, thus it is necessary to develop customised solutions tailored to the customer’s specific needs in order to deploy and integrate suitable equipment into existing operational workflows and processes to achieve the required objectives.

Upon consultation, the necessary equipment is sourced, integrated and installed as part of the implementation process. Subsequently, the equipment is commissioned, and testing and calibration is

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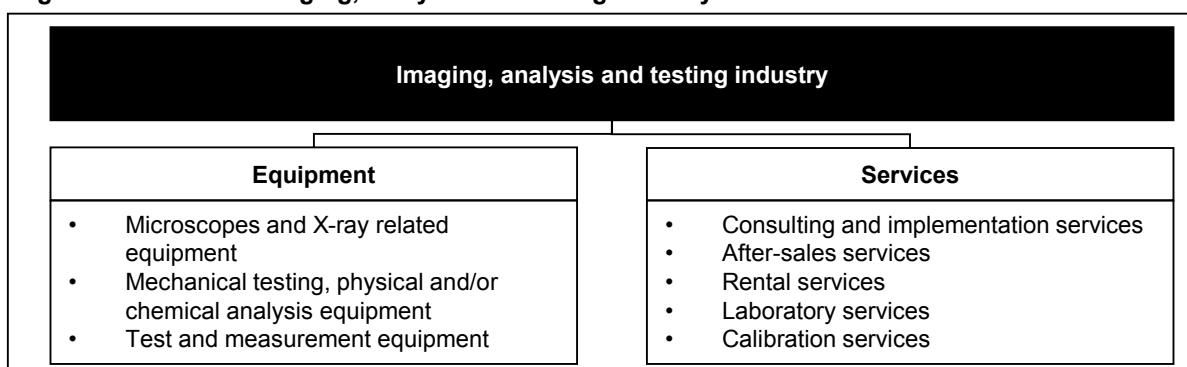
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conducted to ensure that the equipment functions as intended. Further, user-training may be provided to guide customers on the proper usage of the equipment.

- (ii) **After-sales services** – Upon implementation, technical support and maintenance services are rendered to assist customers in solving technical issues and to provide regular maintenance including routine condition checks as well as on-going testing and calibration.
- (iii) **Rental services** – Rental services for imaging, analytical and test equipment is available to provide customers with temporary access to equipment for a specified period without the need to purchase and own the equipment.
- (iv) **Laboratory services** – Laboratory services is provided by service providers which involves performing imaging, inspection, analysis, testing and/or measurement activities on behalf of customers who may not possess the necessary equipment or facilities and/or do not have the technical expertise to perform such tasks in-house.
- (v) **Calibration services** – Calibration services involve the calibration of imaging, analytical and test equipment to ensure that the performance and functionality of the equipment align with the desired specifications and standards.

Imaging, analytical and test solution providers in Malaysia may offer both equipment and services as a solution to customers. As these solution providers do not develop and manufacture equipment, they typically collaborate with product principals to distribute the product principals' equipment.

### Segmentation of the imaging, analysis and testing industry



Note:

- The list is not exhaustive.

Source: SMITH ZANDER

### Industry Performance, Size and Growth

As Crest Group primarily provides solutions using imaging, analytical and test equipment that are generally categorised under microscopes and X-ray related equipment; mechanical testing, physical and/or chemical analysis equipment; and test and measurement equipment, the imaging, analysis and testing industry in Malaysia is represented by these equipment segments.

The imaging, analysis and testing industry in Malaysia decreased by 17.59% from RM5,258 million in 2019 to RM4,333 million in 2020 due to a decline in microscopes and X-ray related equipment, as well as test and measurement equipment, caused by declining demand for these equipment resulting from the economic slowdown amidst the novel coronavirus 2019 (“**COVID-19**”) pandemic. Nonetheless, the imaging, analysis and testing industry in Malaysia recovered and grew from RM4,333 million in 2020 to an estimated RM7,230 million in 2023 at a compound annual growth rate (“**CAGR**”) of 18.61%.

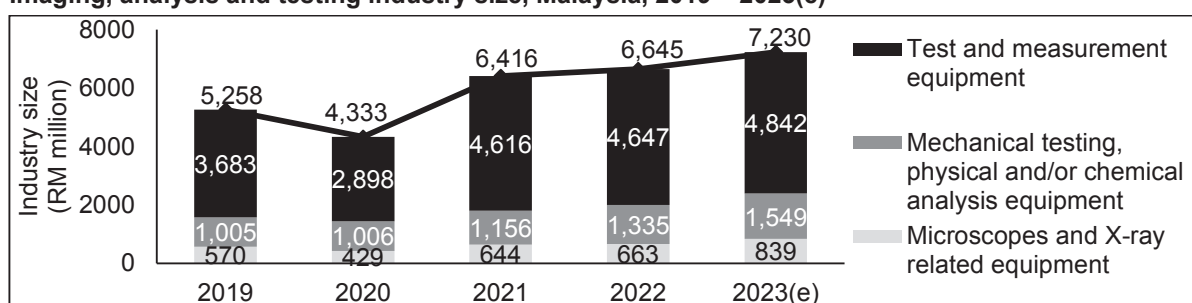
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**Imaging, analysis and testing industry size, Malaysia, 2019 – 2023(e)**

Segments	Industry size <sup>1</sup> (RM million)					CAGR (2019 – 2023(e))
	2019	2020	2021	2022	2023(e) <sup>2</sup>	
Microscopes and X-ray related equipment	570	429	644	663	839	10.15%
Mechanical testing, physical and/or chemical analysis equipment	1,005	1,006	1,156	1,335	1,549	11.42%
Test and measurement equipment	3,683	2,898	4,616	4,647	4,842	7.08%
<b>Total</b>	<b>5,258</b>	<b>4,333</b>	<b>6,416</b>	<b>6,645</b>	<b>7,230</b>	<b>8.29%</b>

Sources: Department of Statistics Malaysia ("DOSM"), SMITH ZANDER

**Imaging, analysis and testing industry size, Malaysia, 2019 – 2023(e)**

Sources: DOSM, SMITH ZANDER

The growth in the imaging, analysis and testing industry in Malaysia is driven by factors such as the growth of various industries that utilise imaging, analytical and test equipment and services, government support and initiatives, as well as the rising adoption of Internet of Things ("IoT") and Industry 4.0 technologies.

## 2 KEY INDUSTRY DRIVERS, RISKS AND CHALLENGES OF THE IMAGING, ANALYSIS AND TESTING INDUSTRY IN MALAYSIA

### Key Industry Drivers

- **The demand for imaging, analytical and test equipment and services is driven by the growth of various industries that utilise such equipment and services**

The demand for imaging, analytical and test equipment and services is driven by the growth of various industries that utilise such equipment and services such as E&E, semiconductor, automotive, aerospace, healthcare, life science, material science as well as oil and gas. As E&E and semiconductor are the key industries that Crest Group supports, the growth of these industries is elaborated below:

- **E&E industry**

E&E products developed today play essential roles in various industries such as retail, manufacturing and telecommunications. Many of these industries cannot function without the use of E&E products. Imaging, analytical and test equipment and services are essential in verifying the performance and functionality of E&E products, to detect any defects or faults and ensure that the products meet the required operational and safety standards and specifications. Further, imaging, analytical and test equipment and services also aid in promoting the advancement of technology, innovation and

<sup>1</sup> The computation of the industry sizes for the microscopes and X-ray related equipment; mechanical testing, physical and/or chemical analysis equipment; as well as test and measurement equipment segments may include imaging, analytical and test equipment and part and accessories that are not sold by Crest Group as data breakdown specifically for the imaging, analytical and test equipment and parts and accessories offered by Crest Group is not publicly available.  
<sup>2</sup> (e) – Estimate.

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development of new E&E products by facilitating various aspects of the product development and improvement process. Growth in the E&E industry will lead to increased adoption of imaging, analytical and test equipment and services.

In 2020, the E&E industry size in Malaysia declined by 0.48% from RM424.23 billion in 2019 to RM422.18 billion in 2020. This was primarily due to the temporary halt of manufacturing activities and supply chain disruption as a result of the imposition of movement restrictions by the Government of Malaysia (“Government”) to curb the spread of the COVID-19 pandemic.

Nonetheless, the E&E industry in Malaysia recovered in 2021 and 2022

and grew at a CAGR of 17.36% from RM422.18 billion in 2020 to RM581.53 billion in 2022, as the economy recovered upon the upliftment of movement restrictions. Further, SMITH ZANDER estimates the E&E industry to have grown by 2.69% from RM581.53 billion in 2022 to RM597.20 billion in 2023.

### • Semiconductor industry

As semiconductor manufacturing involves multiple complex processes (e.g. wafer fabrication, photolithography and etching), imaging, analytical and test equipment are required to monitor and detect any defects during the manufacturing process as well as to ensure the final semiconductor products meet the required specifications, functionality, quality and safety standards.

Therefore, growth in the semiconductor industry will drive the demand for imaging, analytical and test equipment and services to ensure that semiconductor products meet the required quality levels, minimise defects or faults, optimise performance and improve overall product reliability.

The semiconductor industry in Malaysia, measured by the manufacturing sales value of diodes, transistors and similar semiconductor devices as well as electronic integrated circuits (“ICs”) micro assemblies, grew at a CAGR of 17.16% from RM128.44 billion in 2019 to RM206.53 billion in 2022.

SMITH ZANDER estimates the semiconductor industry in Malaysia to have declined by 2.92% from RM206.53 billion in 2022 to RM200.50 billion in 2023, in tandem with the World Semiconductor

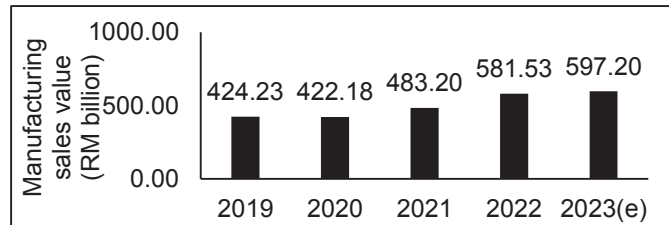
Trade Statistics’ estimates of a 9.40% decline in global semiconductor sales in view of a decrease in sales in the global IC segment, in response to rising inflation rates and weakening demand in end-markets.

Nonetheless, the semiconductor industry in Malaysia is expected to recover and grow moving forward in view that global semiconductor sales will recover in 2024, which will thus continue to spur the growth of the imaging, analysis and testing industry in Malaysia.

### ► Government support and initiatives will spur the growth of the imaging, analysis and testing industry in Malaysia

The outlook for certain end-user industries will benefit from strong support from the Government, which will positively impact the growth of the imaging, analysis and testing industry as the industry is driven by end-user industries such as E&E and aerospace.

**E&E industry size, Malaysia, 2019 – 2023(e)**

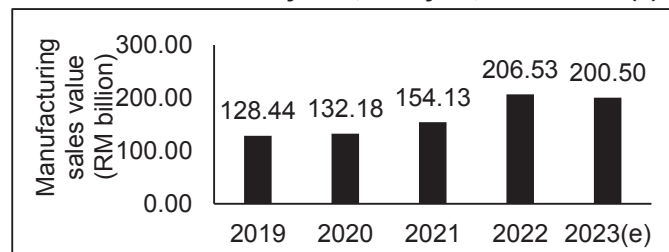


Note:

- (e) – Estimate.

Sources: DOSM, SMITH ZANDER

**Semiconductor industry size, Malaysia, 2019 – 2023(e)**



Note:

- (e) – Estimate.

Sources: DOSM, SMITH ZANDER



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According to the Budget 2023 tabled on 24 February 2023, as Malaysia has a great prospect in the E&E and aerospace sectors, the Government intends to extend the tax incentive given to manufacturing companies that relocate to Malaysia and the tax rate of 15% for C-suite until 2024 to attract companies that were affected by the COVID-19 to operate in Malaysia. Further, the Government also plans to extend the income tax incentives and investment tax allowances for the aerospace sector until 31 December 2025 to stimulate the expansion of existing companies and attract new investments. As such, with the anticipation of the growth of the E&E and aerospace sectors in Malaysia driven by the government initiatives, this may spur the demand for imaging, analytical and test equipment and services in Malaysia as the E&E manufacturing companies and aerospace companies will require imaging, analytical and test solutions to support among others, the inspection and testing of materials, components and structures of an E&E or aerospace product, and the R&D of E&E and aerospace to develop new innovative products or to enhance performance, efficiency and safety of E&E and aerospace systems and equipment.

Additionally, based on Budget 2024 tabled on 13 October 2023, in efforts to spur local industries towards higher value technology to enhance technology services, commercial intervention of R&D products and training, RM10 million will be allocated to the E&E technology field under MIMOS Berhad (MIMOS), aerospace technology field under Malaysian Space Agency (MYSA) as well as the drone and robotics technology field under Malaysian Research Accelerator for Technology and Innovation (MRANTI). The development and progress in the E&E technology and aerospace technology fields supported by the government initiative is expected to drive the demand for imaging, analytical and test equipment and services as these equipment and services will be crucial in supporting various processes of the E&E and aerospace sectors, including R&D and quality assurance, amongst others.

### ► **Rising adoption of IoT and Industry 4.0 technologies drives demand for imaging, analytical and test equipment and services**

IoT refers to a network of devices and objects connected to each other through the internet, to facilitate data exchange and remote access. These smart devices feature wireless fidelity (Wi-Fi) connectivity, where they can be linked to a smartphone via a mobile application. Smart devices is gaining popularity as they allow owners to monitor and control the devices from remote locations, enabling them to save time and providing convenience. Examples of IoT applications include smart homes, wearables, smart cities, smart grids and industrial IoT. As more devices and systems become connected and integrated into the IoT ecosystem, the need for reliable imaging, analytical and test solutions become imperative. This is because IoT devices require high measurement accuracy, efficient data transmission, extensive data collection capability, seamless connectivity, and compatibility with various networks and protocols. Thus, imaging, analytical and test equipment and services help ensure that these devices and system function accordingly upon deployment and integration, as well as achieve the required performance standards.

Moreover, the growth of the imaging, analysis and testing industry is also expected to be propelled by the rising adoption of Industry 4.0 technologies and applications. Industry 4.0, which is known as the Fourth Industrial Revolution, involves the integration of technologies into manufacturing and industrial processes. Industry 4.0 will further transform manufacturing-based industries to include digitalisation and autonomous manufacturing activities. These activities are likely to boost the use of imaging, inspection, analysis, testing and measurement techniques in manufacturing processes as the integration of automation, robotics, data analytics and/or artificial intelligence in industrial settings demand precise measurement and control of various parameters.

## Key Industry Risks and Challenges

### ► **Reliance on product principals for imaging, analytical and test equipment**

Imaging, analytical and test solution providers in Malaysia rely on product principals for the supply and availability of high-quality, accurate and reliable equipment. By partnering with product principals, these solution providers are able to gain access to a diverse range of equipment.

Any changes in the business direction of the product principals may cause a direct impact on the imaging, analytical and test solution providers. For instance, in the event a product principal decides to cease the distribution of their equipment to the imaging, analytical and test solution provider, this would impede the solution provider's ability to offer solutions to its customers. As such, this may result in a disruption in the solution provider's business operations as well as hinder its ability to meet customer requirements.

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Under such circumstances, the imaging, analytical and test solution provider will have to seek out alternative product principals. However, this can be time-consuming, costly and may not necessarily ensure seamless continuity of services.

► **Constant technological advancement resulting in the need for continuous innovation to remain competitive**

In today's everchanging technological landscape, industries such as E&E, semiconductor, automotive, aerospace, healthcare, life science, material science, as well as oil and gas are constantly striving to develop new or enhanced innovative products that align with the latest technological trends. As these industries develop more complex products incorporating advanced technologies, the need for sophisticated and specialised imaging, analytical and test equipment emerges.

As such, it is imperative for imaging, analytical and test solution providers to stay ahead of the curve in offering the latest equipment that can effectively inspect and assess the performance and reliability of the latest products. If they fail to keep up with technological advancements, this could result in a loss of business opportunities. Inability to stay updated and invest in new technologies may subsequently affect the competitiveness of the imaging, analytical and test solution providers, resulting in customers turning to competitors who are able to offer more advanced solutions.

## 3 COMPETITIVE LANDSCAPE OF THE IMAGING, ANALYSIS AND TESTING INDUSTRY IN MALAYSIA

### Overview

The imaging, analysis and testing industry in Malaysia is fragmented due to the wide range of equipment offered in the market for various industries and applications. Product principals typically appoint local imaging, analytical and test solution providers in Malaysia such as Crest Group to distribute and sell their equipment to customers. Different industry players (i.e. distributors and solution providers) may specialise in different types of imaging, analytical and test equipment, with some focusing on offering equipment types catered for specific industries and/or applications while others offer equipment types which are catered to a broader range of industries and/or applications. As such, this diversity leads to a fragmented landscape where industry players may not offer precisely the same range or type of equipment as one another. Further, product principals may also directly provide customers with their equipment and services through locally established entities in Malaysia.

Local solution providers provide product principals access to a wide customer base and customers may often require equipment from various product principals to meet their requirements and budgets. As such, these customers may prefer to engage with solution providers who offer a diverse range of equipment from multiple product principals.

The barriers to entry of the imaging, analysis and testing industry are technical expertise and rapid technological advancements. For instance, solution providers are required to have specialised knowledge to develop and implement suitable solutions to cater to different customer requirements. Hence, the complexity of the technology and know-how involved may prove challenging for new entrants to quickly develop the necessary expertise. Moreover, as the imaging, analysis and testing industry is constantly evolving with new technologies and techniques are continually emerging, the solution providers are thus required to constantly keep themselves updated with the latest advancements and incorporating them into their solutions to remain competitive. Given that established imaging, analytical and test solution providers may hold a distinct advantage in accessing the latest technological updates, this could pose challenges for new entrants to attain a comparable level of technological parity.

### Key Industry Players

As Crest Group is principally involved in the provision of imaging, analytical and test solutions used primarily for quality inspection, sample analysis and R&D, companies which are incorporated in Malaysia and are



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involved in the sale of third party imaging, analytical and test equipment which are similar to Crest Group's is used as the basis for selection of the key industry players in Malaysia.

Premised on the above, the list of key industry players in the imaging, testing and analysis industry in Malaysia is as follows:

Company name	Principal activities	Latest available financial year	Revenue <sup>(a)</sup> (RM million)	Gross profit margin (%)	Profit after tax margin (%)
QES Group Berhad	Manufacturing, distribution and provision of engineering services for inspection, test, measuring, analytical and automated handling equipment	31 December 2022	264.41	26.80	10.50
Crest Group	Provision of imaging, analytical and test solutions used primarily for quality inspection, sample analysis and R&D	31 December 2022	170.20	26.85	10.56
Interscience Sdn Bhd	Dealer of scientific equipment and chemicals	31 December 2021	112.61	27.96	9.08
Symphony Engineering Sdn Bhd	Trading and the provision of engineering services for general, E&E equipment and machineries for industrial, commercial and domestic purposes	31 December 2022	58.57	12.82	3.12
CLMO Technology Sdn Bhd	Trading, installation and maintenance of technological equipment	31 December 2022	50.32	45.25	18.88
Nihon Denkei (Malaysia) Sdn Bhd (a subsidiary of Nihon Denkei Co., Ltd <sup>(b)</sup> )	Trading of electronic test measuring equipment and provision of related services	31 December 2022	34.41	16.19	6.86
DKSH Technology Sdn Bhd (a subsidiary of DKSH Holding Ltd. <sup>(c)</sup> )	Importing and trading in technical products	31 December 2022	27.92	N/A <sup>(d)</sup>	8.06
MTSC Solution Sdn Bhd	Trading of new and used equipment and provision of consultation and services in the area of test, process and laboratory	31 March 2023	24.27	54.35	17.92
Cairnhill Metrology Sdn Bhd (a subsidiary of Cairnhill Metrology Pte Ltd <sup>(e)</sup> )	Marketing, trading and servicing precision measuring tools and equipment	30 September 2022	23.30	N/A <sup>(d)</sup>	3.13
Hi-Tech Instruments Sdn Bhd	Marketing of scientific instruments	30 September 2022	21.57	N/A <sup>(d)</sup>	4.87

**Notes:**

- The identified key industry players include all industry players that were identified by SMITH ZANDER based on sources available, such as the internet, published documents and industry directories. However, there may be

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companies that have no online and/or published media presence, or are operating with minimal public advertisement, and hence SMITH ZANDER is unable to state conclusively that the list of industry players is exhaustive.

- For the purpose of this IMR Report, companies with revenue above RM20.00 million in their latest available respective financial years is used as a cut-off point to shortlist the key industry players. Companies with revenue below RM20.00 million in their latest available respective financial years have not been shortlisted.
- (a) Revenue of industry players may include revenue derived from other business activities (i.e. business activities other than the sale of imaging, analytical and test equipment) and/or revenue derived from countries outside Malaysia.
- (b) Nihon Denkei Co., Ltd, a Japanese company listed on the Tokyo Stock Exchange, is the holding company of Nihon Denkei (Malaysia) Sdn Bhd and is involved in the distributing, manufacturing, leasing and rental business of electronic measuring instruments, system equipment and electronic parts.
- (c) DKSH Holding Ltd., a Swiss company listed on the SIX Swiss Exchange, is the holding company of DKSH Technology Sdn Bhd and is involved in the provision of market expansion services.
- (d) N/A – Not available as gross profit is not reported in the annual report.
- (e) Cairnhill Metrology Pte Ltd, a Singapore private company is the immediate holding company of Cairnhill Metrology Sdn Bhd and is involved in the provision of industrial metrology solutions.

Sources: Crest Group, various company websites, Companies Commission of Malaysia, SMITH ZANDER

Apart from the companies listed in the table above, there are some foreign product principals who may directly sell to customers through their locally established entities in Malaysia, thus competing with the local imaging, analytical and test solution providers. Examples of Malaysian entities established by foreign product principals include Shimadzu Malaysia Sdn Bhd and Hitachi High-Tech IPC (Malaysia) Sdn Bhd.

**Industry/Market Share**

In 2022, the imaging, analysis and testing industry size in Malaysia was recorded at RM6,645 million. For the financial year end 31 December 2022, Crest Group's revenue derived from Malaysia was recorded at RM79.93 million, and thereby Crest Group captured a market share of 1.20% in the imaging, analysis and testing industry in Malaysia.

**4 THE IMAGING, ANALYSIS AND TESTING INDUSTRY IN CHINA, THAILAND, SINGAPORE AND VIETNAM****Industry Performance, Size and Growth**

As Crest Group has business presence in China, Thailand and Singapore, and is planning to expand its business presence to Vietnam, this section covers the imaging, analysis and testing industries in China, Thailand, Singapore and Vietnam.

The imaging, analysis and testing industry in China experienced growth from 2019 to 2023 at a CAGR of 5.29%. Overall, from 2019 to 2023, the test and measurement equipment segment recorded the largest growth at a CAGR of 6.57% amongst the three segments, followed by microscopes and X-ray related equipment, and mechanical testing, physical and/or chemical analysis equipment, which recorded CAGRs of 5.44% and 3.02% respectively.

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**8. INDEPENDENT MARKET RESEARCH REPORT (Cont'd)****SMITH ZANDER****Imaging, analysis and testing industry size, China, 2019 – 2023**

Segments	Industry size <sup>1</sup> (Million)					CAGR (2019 – 2023)
	2019 <sup>3</sup>	2020 <sup>3</sup>	2021 <sup>3</sup>	2022 <sup>3</sup>	2023 <sup>3</sup>	
Microscopes and X-ray related equipment	CNY26,381 (RM15,823)	CNY27,968 (RM17,038)	CNY26,897 (RM17,287)	CNY28,944 (RM18,929)	CNY32,606 (RM21,002)	5.44%
Mechanical testing, physical and/or chemical analysis equipment	CNY52,563 (RM31,527)	CNY58,392 (RM35,572)	CNY54,302 (RM34,900)	CNY57,667 (RM37,714)	CNY59,203 (RM38,133)	3.02%
Test and measurement equipment	CNY85,945 (RM51,550)	CNY93,108 (RM56,721)	CNY104,623 (RM67,241)	CNY105,213 (RM68,809)	CNY110,852 (RM71,400)	6.57%
<b>Total</b>	<b>CNY164,889 (RM98,900)</b>	<b>CNY179,468 (RM109,332)</b>	<b>CNY185,822 (RM119,428)</b>	<b>CNY191,824 (RM125,453)</b>	<b>CNY202,661 (RM130,534)</b>	<b>5.29%</b>

Sources: General Administration of Customs of the People's Republic of China, SMITH ZANDER

The imaging, analysis and testing industry in Thailand experienced growth from 2019 to 2023 at a CAGR of 3.65%. Overall, from 2019 to 2023, the microscopes and X-ray related equipment segment recorded the largest growth at a CAGR of 5.71%, followed by mechanical testing, physical and/or chemical analysis equipment, and test and measurement equipment, which recorded CAGRs of 5.26% and 2.43% respectively.

**Imaging, analysis and testing industry size, Thailand, 2019 – 2023(e)**

Segments	Industry size <sup>1</sup> (Million)					CAGR (2019 – 2023(e))
	2019 <sup>3</sup>	2020 <sup>3</sup>	2021 <sup>3</sup>	2022 <sup>3</sup>	2023(e) <sup>2,3</sup>	
Microscopes and X-ray related equipment	THB5,412 (RM722)	THB5,430 (RM729)	THB4,984 (RM646)	THB5,472 (RM687)	THB6,758 (RM886)	5.71%
Mechanical testing, physical and/or chemical analysis equipment	THB10,712 (RM1,430)	THB9,719 (RM1,305)	THB11,671 (RM1,512)	THB12,858 (RM1,614)	THB13,148 (RM1,723)	5.26%
Test and measurement equipment	THB24,326 (RM3,247)	THB20,139 (RM2,705)	THB24,912 (RM3,228)	THB28,193 (RM3,539)	THB26,783 (RM3,511)	2.43%
<b>Total</b>	<b>THB40,450 (RM5,400)</b>	<b>THB35,288 (RM4,739)</b>	<b>THB41,567 (RM5,386)</b>	<b>THB46,523 (RM5,841)</b>	<b>THB46,689 (RM6,120)</b>	<b>3.65%</b>

Sources: Ministry of Commerce of Thailand, SMITH ZANDER

<sup>3</sup> Exchange rates from CNY, THB and USD to RM in this IMR Report were converted based on average annual exchange rates extracted from published information from Bank Negara Malaysia:

	2019	2020	2021	2022	2023
CNY1=RM	0.5998	0.6092	0.6427	0.6540	0.6441
THB100=RM	13.3489	13.4309	12.9574	12.5543	13.1073
USD1=RM	4.1427	4.2016	4.1454	4.4005	4.5653

**8. INDEPENDENT MARKET RESEARCH REPORT (Cont'd)****SMITH ZANDER**

The imaging, analysis and testing industry in Singapore experienced growth from 2019 to 2023 at a CAGR of 14.35%. Overall, from 2019 to 2023, the test and measurement equipment segment recorded the largest growth at a CAGR of 22.49%, followed by mechanical testing, physical and/or chemical analysis equipment, and microscopes and X-ray related equipment, which recorded CAGRs of 6.74% and 1.42% respectively.

**Imaging, analysis and testing industry size, Singapore, 2019 – 2023(e)**

Segments	Industry size <sup>1</sup> (Million)					CAGR (2019 – 2023(e))
	2019 <sup>3</sup>	2020 <sup>3</sup>	2021 <sup>3</sup>	2022 <sup>3</sup>	2023(e) <sup>2,3</sup>	
Microscopes and X-ray related equipment	USD447 (RM1,852)	USD373 (RM1,567)	USD445 (RM1,845)	USD488 (RM2,147)	USD473 (RM2,159)	1.42%
Mechanical testing, physical and/or chemical analysis equipment	USD1,433 (RM5,936)	USD1,360 (RM5,714)	USD1,612 (RM6,682)	USD1,910 (RM8,405)	USD1,860 (RM8,491)	6.74%
Test and measurement equipment	USD1,629 (RM6,748)	USD2,292 (RM9,630)	USD3,433 (RM14,231)	USD3,780 (RM16,634)	USD3,667 (RM16,741)	22.49%
<b>Total</b>	<b>USD3,509 (RM14,537)</b>	<b>USD4,025 (RM16,911)</b>	<b>USD5,490 (RM22,758)</b>	<b>USD6,178 (RM27,186)</b>	<b>USD6,000 (RM27,392)</b>	<b>14.35%</b>

Sources: United Nations ("UN") Comtrade, SMITH ZANDER

The imaging, analysis and testing industry in Vietnam experienced growth from 2019 to 2023 at a CAGR of 2.88%. Overall, from 2019 to 2023, the test and measurement equipment segment recorded the largest growth at a CAGR of 5.17%, followed by mechanical testing, physical and/or chemical analysis equipment which recorded a CAGR of 0.43%. The microscopes and X-ray related equipment segment recorded a negative CAGR of 11.68% from 2019 to 2023 due to lower demand.

**Imaging, analysis and testing industry size, Vietnam, 2019 – 2023(e)**

Segments	Industry size <sup>1</sup> (Million)					CAGR (2019 – 2023 (e))
	2019 <sup>3</sup>	2020 <sup>3</sup>	2021 <sup>3</sup>	2022 <sup>3</sup>	2023(e) <sup>2,3</sup>	
Microscopes and X-ray related equipment	USD166 (RM688)	USD126 (RM529)	USD124 (RM514)	USD101 (RM444)	USD101 (RM461)	-11.68%
Mechanical testing, physical and/or chemical analysis equipment	USD348 (RM1,442)	USD305 (RM1,281)	USD427 (RM1,770)	USD342 (RM1,505)	USD354 (RM1,616)	0.43%
Test and measurement equipment	USD1,168 (RM4,839)	USD1,081 (RM4,542)	USD1,309 (RM5,426)	USD1,306 (RM5,747)	USD1,429 (RM6,524)	5.17%
<b>Total</b>	<b>USD1,682 (RM6,968)</b>	<b>USD1,512 (RM6,353)</b>	<b>USD1,860 (RM7,710)</b>	<b>USD1,749 (RM7,696)</b>	<b>USD1,884 (RM8,601)</b>	<b>2.88%</b>

Sources: UN Comtrade, SMITH ZANDER

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