

## **Report on WPC scholarship visit for Benny Wielandt, WPC 2008 Scholar**

### **1: Format, content and delivery mechanisms of plumbing training in Thailand.**

Thailand Ministry of Education, through the Office of Vocational Education Commission (OVEC) run a 3 year VET programme in **Construction**, a programme offered at appr 150 VET colleges.

In this Construction programme **Plumbing is a subject**, like Carpentry and Masonry.

Most of the VET colleges with Construction Programme offer their student internships in construction companies. These internships replace practical training in college workshops.

Other VET colleges instead offer Dual Training program, based on the German system where students are attached to specific companies and then are released from their companies to attend VET college two days per week

Practical plumbing training provides appr. 25 % of practical content in the Construction programme, the rest being devoted to other practical construction skills.

For other details on vocational education see file on education and file on modular structure

The Ministry of Labour have some competence-building courses for various skill areas, including plumbing work

Water companies run their own in-house training programme for mains pipe layers

Water companies also train the “street plumbers”, the tradespersons making connection from mains supply pipes to meter at edge of customer property, Metropolitan Water Authority run a scholarship course in house plumbing

### **2: Regulatory or licensing arrangements applying to the Thailand plumbing industry.**

Let me start by dividing the work up in a) Water management, b) plumbing and c) waste water management

- a) Water supply is very well managed and regulated. Almost all public water companies in Thailand comply with ISO 9001, and the companies are responsible for providing clean water from mains pipeline to water meter at customer premises
- b) Plumbing work from meter to taps and appliances, and from these to sewer, is not regulated or covered by licensing at all.

In order for the Water Company to supply water to buildings the customer must provide evidence of competent engineering know-how in the company carrying out the installation

There is no legal requirement for involvement of a certified or licensed ” plumber”

tradesperson in carrying out the installation from meter to appliance .

There is no Thailand Plumbing Code, and thus no trade regulation or standards covering the installation work of water from water meter to sewer.

Many major building contractors employ plumbers from neighbouring countries (Malaysia, Singapore etc) , or employ people with autodidactic competence for work in high rise buildings, whether these be housing blocks, office blocks or in the hospitality industry.

Of course the graduates from Construction programme will also be able and be qualified to obtain employment here

For general maintenance work and service of existing plumbing installations there is a large number of Handyman companies, offering all kinds of building maintenance work, including plumbing installations, and also doing work as subcontractors

LPG gas is the common source of energy for cooking purposes. The installation or servicing of LPG gas installations and appliances is not regulated..Thailand has a number off-shore gas wells and also have own refineries.Most LPG gas is imported from India

Air conditioning installations are prominent in most hotels, public buildings and shopping complexes. Again , this VAC work is carried out by specialist VAC companies, by a number of very skilful practitioners with or without formal training background

- c) Waste water management is very well regulated. The waste water authorities also comply with ISO 9001, at least in those instances where waste water is led to mains sewers.

In general , wastewater authorities plan for having separate systems rather than combined system, du to the volume of rainwater in monsoon seasons.

Bangkok Metropolitan Council is in charge of all wastewater management in Greater Bangkok Area.

Wastewater Management Authority is the governing body for wastewater management outside Bangkok

### **3: Typical plumbing practices in Thailand**

In new low rise buildings/bungalows the water supply pipework and the drainage pipework is completed before any walls are erected (see picture file).

Almost all supply installations to appliances, and waste pipes from appliances, are made with “blue” PVC pipes and fittings.

The pipes and fittings are produced in Thailand and are joined by solvent weld method, terminating with threaded connection points as needed for valves, mixers, meters, gauges etc

Sanitary appliances, sinks, taps and valves are made locally or imported from India or Mainland China. The design of sanitation porcelain and of stainless steel sinks etc is identical to materials used elsewhere

Water closets **in hotels** and other buildings frequented by tourists and foreign visitors are all of western type, Low level pedestal with Cistern and flush (and equipped with toilet paper rolls)

Water closets in **Thai-staffed** office blocks and other high rise buildings are of same type, but for personal cleansing the use of toilet paper is replaced by using hand-held nozzle providing a water jet (see picture file)

**Traditional Thai squat type toilets** (like those in most parts of Asia, the Middle East, and some parts of Europe consist basically of a hole in the floor leading to a cesspool or a drain.

In Thailand, a white ceramic plate generally surrounds the hole, with two slightly raised footprints.. In traditional squat toilets, a barrel of clean water is placed beside the toilet.

People use this water (a ladle or scoop floats inside) and their left hand to clean themselves, then empty a few more scoops of water into the toilet until all traces of their visit disappear.

The water barrel is gradually replenished from a spring or brook (or from a faucet, if available), and the water in the barrel remains pure.

#### **4: Principal representative organisations involved in the Thai plumbing industry:**

##### **Water supply**

Metropolitan Water Authority (MWA) provide water supply for Greater Bangkok/Chao Phraya Basin area for 12 million persons

Provincial Water Authority, overall body for rest of Thailand, offers expertise, financing, Build/Operate/Transfer and audit <http://en.pwa.co.th/index.html>

Ministry of Public Health, <http://eng.moph.go.th/>

Sanitation and Health Impact Assessment Division, Ministry of Public Health, Tivanond Road, Nonthaburi 11000, Thailand

##### **Plumbing**

Thailand has only very few specialist plumbing companies, and there are neither organisations representing plumbers, or any organisations for employers of plumbers

Indirectly, various Thai engineering associations will contribute to knowledge, layout, design and planning on the plumbing consultancy side, the quantity surveyor side and the on-site control side

##### **Waste water management**

For Greater Bangkok area: Bangkok Metropolitan Authority

For the rest of Thailand: Wastewater Management Authority (WMA), Chatuchak  
WMA offers expertise, initial financing , Build/operate/transfer (BOT) of Waste Water treatment plants, and audit.

### **Plumbing Education and training**

Office of Vocational Education Commission (OVEC), Ministry of Education  
Ministry of Labour, Department of Training

### **5: Lessons to be learned by the World Plumbing Community**

Thailand has made enormous gains in providing Water Supply and Sanitary facilities to the Thai population, with almost 100 % of population having access to clean water and sanitation (see file on water supply and Sanitation).

In primary and Secondary Education good sanitary habits are being introduced as an integrated part of the curriculum

### **6: Training practices used in Thailand**

Thai vocational training is competency-based. The main bulk of practical training in the plumbing trade takes place in internships at building contractors, with supervision from the VET colleges.

The construction colleges do have their own plumbing workshops, but most VET colleges are underfunded, and instead internships for the students are the rule. (See also file on Education)

Thus it is cost effective for the colleges to lend out students for on-the-job-internships, reducing costs for materials and teaching staff. As these internships provide learning by doing, this appears to be a win-win solution, except that there is limited quality control from the college during internships, and also no proper assessment at end of an internship programme

Plumbing practices in Thailand are basically very functional and adequate. The practices involved in working with the blue pipes and fittings in use do not require long training, and Thai workers are very conscientious and reliable

### **7: Recommendations on how WPC might work with/assist the Thai plumbing industry.**

In regards to future advancements it ought to be a matter for WPC and WHO to support countries like Thailand to improve their own capacity to regulate Plumbing rather than to attempt even in good faith to impose a model from outside, a model which might easily fail.

Development of a template of a Unified Plumbing Code is the best solution but also the regulatory models and options developed or under development in other countries should be inspirational and also allow for non-regulated capacity-building

My advice for WPC to support Ministry of Education, Ministry of Public Health, water management authorities and to Thailand organisations for engineers would be the following::

### **Re input to relevant Ministries , Office of Vocational Education Commission (OVEC)**

The framework of all Thailand VET is competency-based. But there seems to be no formal link between the VET Plumbing Curriculum and the practices of the water companies and the plumbing needs of the Thai population

Efforts could be made to encourage the curriculum developers at OVEC to frame the curriculum around a (admittedly yet to be written) WPC Unified Plumbing Code (UPC), adaptable to Thailand needs and potentials. Such a UPC should be an inspirational template for all countries not yet having a Plumbing Code or other kinds of plumbing regulation

### **Re licensing/regulation**

Encourage relevant Thai authorities to work for Introduction of a Plumbers Certificate (in due time to become mandatory for plumbing work on all new connections after meter)

The certificate to be issued by passing of test arranged and monitored by Water companies at their training premises. Candidates for the test should be final year students in Construction programme or Dual programme

### **Re support for training institutions**

WPC could assist by making available or causing production of digital picture libraries for local production of text books and manuals for plumbing work, and for theory background covering related theory

This activity should be expanded to also cover and reach Thai institutions of higher learning where building engineers, town engineers and architects are being educated.

### **8: How my own organisation/country might benefit from knowledge gained during my trip.**

I have made very good contacts with key lecturers in VET colleges with construction programme  
I will write articles for Danish Plumbing trade press and Vocational Training profession press)

### **9: Visits were made to**

#### **Ministry of Education, Office of Vocational Education Commission/OVEC**

Ratchadamnern Road, Dusit, Bangkok 10300, [www.vec.go.th](http://www.vec.go.th)

- Ms Maturode Sumranpon, Chief of External Relations Section
- Mr Suchart Kitpitak, Curriculum Developer
- Mr Prachuab Kaewkheow, personal assistant

#### **Dusit Technical College**

76 Ranong 2 Rd., Nakornchaisri, **Dusit**, Bangkok, 10300 Thailand., [www.dstc.ac.th](http://www.dstc.ac.th)

- Mr Phongphet Pittayapala, Director, Advisor for Vocational Education Standard
- Mr Prateep Puangladda, Instuctor & Chartered Engineer

Various visits to shops and markets selling plumbing materials

**Sansiri PCL** ( company providing internship building sites for Dusit Technical College students)  
Rajthevi, Bangkok 10400, [www.sansiri.com](http://www.sansiri.com)

- Mr Chaisak Charoenkong, Senior Technician Supervisor

**King Mongkut University of Technology Campus, North Bangkok**

Welding Technology Department & NDT Testing Centre 1518 Pibulsongkram Road,  
Bangsue, Bangkok 10800 [www.kmitl.ac.th](http://www.kmitl.ac.th)

- Mr Niphan Sirisak, CEO

**Metropolitan Water Authority**

400 Prachachuen Road, Laksi, Bangkok 10210 , [www.mwa.co.th](http://www.mwa.co.th)

- Ms Yanee Thirathon, Director of Waterworks Business Training Department
- Mr Yodying Swangreungsri, MWA Advisor
- Mr Parichat Punthong, Industrial Engineer

**Wastewater Management Authority in Chatuchak (two visits)**

333 Lao Peng Nguan 1 , Viphavadee Jatujak Bangkok 10900, [www.wmr.or.th](http://www.wmr.or.th)

**Grundfos Thailand Ltd ( for ReWard Programme, see ReWard file)**

92 Chaloe Phrakiat Rama 9 road Pravej, Bangkok 10250, [www.grundfos.com](http://www.grundfos.com)

- Ms Pornthip Viphatanaporn, Managing director
- Mr Jens Ove Frederiksen, Business Development Manager ReWard Project

**Outside Bangkok (100 km north of Bangkok)**

**Saraburi Technical College**

- Mr Prasert Jaipuapae, director
- Mr Piya Kosa, Senior Lecturer

**Saraburi Polytechnic & Fix it-center**

<http://www.srbpoly.ac.th/>