Summary of 1st Workshop

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The 2nd APEC Workshop on Guidelines toward High Biodiesel Blend Diesel (eg B20) Specification in the APEC Region

19 March 2018
Hilton Waikiki Beach Hotel, Hawaii, USA
# Agenda of 1<sup>st</sup> workshop in Bangkok (13-14 Dec 17)

**ANNEXI**
**AGENDA (Draft)**

The 1<sup>st</sup>APEC Workshop on Guidelines toward High Biodiesel Blend Diesel (eg B20)
Specification in the APEC Region
13-14 December 2017
Convention Center Room CC405
Thailand Science Park, Pathumthani, Thailand  
([https://goo.gl/maps/e9rEp72J4F12](https://goo.gl/maps/e9rEp72J4F12))

### Wednesday, 13 December

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<td>08.30</td>
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| 09.00 | Opening Session and Workshop/Project Overview  
Welcoming Remark by Dr. Aree Thanaaosomsun, Deputy Executive Director, MTEC  
Project overview by Ms. Munika Sompramont, DEDE & EGNRET Representative  
Opening Speech by Mr. Yongyuth Sawatdisawatee, Deputy Director General, DEDE  
Group Photo |
| 09.30 | Keynote – Overview of biodiesel development in Thailand  
Dr. Apiradee Thammanomai  
Department of Alternative Energy Development and Efficiency (DEDE) |
| 10.00 | Coffee Break |
| 10.30 | Overview of biodiesel specifications from around the world  
People's Republic of China: Ms. Du Guomin, Division Chief of Development Strategy, PetroChina Planning and Engineering Institute  
Indonesia: Prof. Tatang Hernas Socrates, Head of Center for Research on Natural Resource Utilization, Institut Teknologi Bandung (ITB)  
Malaysia: Dr. Harrison Lau Lik Nang, Leader of Biodiesel Technology Group, Malaysian Palm Oil Board (MPOB) |
| 12.00 | Lunch |
| 13.00 | Overview of biodiesel specifications from around the world (cont'd)  
Republic of Korea: Prof. Ocktaeck Lim, University of Ulsan  
Philippines: Mr. Ricardo S. Infante, Supervising Science Research Specialist, Department of Energy (DOE)  
Thailand: Dr. Manida Tongroon, National Metal and Materials Technology Center (MTEC) |
| 14.30 | Concern from automotive makers for higher blend of biodiesel  
Mr. Tomoaki Kakihara, Chairman of Diesel Fuel Experts Group, Automobile Manufacturing Association (JAMA), Japan |
| 15.00 | Coffee Break |
| 15.30 | Discussion on guidelines toward high biodiesel blend diesel  
- Moderator will ask for opinion from participants on each technical specification |
| 16.00 | Way forward for guidelines toward high biodiesel blend diesel  
- Based on discussion from biodiesel producers and car makers, a way forward for guideline on high biodiesel blend diesel will be formulated. |
| 16.30 | Wrap up  
- The moderator will provide feedback and recommendations on potential guideline. All the feedback will be compiled for further discussion. |
| 16.00 | Welcome Dinner |

### Thursday, 14 December

Thailand case study for higher blend of biodiesel & Site visit (by invitation)

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| 09.00 | Overview of Thailand case study for higher blend of biodiesel  
Dr. Nawong Chollacoop, National Metal and Materials Technology Center (MTEC) |
| 09.30 | Introduction of H-FAME Technology for Thai B10 program  
Dr. Yuji Yoshimura  
Emeritus Researcher, National Institute of Advanced Industrial Science and Technology (AIST) |
| 10.00 | Coffee Break |
| 10.30 | Site visit to H-FAME pilot plant at Thailand Institute of Scientific and Technological Research (TISTR)  
([https://goo.gl/maps/VVaBPPrKcimY2](https://goo.gl/maps/VVaBPPrKcimY2)) |
| 12.00 | Lunch |
| 13.00 | Site visit to Thai commercial biodiesel plant: Bangchak Biofuel  
([https://goo.gl/maps/8Hh5wGbS32](https://goo.gl/maps/8Hh5wGbS32)) |
Statistic of 1st BDF workshop

1st APEC Biodiesel Workshop (58 participants)

- Govt: 14 (24%)
- Univ: 31 (53%)
- Private: 27 (47%)

*Many MTEC staffs not in the photo*
Day 1: 13 Dec 2017
Day 2: 14 Dec 2017

Visit to TISTR

Visit to Bangchak
Summary (I)

• PRC
  – Specification: B100 (S50 & S10) for up to B5 blending
    ✓ feedstock: waste cooking oil
  – B5 nationwide after 2017
    ✓ various grade depending on surrounding ambient temp (CFPP, freezing point)
    ✓ additional requirement on impurities, PAH for EuroVI

• INA
  – Specification: B100 for up to B20 blending
    ✓ feedstock: palm oil
  – B20 nationwide after 2016
    ✓ improvement on various properties: sulfur/phosphorous content, acid value, oxidation stability, MG limit

• MAS
  – Specification: B100 for up to B7 blending
    ✓ feedstock: palm oil
  – B7 nationwide since 2015
    ✓ planned for B10 in Jun 2016 but postponed (B7 for EuroV)
Summary (II)

• POK
    ✓ feedstock: imported palm oil (summer) & waste cooking oil (winter)
  – B3 nationwide after 2018
    ✓ use of biodiesel mandated by RFS

• PH
  – Specification: B100 for up to B2 blending (since 2009)
    ✓ feedstock: coconut oil
  – Plan for B5 (2018) but some problem on CME handling & cost
    ✓ introduction of non-coconut biodiesel feedstock?

• TH
  – Specification: B100 for up to B7 blending
    ✓ feedstock: palm oil
  – B7 nationwide since 2014
    ✓ planned to introduce B10 with mandate in 2026
Summary (III)

• JAMA
  – Global statement to recommend up to 5% (or 7%) of biodiesel as for general public diesel fuel
  – Supplemental statement to accept up to 20% under conditions
    ✓ Palm biodiesel,
    ✓ Euro 4 diesel
    ✓ Monoglyceride content in B100 & water content in Bxx
  – Recommend to keep conventional diesel fuel for older vehicle
  – Not sure impact of high FAME blends on EuroV
    ✓ Higher boiling point of FAME (unburned FAME in exhaust)
    ✓ Lower heating value of FAME to give enough exhaust gas temp for DPF regeneration
    ✓ Poorer oxidation stability of FAME for potential sludge formation

• Discussion on way forward
  – International review of biodiesel standard with prior attempts on harmonization
  – Will consider AAF (ASEAN Automotive Federation) recommendation for further discussion
  – Guideline for maintenance?
Summary (IV)

- Thailand case study
  - H-FAME (partially Hydrogenated Fatty Acid Methyl Ester) technology to improve FAME quality: lowering monoglyceride
  - Currently undergoing B10 national project
  - Site visit to H-FAME pilot plant at TISTR & commercial biodiesel plant at Bangchak
Thank you