

A. Project description

1. Current situation from developmental view

Thailand is one of the biggest energy consumer in South-East Asia. For 2030 a doubling of power consumption is predicted. The Thai authorities succeeded to increase the access to electricity in remote regions continually, but the reliability of power supply remains problematic.

Already existing electricity grid, particularly in economical center of Bangkok and tourist areas, are overloaded often because of increasing demand. A fast expansion of the grid is absolutely essential. This is why overhead transmission lines are preferred to underground cable installation due to costs and efficiency. These overhead transmission lines are carried by towers. Many Thai regions experience electricity failures because of missing quality and safety standards very frequently. In October 2014, three incidents with breaking towers, just in Bangkok alone, caused dangerous situations.

Also the problem awareness about the danger in handling high-voltage power lines and mounting transmission tower is limited.

Not surprising is the fact that there are often times serious accidents, partly with lethal consequences. Is it often the case that Thai workers climb transmission towers without fall protection and install any kind of cables inappropriately.

2. Abstract of develoPPP.de project

ZECK is a family business in the third generation which develops and produces machines and accessories for the construction and maintenance of overhead transmission lines, catenaries, antennas and underground cables. As part of the develoPPP.de project a training program which will mediate modern standards in transmission line construction will be established in Thailand. Furthermore, European norms in working safety and building up towers will be introduced as part of the training program.

Zeck GmbH will conduct the project in cooperation with following partners:

- Zeck Thailand Limited
- Several local educational institutions which will defined in detail during the project
- certification institute (TÜV)
- EGAT – Electricity Generating Authority of Thailand

Two transmission towers and one „half constructed tower“ (for training tower erection) will be installed on the area of ZECK Thailand Ltd. for training purposes. Further the knowledge and utilization of capstan winches to pull the ropes, tensioners for tighten the ropes, drum winches and additional accessories (e.g. different kind of ladders, platforms, line cars, gin poles) will be shown as part of additional training. The pilot plant will be established in cooperation with a university (e.g. the High Voltage Laboratory from Chulalongkorn University).

According to pilot plant, latest technologies concerning foundation, draft, planning, construction, assembly, commissioning and maintenance of transmission towers will be taught. Training sessions on working safety and risk management (e.g. fall protection, right usage of machines and ropes, avoiding accidents...) will be essential components of the program.

During develoPPP.de minimum 140 people will get trained. Potential audience will be technical staff from customers of ZECK GmbH. Moreover, representatives of the EGAT and engineer faculties will be involved and invited to participate in trainings.

Theoretical and practical curricula as well as training documents (English and Thai) will get evolved in cooperation with educational institutions, as well as the syllabus and schedule. Training will get certified

towards international validated standards by TÜV Rheinland. The certified training concept will be made available to other interested companies free of charge.

Training content and project results will get forwarded to universities and colleges to spread the effects of the project as much as possible.

Moreover, advanced vocational training possibilities will be presented at an open house event.

As part of project supporting public relation activities, demonstration field will be opened in a big ceremony with representatives of chamber of foreign trade, department of energy, science and economics. Additionally all projects results will be presented at a closing event.

3. Relevance of develoPPP.de-project for Zeck GmbH

The company plans to keep expanding internationally and open up more markets out of Europe to foster and strengthen the own market position. In medium-term Zeck will enlarge the manufacturing facility in Thailand to produce pulley blocks, ladders and platforms.

With this project, application possibilities of Zeck machinery will be demonstrated and the dangers in overhead transmission construction and maintenance will be minimized. Additionally ZECK wants to encourage Asian decision makers of power supply sector and construction companies to work under highest technical and industrial safety conditions while using ZECK machinery.

Furthermore ZECK is generally willing to invest in extension the own network in Thailand. However, without the cooperation with develoPPP.de, ZECK would only be able to implement training measures which are scattered and immediately linked to own business, for example demonstration of machine during sale. A structured and effective knowledge transfer in cooperation with local education and energy authorities would not be possible as initially planned.

4. Important developmental project effects

Implementation of innovative, future oriented energy supplying technology, maintenance and safety technics according to highest quality standards will contribute to improve energy supply and reduce occupational accidents at transmission line construction. Accidents caused by overthrusting, ailing, wrong established or too fragile towers will be reduced and the safety for workers will be increased therefore.

ZECK renders a contribution to knowledge transfer and advanced training by schooling and practical training. Especially staff from transmission line construction companies which are working on behalf of EGAT to maintenance the electricity grid as well as the engineering students will benefit from this project. After propagation of the certified training material, knowledge is intended to be further developed and passed independently. The supply of jobs and apprentice availabilities will be increased by implementation of universities and technical colleges. This will lead to new job fields and employment opportunities in the energy sector.

The German-Thai network consisting of power suppliers, transmission line constructors and universities will be tightened and expanded in order to identify and create common training, research and business activities, even when this project has ended.