Fact Sheet on the Launch of A New Lean Enterprise Development (LED) Project for the Food Manufacturing Sector - Industry Development, Enhancement & Advancement Programme for Small and Medium Enterprises (IDEAS)

Sector Overview

1. Singapore’s food manufacturing sector comprises over 860 establishments employing about 30,000 workers and contributed $10.4 billion in total output and $3.4 billion in value-added, with the sector expected to experience further growth in the next five years.

2. Local food manufacturers are investing in R&D for more first-in-the-market products whilst enhancing processes and packaging for better quality products with longer shelf-life. To augment the expected growth of the food manufacturing and other process industries, the collaboration between Workforce Singapore, Singapore Polytechnic and Agilent Technologies will benefit up to 500 workers and 50 companies, achieving up to 85% manpower savings and productivity improvements of up to 6 times for participating companies.

About the New Lean Enterprise Development (LED) Project

3. Workforce Singapore, Singapore Polytechnic and Agilent Technologies have collaborated on a new Lean Enterprise Development (LED) project known as Industry Development, Enhancement & Advancement Programme for Small and Medium Enterprises (IDEAS), to benefit the Food Manufacturing Sector in product testing and development. Through the collaboration, Agilent will provide state-of-the-art analytical instruments at Singapore Polytechnic, while Singapore Polytechnic will offer consultancy services and training on technology leverage and processes. The collaboration is not limited to the food manufacturing sector and is extended to all process industries such as Biomedical Sciences, Chemicals Oil & Gases as well as Environmental technology.

4. Current processes and technology adopted by SMEs in product testing and development requires a lengthy process of preparation of samples, running of tests and interpretation of data. The entire process requires a minimum of 24 hours before a conclusion can be reached. Through the analytical equipment made available by Agilent Technologies, the process of product testing and development will be shortened by more than six times, obtaining results with greater accuracy within a short span of 4 hours (Please see Annex A for more information on the list of equipment).

5. Singapore Polytechnic will further develop technical notes from the various product testing and developments, and share relevant information with the industry. This will be done through symposiums, masterclasses and workshops, with funding support from Workforce Singapore through the Industry Catalyst Programme (ICP). It aims to equip local employees with specialised skills in the operating and interpretation of data from the high-tech analytical instruments, resulting in productivity gains, increased value-add of the work and creation of higher value and skilled jobs for Singaporeans. Singapore Polytechnic and Agilent Technologies will curate and run the training.

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1 Source: EDB Research & Statistics Unit 2014
Commencement of Programme

6. The programme commenced on 1 October 2016, and will be reviewed half yearly till the expiration of each of the instrument’s loan term.

List of participating companies

7. For a start, the following six companies have expressed their interest to take part in the new Lean Enterprise Development project:
   - Gryphon Tea Company
   - Gold Kili Trading Enterprise (S) Pte Ltd
   - Stamfles International Pte Ltd
   - Gene Oasis Pte Ltd
   - NamZ Pte Ltd
   - Mr Bean International Pte Ltd

8. The companies will benefit from the project, achieving manpower savings of up to 85% and six times increase in productivity.

Application Details

9. Companies which are keen to embark on the programme or require further details of the programme may contact the following:

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<tr>
<th>For Application and further details</th>
<th>Singapore Polytechnic</th>
<th>Mr Gabriel Soon</th>
<th>6870 8356</th>
<th><a href="mailto:gabriel_soon@sp.edu.sg">gabriel_soon@sp.edu.sg</a></th>
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<tr>
<td>For further details</td>
<td>Agilent Technologies</td>
<td>Ms Ilini Ng</td>
<td>6215 8067</td>
<td><a href="mailto:Ilini_ng@agilent.com">Ilini_ng@agilent.com</a></td>
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### Instruments to be placed in SP

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<td><img src="image1" alt="Gas Chromatograph – Mass Spectrometer" /></td>
<td><img src="image2" alt="Liquid Chromatograph – Mass Spectrometer" /></td>
<td><img src="image3" alt="Inductively Coupled Plasma Mass Spectrometer" /></td>
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Gas chromatography mass spectrometry (GC/MS) is an instrumental technique, comprising a gas chromatograph (GC) coupled to a mass spectrometer (MS), by which complex mixtures of chemicals may be separated, identified and quantified.

**Chemical industry**
- Fast and accurate analysis of hydrocarbon streams in petrochemical and chemical products
- Reliable measurement of additives and stabilizers in plastics and polymers
- Screening for banned or restricted substances (phthalates) in toys.

**Food industry**
- Detection of carcinogenic compounds i.e. persistent organic pollutants (POPs) in foodstuff
- Screening for pesticides in foodstuff

Liquid chromatography–mass spectrometry (LC-MS, or alternatively HPLC-MS) is an analytical chemistry technique that combines the physical separation capabilities of liquid chromatography (or HPLC) with the mass analysis capabilities of mass spectrometry (MS).

**Food industry**
- Analysis of Vitamins, sugar, preservatives, antioxidants, colouring in foodstuff
- Screening for trace level of food contaminants i.e. Antibiotics in meat, malachite green in seafood, sudan dyes in salted egg, etc.
- Mycotoxins occur in food through fungal infections, interaction or feeding on other toxic organisms i.e. Algae or through internal processes in the food during storage.

Inductively coupled plasma mass spectrometry (ICP-MS) is a type of mass spectrometry which is capable of detecting metals and several non-metals at trace level concentrations.

**Chemical Industry**
- Detection of trace metals in specialty chemicals

**Food Industry**
- Detection of Arsenic and Selenium in Food

**Pharmaceutical and Biologics Industry**
- Trace metals analysis
| Fragrances and flavourings in foodstuff | Pharmaceutical and Biologics Industry |
| Monitoring of contaminants i.e. Polyaromatic hydrocarbons and Acrylamide in food processing and packaging. | Purity and impurity analysis in drugs |
| Pharmaceutical and Biopharmaceutical Industry | Analysis of Chinese herbal medicines |
| Detection of residual solvents | Amino acids and media analysis |
| Detection and identification of extractables and leachables from drug packaging and medical devices | Protein analysis |