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Panellists   2-4

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Programme of Events

Sunday, 30th June	• Registration, 10am-6pm, • BIT Turbomachinery lab tour 3-5pm • Reception dinner 5-8pm
Monday,1st July **8:10 – 11:30 a.m.**	**Session 1: Full Presentation** 1. Opening speech: Prof. Ma (10 mins) 2. Turbo matching and model based control (8:10-9am). Facilitator: Peter Hofbauer, Harold Sun • Two stage boost modeling, Yueyun Wang, GM • Advanced turbo technologies, Tom Grissom, BW 3. Bearing and rotor dynamics (9-9:50am). Facilitator: Harold Sun, Bob Griffith • Ball bearing development, Peter Davis, HW • Oil free turbocharger, Prof. Luis San Andres 4. Aerodynamic development/analysis (9:50-10:40am). Facilitator: Chaochen Ma, Bob McMullen • Mixed flow turbine development, Hua Chen • Advanced turbo to support future engine technologies, Harold Sun 5. Design for durability and low noise rediation (10:40am-11:30am). Facilitator: Peter Davis, Bob Griffith • Turbo durability and reliability, Prof. Luis San Andres • Assessment of turbocharger NVH, Xiaozhen Sheng,
12:00- 13:00 p.m.	**Lunch**
13:00 – 17:30 p.m.	**Session 2 Panel discussion: system optimization** 1. Advanced aerodynamic performance to support future engines (1-1:50pm) Panelists: Chaochen Ma, Bob Griffith, Bob McMullen, Harold Sun, Hua Chen, Don Stanton, Ce Yang, Hong Zhang, Mingxu Qi, • High efficiency and wide operation range aero design for high EGR, power density, • Potential impact of hydraulic, mechanical or electric assisted turbo on aerodynamic design of turbochargers. 2. Trade-off between aero performance and durability (1:50-2:40pm). Panelists: Harold Sun, Bob Griffith, Luis San Andres, Hua Chen, Xin Shi, Steve Arnold, Jizhong Zhang, Hong He, Hang Wang • trade-off between performance and durability with real world applications and future engine combustion, control and

	fuel economy improvement technologies, • material for light weight, low cost and high temperature; mitigation of fatigue failure near resonance frequency speeds; classical assessment of HCF and LCF • Fluid structure interaction/forced response 3. Turbo matching, correlation with engine performance, control and automated calibration (2:40-3:30pm) Panelists: Yueyun Wang, Bob McMillen, Chaochen Ma, Don Stanton, Ruo Huang, Mingshan Wei, Zhiqiang Zhang, Linfu Guo • Characterize turbo performance under high EGR, pulsed environment and operation range that is relevant to auto engine application; • Heat transfer impact on turbine flow bench test; • Better turbo flow bench/engine correlation to support Model based control. • Challenges for multi-stage turbocharging: modeling, transition, matching, and fast-warmup; (30 min tea break) 4. Bearing, rotor dyanmics and other emerging technologies (4-4:50pm) Panelists: Peter Davis, Tom Grissom, Kehrwald, Jaeger, Hadler, Luis San Andres, Peter Hofbauer, Ruo Huang, Liaoping Hu, Hong Zhang, Junsheng Zhao, Hong He • Issues with Start/stop operation, impact of thrust loading on bearing loss and turbine efficiency measurement • Compressor fouling/erosion; advanced compressor milling technologies; Turbocompound and exhaust heat recovery • Hydraulic, mechanical or electric assisted turbo technologies; • Vibration and noise problem? 5. Understand the emerging market (4:50-5:30pm) Panelists: Ruo Huang, Hang Wang, Weijian Han, Luis San Andres, Steve Arnold, Liaoping Hu, Jinguang Bi • Duty cycles and durability in emerging market for HCF and LCF qualifications • Durability of turbocharger under high sulfur fuel/oil: VGT, sheet metal turbine, etc. Embrittlement of sulfur and H2 • Low cost turbo, switching valve, and viable solution for emerging market
18:00 p.m.	**Dinner**
19:30	**Departure for Tianjin, by bus**

Attention: Panelists are required to prepare 2-4 questions that are appropriate for discussions on respective subjects. The questions need to be submitted to Dr. Mingxu Qi, (qimx@bit.edu.cn) before 6/1 and shared among all panelists before the forum.

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