Profiles of Construction-related Firms Implementing Productivity Improvements

Name of company: DLE M&E Pte Ltd
Contact Person: Sarah Goh, Associate Director
Mobile: 81133282
E-mail: sarahgoh@dle.com.sg

Approved Grant from BCA: About $40,000.

About the company:

Based in Singapore, DLE M&E Pte Ltd (DLE) first started out as Double Lion Electrical & Plumbing Services in 1975 and became privatised under the name of Double Lion Electrical Pte Ltd in 1980. On 3 August 2009, Double Lion Electrical Pte Ltd changed its name to become DLE M&E Pte Ltd to better reflect its capability in both mechanical and electrical services, and in becoming a one-stop integrated contractor for our valued clients. DLE M&E Pte Ltd was founded by Mr Goh Gwek Soon.

It is a registered contractor with the Building and Construction Authority – Electrical Engineering and Integrated building services workhead (L6 grade, with an unlimited tendering limit) and general building works (C1 grade, with $3 million tendering limit). DLE is also a licensed builder with BCA under the class 1 grade for General Building works.

DLE’s primary business is in Electrical Engineering works. The company’s vast portfolio includes office fit-out works, retail shops for luxury brands, factories and private high-rise condominiums. The total contract value of more than S$124 million Singapore dollars had been awarded to the company in the past three years.

More info on the company can be found at http://www.dle.com.sg

Initiatives undertaken by the company

On technology adoption, DLE has applied for the Mechanisation Credit Scheme under BCA’s CPCF. The company has used the fund for investing in scissor lift to replace the conventional scaffolding system. The aerial work platform not only shortens the erection and dismantling time of scaffolding, but also requires fewer workers.
Through the adoption of technology, DLE can increase its productivity and undertake more complex projects.

On workforce development, DLE has sent 8 workers for CoreTrade foremen skill assessment in Electrical Wiring Installation. The Workforce Training and Upgrading scheme under CPCF has helped the company to defray the CoreTrade assessment cost.
Profiles of Construction-related Firms Implementing Productivity Improvements

Name of company: OSK Engineering Pte Ltd
Contact: Mr. Tan Yeo Kee, CEO
Mobile: 9638 6173
E-mail: tanyeokee@oskpl.com.sg

Approved Grant from BCA: About $42,000

About the company

OSK Engineering Pte Ltd (OSK) was founded by Mr Tan Yeo Kee and Madam Oh Swee Kit in 1988. OSK’s primary business is in Plumbing, Sanitary and Gas Installation works. The company’s vast portfolio includes private housings, government housings, factories and private high-rise condominiums, commercial building and hotels. The total contract value of more than S$44 million Singapore dollars had been awarded to the company in the past three years.

Some of the company’s projects include Marina Bay Sand Integrated Resort (Package 6130, 6409, 6151, 6152), QuaySide Hotel at Sentosa, NUS New Town – Khaya and Angsana and Holland Hill Condominium.

OSK is registered in various categories in BCA’s Contractors Registry System - Plumbing & Sanitary Works (L5 grade, with a tendering limit of $13 million), Cable/Pipe Laying & Road Reinstatement (L2 grade, with a tendering limit of $1.3 million), Civil Engineering (C3 grade, with a tendering limit of $0.65 million), Fire Prevention and Protection System (L1 grade, with a tendering limit of $0.65 million), General Building (C3 grade with tendering limit of $0.65 million).

More info on the company can be found at http://www.oskpl.com.sg

Initiatives undertaken by the company

On technology adoption, OSK has applied for the Mechanisation Credit Scheme under BCA’s CPCF. The company has used the fund for investing in the leasing of 2 scissors lift and a boom lift; and for purchase of 2 sets of pipe jointing equipment (Rautool Tool Kit) that could be used in its installation works for the “Flexible Piping System”.

On workforce development, OSK has sent four workers for CoreTrade foremen skill assessment in Plumbing & Pipefitting. The Workforce Training and Upgrading scheme under CPCF has helped the company to defray the CoreTrade assessment cost.
OSK Engineering Pte Ltd has also applied for the Productivity Improvement Project Scheme to invest in an “Innovation Method of Plumbing Installation works Using Flexible piping” to replace the conventional copper piping system. The innovative system not only shortens the installation time of the Plumbing installation, but also requires fewer workers. OSK Engineering Pte Ltd can increase its productivity, build its in-house expertise in deploying the “Flexible Piping System”, develop new technologies and undertake more complex projects.
Profiles of Construction-related Firms Implementing Productivity Improvements

Name of company: Fonda Global Engineering Pte Ltd
Contact Person: Woon Chun Mei
Tel: 64188185
E-mail: fonda1@singnet.com.sg or wchunmei@tree.com.sg

Approved Grant from BCA: About $20,000

About the company:

Fonda Global Engineering Pte Ltd was established in 1994. It is a BCA registered contractor in grade A1 in general building works, grade B1 in civil engineering works as well as registered in mechanical and electrical engineering works. Fonda Global Engineering Pte Ltd is also a licensed builder with BCA under the class 1 grade for General Building works.

The company’s principle activities were in general building works and civil engineering works. It was later expanded to integrated building services, mechanical & electrical engineering, air-con refrigeration & ventilation, plumbing & sanitary, housekeeping, cleansing, desilting & conservancy service and even Landscaping.

More info on the company can be found at http://www.fonda.com.sg/main.html

Initiatives undertaken by the company

On workforce development, Fonda Global Engineering Pte Ltd had tapped on the Workforce Training and Upgrading (WTU) scheme under the Construction Productivity and Capability Fund (CPCF). The company has sent 28 workers for Coretrade tradesmen and foremen skill assessment in the following skills qualifications:

- Plumbing & Pipefitting;
- Steel Reinforcement Work;
- Welding; and
- Hydraulic Excavator Operation.

On technology adoption, Fonda Global Engineering Pte Ltd had applied for the Building Information Modeling (BIM) scheme to defray 50% of the cost of technology acquisition and capability building. The company has obtained a total of $13,100 grant for purchase of BIM software and hardware, as well as staff training and work practice consultancy.
Profiles of Construction-related Firms Implementing Productivity Improvements

Name of company: Kong Hwee Iron Works & Construction Pte Ltd
Contact Person: Mr. Tee Swee Huat, Asst. General Manager
Mobile: 97356530
E-mail: contract@konghweeiron.com.sg

Approved Grant from BCA: close to $90,000

About the company:
Kong Hwee Iron Works & Construction Pte Ltd (Kong Hwee) was founded by Mr Ng Lok Kai in 1960. Its primary business is in structural steel construction and metalworks. Some of the company's projects include The Sail@Marina Bay, Novena Suites, Woodland Checkpoint and Nanyang Polytechnic. The total contract value of more than S$ 150 million Singapore dollars had been awarded to the company in the past three years.

Kong Hwee is registered in various categories in BCA’s Contractors Registry System - General Building (C2 grade, with a tendering limit of $1.3 million), Fencing & Ironwork (L3 grade with tendering limit of $4 million).

More info on the company can be found at http://www.konghwee.com

Initiatives undertaken by the company
Kong Hwee Iron Works & Construction Pte Ltd has applied for the Mechanisation Scheme (MechC) under BCA’s Construction Productivity and Capability Fund to invest in high tech computerised steel fabrication cutting and drilling equipment to replace the conventional labour intensive equipment. The innovative system not only shortens the steel fabrication time and increase the quality of the final product, but also requires fewer workers.
Besides that, they had also applied for funding to purchase 2 sets of scissors to speed up their steel installation works on site.

Kong Hwee Iron Works & Construction Pte Ltd can increase its productivity, build its in-house expertise in using these new computerised equipments and undertake more complex projects.

On workforce development, Kong Hwee Iron Works & Construction Pte Ltd has sent 3 workers for CoreTrade foremen skill assessment in Structural Steel Fittings. The Workforce Training and Upgrading scheme under CPCF has helped the company to defray the CoreTrade assessment cost.
Profiles of Construction-related Firms Implementing Productivity Improvements

Name of company: Technocrete Pte Ltd
Contact Person: Mr. Low Chee Man, Director
Mobile: 96782608
E-mail: technocrete@tanhong.com.sg

Approved Grant from BCA: $60,000 from MechC Scheme ($10,000 from leasing, $60,000 from purchase)

About the company:

Technocrete was incorporated in 1990 as a specialist subcontractor providing concrete repair, structural strengthening & controlled demolition services to the construction industry. They are a member of the Tat Hong group of companies.

Technocrete is registered in various categories in BCA’s Contractors Registry System – Workheads CR03 - Demolition, CR05 – Concrete Repairs (L2 grade with tendering limit of $1.3 million), CR09 Repairs & Redecoration (L1 grade with tendering limit of $0.65 million), CR13 Waterproofing Installation (L1 grade with tendering limit of $0.65 million)

Their past projects include:

(i) HDB upgrading sites concrete cutting works
(ii) Concrete cutting for addition and alteration works at various projects/sites: Marina Square, Bishan Junction 8, CPF Building, Changi Airport People Mover System, MRT Systems
(iii) Emergency Concrete Cuttings/Corings

More info on the company can be found at http://www.technocrete.com.sg/

Initiatives undertaken by the company

Technocrete Pte Ltd has applied for the Mechanisation Credit Scheme (MechC) under BCA’s Construction Productivity and Capability Fund to purchase and lease equipment and machineries to improve productivity at their projects. These equipment and machineries include demolition machines; coring machine; boom lift; scissors lift; and equipment for mortar mixing, pumping and spraying.
Profiles of Construction-related Firms Implementing Productivity Improvements

Name of Company: L S Construction Pte Ltd (subsidiary of Lian Beng Group Pte Ltd)
Contact Person: Jeffrey Teo, Director
Contact Details: 96706814

Approved Grant from BCA: $100,000

About the Company:

Incorporated in 1993, L.S. Construction (LSC) has a B2 grading in the General Building category under BCA's Contractors' Registry System. LSC is able to tender for public sector's building projects of contract value up to $13 million.

LSC is currently certified under the ISO 9001, ISO 14001 and OHSAS 18001 certification by BCA as well as the Workplace Safety & Health Council's bizSAFE Partner and bizSAFE STAR certification.

L S Construction is a subsidiary of Lian Beng Group Ltd. Lian Beng Group was listed in SGX since 1999, with a staff strength of 500. Its main construction arm, Lian Beng Construction (1988) Pte Ltd, was registered in the highest grade (A1) of BCA's Contractors' Registry System under General Building category.

More information can be found on website:

About the Productivity Improvement Project - Adoption of movable integrated working platforms and perimeter safety screens to replace traditional scaffold

1. Working platforms and safety scaffolds are erected for building construction. The conventional method is that workers would have to erect scaffolds and working platforms manually around the elevations of a building under construction. As the building construction goes up progressively, the scaffolds would have to be extended to the next floor under construction. As the conventional platforms and safety screens covers the entire elevations and height of the building from the ground floor, obstruction to construction work especially construction of apron has always been a problem and has thus affected site productivity.

2. To save manpower, LS Construction Pte Ltd proposed to adopt the innovative movable integrated working platforms and perimeter safety screens to replace the conventional external safety scaffolds. The 4-tier working platforms and perimeter safety screens is preassembled on the ground and installed at the lower floors. The system will move up in tandem (lifted by the cranes) with the storey structural works as the building goes up.

3. The light, modular, movable integrated system makes hoisting easy during the lifting operations. Only four men are required to jump lift the platform to the next level. Hence, saving the manpower as compared to the conventional scaffolding method which require 10 men to erect working platforms and scaffoldings for every typical structural cycle.
Innovation

4. Unlike the conventional method, this system integrates the working platform and safety perimeter screens together in a 4-storey modular unit. In addition, it eliminated the problems of works at the lower floors being obstructed by the external scaffolding.

Pilot Site

5. The use of the movable integrated working platforms and perimeter safety screens will be test-bedded at the Centro Residences, a residential development comprising a block of 34-storey residential tower (Total: 329 Units) with a 6-storey podium of car parks at Ang Mo Kio Avenue 8. The integrated system would also be used for future projects by the company after this pilot project.

Productivity Improvement

6. The estimated manpower savings are shown below:

<table>
<thead>
<tr>
<th>Conventional External Safety Scaffold</th>
<th>Integrated movable working platforms and perimeter safety screens</th>
<th>Productivity improvement (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,332 man-days</td>
<td>872 man-days</td>
<td>34.5%</td>
</tr>
</tbody>
</table>

7. As this is the first time LS is adopting this system, trainings would be conducted to upgrade the skills of the workers on the use.
Profiles of Construction-related Firms Implementing Productivity Improvements

Name of company: Unison Construction Pte Ltd
Contact Person: Tan Soon Kian, Director
Mobile: 90127633
E-mail: sktan@unisoncon.sg

About the company:
Founded in July 2009, Unison Construction was formed by building professionals, each of whom has more than 20 years of experience in the building and construction industry. Unison Construction has managed projects such as condominiums, HDB apartments, landed and clustered housing, factories, warehouses and upgrading works.

Unison’s past achievements include winning the RosPA Occupational Health & Safety Awards, BCA Construction Excellence Award, BCA Green Mark Awards, BCA Best Buildable Design Award, WSH Practices Awards (from MOM) and HDB Quality Award.

Some of the company’s projects include Ferrell Residences, Urbana and Amaranda condominiums.

Initiatives undertaken by the company
Unison Construction has applied for the Productivity Improvement Project under BCA’s Construction Productivity and Capability Fund. The company intends to use the fund for investing in an advanced aluminium formwork system to replace the conventional formwork system. The advanced system not only shortens the erection and dismantling time of formworks, but also requires fewer workers.

Through this project, Unison Construction can increase its productivity, build its in-house expertise in deploying advanced integrated formwork systems, develop new technologies and undertake more complex projects.
Profiles of Construction-related Firms Implementing Productivity Improvements
Automation of Precast Concrete Production at Tiong Seng Prefab Hub

Name of Company: Tiong Seng Contractors Pte Ltd
Contact Person: Lim Tee Yoke
Contact Details: 91794709

Approved Grant: $1,000,000

About the Company:
Tiong Seng is principally engaged in building construction and civil engineering in Singapore. With an established track record of over 50 years, Tiong Seng is one of the leading building construction and civil engineering contractors in Singapore. It holds the highest grading of A1 from the Building Construction Authority of Singapore (BCA) for both general building and civil engineering, which qualifies the Group to undertake public sector construction projects with unlimited contract value.

About the Productivity Improvement Project - Automation of Precast Concrete Production at Tiong Seng Prefab Hub

1. Conventional precast concrete production is mainly done in an open yard factory with no shelter. The process is limited by the weather and very often, operations have to be halted due to inclement weather. In addition, movement and hoisting of the completed precast components often involves the extensive use of manual labour and cranes, which reduces the efficiency of the precast concrete production process.

2. With this in mind, Tiong Seng Contractors Pte Ltd intends to set up the automated precasting facilities in the new 3-storey factory at Tiong Seng Prefab Hub, located at Tuas South Avenue 1, to improve on its existing production process. The Prefab Hub will have two automated production lines incorporating new equipments to be brought in from Germany (adopting Avermann’s technology for one of the production line, and Vollert and Weckmann’s technology for the another line).

3. When completed, the Prefab Hub will allow concrete pre-casting works to be carried out under sheltered conditions to minimise disruptions due to unfavourable weather. In addition, the automation is expected to reduce the labour required by 50% to 70%. Furthermore, the facility is capable of operating a 24-hour production process to boost its output to meet the expected rising demand for pre-cast components.

Objectives
4. The objective of this Productivity Improvement Project (PIP) is to automate the precast concrete production systems to achieve time and manpower savings as well as raise the supply of precast concrete production to meet the rising needs in the industry.
Project Description
5. The Automated Precasting Facility in the Tiong Seng Prefab Hub will be divided into two phases.

- Phase 1 comprises a 100m run of Automated Pre-stressing Line to produce prestressed planks or normal flat panel. Precast specialist from Germany, Avermann, will assist the company with the Phase 1 setup.

- Phase 2 comprises 40 pallets Rotation Automated Line, which will be setup with the help from precast specialist, Vollert and Weckermann.

Expected Impact on site Productivity Improvement

<table>
<thead>
<tr>
<th>Area of Improvement</th>
<th>Projected Outcomes</th>
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<tbody>
<tr>
<td></td>
<td>Before Implementation</td>
</tr>
<tr>
<td></td>
<td>(Current open yard production)</td>
</tr>
<tr>
<td>Manpower Saving (Number of Workers)</td>
<td>100 to 110</td>
</tr>
<tr>
<td>Productivity Improvement (manday/m³)</td>
<td>0.91 manday/m³</td>
</tr>
</tbody>
</table>

The fully automated precast facility has a capacity of doubling its current output to more than 100,000 m³ of precast components annually.
New Capabilities/Competencies that Will be Developed

6. Such automated precasting facility is first of its kind in Singapore. Complex work processes will be automated, such as the marking-out of dimensions with high precision, and the automated pallet circuits to transport precast products from one workstation to another for processing. The manufacturing process will be controlled by a centralised computer system which reads information from computer-aided drawing (CAD) data files and maintain production data and records. The new precast facility will also include a curing chamber to reduce time spent on curing the precast products.

7. The acquisition of the state-of-the-art system in precast automation from Germany, and sending their management and technical personnel to Germany for extensive training on the usage of the automation systems, greatly enhances the capability of the company in precast concrete production and competencies of its staff.

Current status

8. The Tiong Seng Prefab Hub is under construction and targets completion by 3Q 2011.
Profiles of Construction-related Firms Implementing Productivity Improvements

Name of company: Alpine Bau GmbH
Contact Person: Dharmendra Singh, QA/QC Manager
Mobile: 9231 8807
E-mail: dharmendra.singh@alpine.at

Approved Grant from BCA: About $53,000

About the company:

Founded in 1965 as a small construction machine dealership, ALPINE is today one of the leading construction groups in Europe and an internationally recognised company. In recent years, ALPINE has continuously increased its construction output through acquisitions and expansion into foreign markets.

This massive yet quality-oriented growth allowed ALPINE to strengthen and expand its position on the home market as well as in Central and South-East European markets. ALPINE also successfully operates in Singapore, India and China. ALPINE is active in more than 30 countries world-wide.

ALPINE BAU GmbH is registered under BCA’s Contractors Registry System with a workhead of CW02- Civil Engineering (A2 grade, with a tendering limit of $85 million), GB1 General Builder (Class 1) and SB(GS) Specialist Builder (Ground Support and Stabilisation Works). They are involved in the construction of the Circle Line and the Downtown Line projects in Singapore.

More info on the company can be found at http://www.alpine.at

Initiatives undertaken by the company

On technology adoption, ALPINE has applied for the Mechanisation Credit Scheme (MechC) under BCA’s CPCF to purchase various equipment and machinery. The company has used the fund for investing in a Bobcat material mover (skid loader) to reduce reliance on the manual labour required to physically move the materials around during construction works.
ALPINE has also tapped on MechC to purchase 2 sets of automatic wheel washer systems which use pressure jets to clean the tyres of vehicles leaving the site. Using recyclable water and a filter system, the automatic wheel washer system replaces the need for manual labour, permanently stationed at the washing bay at the exit of the construction sites, with hoses to wash the tyres of departing vehicles.