



## PE WSQ Advanced Certificate in Engineering Simulation

*Bringing you tomorrow's technology ... today!*

## About CAD-IT Consultants (Asia) Pte Ltd

CAD-IT Consultants, formed in 1991 in Singapore, is an ISO 9001:2008 certified, premier Product Lifecycle Management (PLM) technology solution provider in Asia providing affordable, state-of-the-art world class turnkey solutions covering software, consulting, training, support, software development and maintenance services to meet design, engineering, manufacturing and enterprise management needs.

CAD-IT Consultants has since built a customer base of over 1,500 engineering companies, and currently has offices in Singapore, Malaysia, China (Shanghai, Guangzhou, Hong Kong and Shenzhen) and Thailand, supporting world-class PLM products such as ANSYS, Autodesk Moldflow, Cortona3D, DEFORM, EnSight, Goldfire Innovator, Mentor Graphics Valor DFM & Valor MSS and SpaceClaim.

CAD-IT had received more than 60 International and National Awards since 1991 in recognition of its professionalism in training, service and support of its customers. Among its most recent accolades are the APEA Most Promising Entrepreneur Award 2009 & Outstanding Entrepreneur Award 2010, the SPBA Established Brand Award 2009 & 2010, and the Singapore SME 1000 Company 2011 .

Please visit [www.cadit.com.sg](http://www.cadit.com.sg) for more information.



## Message From the CEO

For our workforce to remain competitive and employable in today's fast changing workplace, they must have both knowledge as well as skills that are relevant, current and sought after by employers to meet the changing needs of Singapore's economy. In response to these needs, the Singapore Workforce Development Agency (WDA) was formed to lead and drive workforce development in Singapore.

WDA developed a national skills frameworks under the Workforce Skills Qualifications (WSQ) system for all key sectors, including building up of CET Centres and a network of training providers to deliver training programmes according to national WSQ standards. This is in line with CAD-IT Consultants' goal to upgrade the technological capabilities of engineering organizations in Singapore to undertake high-value R & D responsibilities.

Engineering Simulation has fast become the main differentiator between innovative companies and run-of-the-mill ones. The use of PLM Technology will allow Singapore companies to drastically increase productivity and achieve greater product innovation, leading to increased profitability and global competitiveness.

Pervasive and successful use of Engineering Simulation serves to accelerate Singapore's transformation into a highly skilled design and manufacturing environment offering world-class products and services. Together with WDA, CAD-IT Consultants is excited and honored to offer one of the most innovative, practical and industry-relevant set of Engineering Simulation training courses in Singapore.

**Mr. Terence Chan**  
CEO, CAD-IT Consultants (Asia) Pte Ltd



## Why Study With CAD-IT?

It is undeniable that continuous education/ training is an investment in your career and your future. Whether you are considering upgrading your skills to secure a promotion, a career change or a better salary, here are some good reasons why you should choose to study with CAD-IT:

- **Better Job Prospects**

Postgraduate study can offer pathways to promotion and career development in your current line of work or in another area if you would like a change of direction. The mix of theory and practical experience in our leading-edge courses ensures you are prepared for the real world with courses that relate directly to your existing career path or that broaden your base of expertise.

- **Courses with Industry Input**

Our courses are regularly reviewed as we seek the advice of industry, government and the professions in the design of curriculum to ensure courses remain relevant to changing industry needs. We also build opportunities to apply real-world learning through workplace projects for study or research.

- **Latest Technology**

We use the latest technologies to enrich teaching and make studying easier. Throughout the course, students will have access to state-of-the-art Engineering Simulation solutions to equip them for real world R & D work through various projects and assignments.

- **Global & Collaborative Focus**

Our real-world courses and learning facilities ensure our graduates are equipped to work locally and abroad. We have a strong reputation for working together with business, industry and the community to solve real world problems.

- **Multi-disciplinary**

In the real world you need to be able to draw on wide networks of expertise to solve complex problems. CAD-IT provides a multi-disciplinary approach in its course, project and research training.

## About Workforce Skills Qualification (WSQ)

WSQ, or the Singapore Workforce Skills Qualifications, is a national credentialing system that trains, develops, assesses and recognises adult workers for competencies they need to stay employable. Based on standards developed by the Singapore Workforce Development Agency (WDA) and various industries, WSQ ensures workers acquire skills needed by employers at the workplace. With clear progression pathways, workers can also use WSQ to upgrade their skills and plan their careers.

As training and assessment are competency-based, not academic-based, workers have to demonstrate the right competencies before they are certified. Experienced workers however, can receive WSQ certification without training. WSQ is accessible to all workers, as its entry criteria are skills and knowledge, not formal qualifications. The quality of WSQ is assured by WDA, from the development of competency standards, accreditation of training providers to the award of its qualifications. For more information, please visit [www.wda.gov.sg](http://www.wda.gov.sg)

## Our Testimonials ...

“The PE WSQ Advanced Certificate in Engineering Simulation is highly relevant to many industries in the manufacturing sector, including Precision Engineering, Aerospace, Marine and Process. The programmes are intended to provide hands-on practical training for professionals in Engineering Simulation, and to enhance the technological capability of companies as they move up the value chain.”

**Julia Ng**  
Singapore Workforce Development Agency (WDA)

“I commend CAD-IT’s instructor for his best efforts, positive and helpful attitude to answer all queries and doubts of trainees.”

**Arthur Lim Teck Bin**  
Vestas Technology R&D Singapore Pte Ltd

“I find the arrangements of the event, the facilities, the demonstrations and the expertise of CAD-IT engineers commendable.”

**Ravi Shankar**  
STMicroelectronics

“CAD-IT’s solutions and training enabled us to gain a competitive edge in designing structures that operate in extreme offshore environments.”

**Tiew Kee Yoon**  
BW Offshore (KL) Sdn Bhd

“A lot of updated information is provided. I now know about the updated features and enhancements.”

**Xu Dan**  
Sulzer Chemtech

“My objectives – to understand the basic concepts of creating a new program and how it can be implemented on the shop floor – have been fulfilled.”

**Brij Mohan Vashisth**  
Schlumberger Ltd

“The training course materials are very good.”

**Wong Meng Yung**  
Universiti Kebangsaan Malaysia (UKM)

“The software allows us to evaluate the Building Designs from a Sustainable Technologies point of view. It enhances the building design so that it is more energy efficient and cost effective by analyzing the impact of environmental factors on the building façade.”

**Ameet A. A.**  
Surbana Technologies

“Using engineering simulation accelerates the systematic approach in the design process. It helps designers to understand the situation in detail before conducting complex experiments. This improves the design iteration cycle and learning process.”

**Ong Chee Keong**  
Philips Electronics Singapore Pte Ltd

“The software helps us to develop tooling and fixture in manufacturing and testing processes, as well as to analyze and solve the resonance issues which are critical for HDD components. We have now gained competitive capability to grow our business.”

**Annuaay Meeraeng**  
Compart Precision (Thailand) Co., Ltd

“Thanks! it was a meaningful learning experience.”

**Michel van Vorsele**  
Kranji Solutions Pte Ltd

“Good examples and notes.”

**Cheah Ui Ping**  
Motorola Technology Sdn Bhd

“We are satisfied with CAD-IT’s solutions and support services. We are especially appreciative of their engineers’ initiative in setting up the models for us.”

**Dr. Ma Yifei**  
DSO National Laboratories

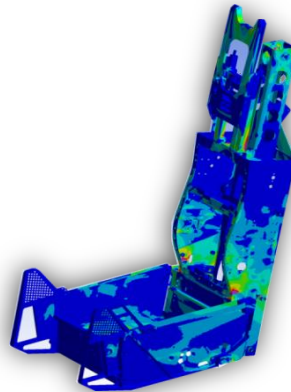
“Very nice course materials and we could see the excellent technical capability from the instructor.”

**Krishnamoorthi. S**  
Vestas Technology R&D Singapore Pte Ltd

## PE WSQ Advanced Certificate in Engineering Simulation

Engineering simulation, also known as Computer-Aided Engineering (CAE), is a high-value, high-technology, numerical, analytical, factual, knowledge-intensive and scientific occupation that encompasses the validation and optimization of products. CAE tools are often used to analyze the robustness and performance of components and assemblies.

Engineering simulation enables organizations to perform virtual product prototyping, thus relying less on physical prototypes, which translates into improved product innovation and quality, reduced material wastage, shortened time-to-market, as well as increased productivity and profitability.



The PE WSQ Advanced Certificate in Engineering Simulation aims to train workers in various types of engineering simulation. The course will impart in them the practical knowledge to perform simulation using world-class and state-of-the-art engineering simulation tools for virtual product prototyping, as well as for research and development. The individual units are accredited by Professional Engineers Board Singapore (PEB) for the Continuing Professional Development (CPD) program.

Students would be equipped with the knowledge to set up and run advanced simulations relevant to their specific industries, such as Aerospace, Electronics, HVAC, Marine & Offshore, and Medtech. They can look forward to exciting careers in engineering simulation as technical consultants/ managers, R&D engineers/ managers, thermal/mechanical simulation engineers or research scientists.



## Course Synopses

These 11 modules are offered on a modular basis.

### **PE-MP-353E-1**

#### **Apply Engineering Simulation Fundamentals**

This module highlights the practical applications of finite element theory. It stipulates how to create and modify geometry, as well as to generate quality mesh for analysis.

### **PE-MP-354E-1 \***

#### **Perform Structural Simulation For Design Verification**

This module stipulates how to perform Finite Element Analysis (FEA) simulations, including linear and nonlinear analyses. It also focuses on how to perform engineering design optimization.

### **PE-MP-355E-1 \***

#### **Perform CFD Simulation For Design Verification**

This module is recommended for engineers who wish to analyze general fluid flow simulations. It also stipulates how to enhance the visualization of simulations.

### **PE-MP-357E-1 \*\***

#### **Perform Engineering Simulation For Built Environment and HVAC Design**

This module is recommended for engineers who wish to perform airflow modelling using CFD analysis. It focuses on heat transfer, turbulent flows and multiphase flows.

### **PE-MP-359E-1 \*\***

#### **Perform Engineering Simulation For The Electronics Industry**

This module stipulates how to perform engineering analyses for Electronics products and processes, including coupled physics analyses, thermal analyses and drop test analyses.

### **PE-MP-360E-1 \*\***

#### **Perform Engineering Simulation For The Marine & Offshore Industry**

This module focuses on the dynamic response of structures, fatigue phenomena, multi-body hydrodynamic analysis and fluid-structure interactions.

### **PE-MP-361E-1 \*\***

#### **Perform Engineering Simulation For The Industrial Equipment/ Machinery Industry**

This module highlights rigid and flexible dynamic analyses, fatigue phenomena, rotating machinery simulations and combustion simulations.

### **PE-MP-362E-1 \*\***

#### **Perform Engineering Simulation For The Medtech Industry**

This module is recommended for engineers who wish to perform engineering analyses related to Medical technology, including coupled physics analyses, thermal analyses, drop test analyses and multiphase flows.

### **PE-MP-363E-1 \*\***

#### **Perform Engineering Simulation For The Aerospace Industry**

This module stipulates how to perform advanced geometry preparation and meshing, analyze the dynamics of structures, simulate turbulent flows, and analyze rotating machinery simulations.

### **PE-MP-364E-1 \*\***

#### **Perform Engineering Simulation For Defence & Homeland Security**

This module trains students to perform explicit dynamics simulations, nonlinear, transient dynamic analyses and turbulent flow simulations.

### **PE-MP-356E-1 \*\*\***

#### **Perform Industry-Specific Engineering Analysis**

This module stipulates how to utilize an innovation tool to circumvent barriers that traditionally impede innovation. It then focuses on how to pre-process, solve, post-process, present and report an engineering analysis of the student's choice.

\*Pre-requisites: PE-MP-353E-1

\*\*Pre-requisites: PE-MP-354E-1 and PE-MP-355E-1

\*\*\*Pre-requisites: Any \*\* module



# CAD-IT CONSULTANTS (ASIA) PTE LTD

**Mission:** To provide world-class design and manufacturing solutions, thereby helping our customers and their supply chains achieve greater innovation, quality and productivity, reduced costs and time-to-market, by being good stewards of the resources that God has entrusted us with.

Founded in 1991, CAD-IT Consultants has attained ISO 9001:2008 certification and won over 60 international awards. CAD-IT Consultants is a leading provider of PLM (Product Lifecycle Management) software, solutions and services covering training, support and consulting in the Asia Pacific region.

## World-class Solutions For Sustainable Innovation



### ANSYS Multiphysics Simulation

With a 40 year track record as the industry leader in engineering simulation, ANSYS offers companies an **unequaled depth and unparalleled breadth of engineering simulation solutions** that are used to transform their leading edge design concepts into innovative products and processes that work.

ANSYS, the world's **most comprehensive coupled Multiphysics tool**, combines structural, thermal, computational fluid dynamics (CFD), acoustic and electromagnetic simulation capabilities in a single engineering software solution and on a common Workbench platform.

With engineered scalability of the solutions, ANSYS delivers the flexibility and power that customers need, within an architecture that is adaptable to the processes and design systems of their choice to solve complex engineering challenges in virtually every industry.



### Goldfire Innovator

An enterprise software application that fuses proven ideation and problem-solving methodologies with precise access to corporate and external knowledge, Goldfire Innovator enables engineers and business leaders to collaboratively define problem and opportunity areas in a common language, then stimulate **creative idea generation to drive breakthrough problem-solving**.

Powered by **patented semantic search technology**, Goldfire Innovator provides direct access to concepts from inside and outside of the company, including corporate data sources, deep web sites, worldwide patent data, and Invention Machine's proprietary technical content.

Goldfire Innovator puts the right information in the right hands at the right time, **fueling repeatable innovation**.



Cortona3D provides 3D visual knowledge software to streamline the authoring of technical communications by feeding design data from CAD, PDM and ERP into powerful 3D authoring tools that transform 'Visual Know-How' into product documentation.

Cortona3D enables users to **create interactive content, dramatically reducing effort, errors and delays** that usually accompany redrawing CAD for technical documentation.



### Valor DFM (Design For Manufacturing)

Valor vSure enables PCB designers to **identify and resolve manufacturability issues during the design phase**, eliminating high costs incurred by rectifying problems later on. Concurrent DFM verification is the most efficient manner to incorporate manufacturing optimization into the PCB design process.

### Valor MSS (Manufacturing System Solutions)

A **complete manufacturing execution suite** that integrates solutions for seamless operation to assist manufacturers in PCB assembly operations, Valor MSS encompasses the entire production process, providing complete and accurate information in real-time to **drive manufacturing planning and execution in the most profitable way possible**.



### EnSight

A complete suite of **extreme visualization** tools for CAE users, from meshing to plotting to animation displayed in stereo and in **immersive Virtual Reality**.

Solutions unify Meshing, Post-Processing and with support for sharing of common data formats to aid enterprise-wide, **real-time collaboration** in high-end scientific and engineering applications, while exploiting the full benefits of **parallel processing** and **cluster-based rendering**.



A full suite of engineering software that enables designers to simulate most **metal forming processes** including forging, cold heading, machining, heat treatment, rolling, mechanical joining and a wide range of other applications.



**Windows Compute Cluster Server 2003** enables engineers to perform highly realistic CAE simulations quickly and easily, with minimal administrative overhead, and the **added security and manageability benefits** that integrate with Microsoft Active Directory services.

**Innovate ... Simulate ... Transform ...**

[www.cadit.com.sg](http://www.cadit.com.sg)

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