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Thai Research Work and Inventions in National and International Stages

The National Research Council of Thailand (NRCT) has promoted the application of research work and inventions to create commercial value to the country, including cooperation pertinent to research, inventions and innovation inside and outside the country. Furthermore, the NRCT has encouraged Thai researchers and inventors to take their research work, inventions to compete and exhibit in various international forums; and they were able to win numerous competition and got awards from divers organizations, specially in the year 2016, lots of prizes were rewarded from the following events.

1. **The International Engineering Invention Exhibition 2016 (I-ENVEX 2016) in Perlis, Malaysia during 8 – 10 April 2016**
2. **44 International Exhibition of Inventions of Geneva in Geneva, the Swiss Confederation during 13 – 17 April 2016**
3. **27 International Invention & Innovation Exhibition (ITEX 2016) in Kuala Lumpur, Malaysia during 12 – 14 May 2016**
4. **12th Taipei International Invention Show & Technomart (INST 2017) in Taipei, Taiwan during 29 September – 1 October 2016**
5. **10th International Warsaw Invention Show (IWIS 2016) in Warsaw, Republic of Poland during 10 – 12 October 2016**
6. **9th International Exhibition of Inventions Kunshan (IEIK 2016) in Kunshan, People's Republic of China during 17 – 20 November 2016**
7. **Seoul International Invention Fair 2016 (SIIF 2016) in Seoul, South Korea during 1 – 4 December 2016**
8. **2016 Kaohsiung International Invention and Design EXPO (KIDE 2016) in Kaohsiung, Taiwan during 9 - 11 December 2016**



The 7th Renewable Energy Workshop between China and Thailand

The National Research Council of Thailand (NRCT) and the National Natural Science Foundation of China (NSFC) signed a Memorandum of Understanding (MOU) in 1992 for the purpose of promoting and developing Thai researchers' potential through joint research with Chinese researchers that lead to exchange of research knowledge and experience in various academic fields according to mutual agreement conducive to the elevation of cooperation between researches in both countries.

The NRCT and Chiang Mai University co-hosted "The 7th Renewable Energy Workshop between China and Thailand" during November 28 – December 2, 2016 at Duangtawan Hotel, Chiang Mai Province in collaboration with the NSFC in which Dr. Pattamarat Kunjara, Expert in Research System, gave a welcome speech to participants and academic audit committees in renewable energy under Thailand-China cooperative project, the NRCT's officers Chinese coordinator and Guangzhou Institute of Energy Conversion (GIEC), The 7th Renewable Energy workshop was held for the purpose of having a Chinese-Thai researchers who receive research funding for the fiscal year 2015 and 2016 from the NRCT and the NSFC exchange technological knowledge, as well as advancement and expertise of each party for applying to related research, together with giving an opportunity to young Thai-Chinese researchers who take interested in further research or conducting research together in the future to build a network and to exchange research ideas.



Development of a Safety Evaluation System and Working Conditions of Thai Rail System



Pre-Research Issues

The Airport Rail Link Project Provides connection service from Suvarnabhumi Airport to downtown area. There are eight service-rendering stations starting from Suvarnabhumi Airport Station and ending at Phayathai Station. The Airport Rail Link is the highest speed train in the country at top speed of 160 kph. Currently, nine trains are available for service. For maximum safety service, testing and evaluation planning requires foreign advanced knowledge and technology. Vibration checks with dynamic value follow European Standard (UIC 518 (2009), EN 14363 (2005), FRA 49CFR213.333) and Manual for Speed-Up Testing on Railways, 1993 in the United States and Japan, respectively. The checked vibration value can be assessed running safety of the train and passengers' riding comfort, together with abnormalities of the track and the train. Therefore, the aim of this research project is to develop a safety evaluation system and operational conditions based on the vibration values of the train. This research focused on the exercise of research results for developing the Airport Rail Link Project operated by the State Railway of Thailand Electrified Train (SRTET) Co., Ltd., raising the checks, safety standards of the train, and for planning to maintain the train effectively. Dr. Rattapoom Parichatprecha, Naresuan University and his team developed a set of tools for checking the vibration as well as software for collecting and analyzing data to make the checks more effective, suitable and convenient to use.

Research Outputs and Outcomes

1. A train checked report in accordance with UIC 518 (Simplified Acceleration Method) to be delivered to the SRTET Co., Ltd. for further operation.
2. Checking kits consisting of:
 - 1) A vibration checking device with train vibration inspection system.
 - 2) A checking tool specifying GPS train position identification and speed profile system.
 - 3) Wheels and rails movement detection kit.
3. Operational processes and programs:
 - 1) Programs for ordering, storing and managing real time data (DAQ system), and for analyzing movement between wheels and rails from side to side with Image Processing Method.
 - 2) Safety and serviceability investigation in accordance with UIC 518 Software version 1.0.
4. Development of Thai researchers and engineers' skills in vibration checks.

