



## ASHRAE DISTINGUISHED LECTURERS PROGRAM

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ASHRAE-Danube Chapter's Technology Transfer Committee in cooperation with the Serbian HVAC Society KGH – SMEITS, and Serbian Academy of Engineering Sciences are inviting You to attend the

### DISTINGUISHED LECTURER SEMINAR

**Lecturer: Wei Sun, MSME, P.E. and MSAE, President Engsysco, Inc. An Arbor, Ann Arbor, MI**  
**United States**

Friday 28<sup>th</sup> of April, 2017, 11 am, Belgrade Civil Engineering Faculty, Ceremonial Hall

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#### *Other TOPICS*

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#### **1► Laboratories and HVAC Systems Design Fundamentals -Intermediate**

This presentation discusses the definition of various labs, related standards and guidelines, architectural layout and considerations, hazard assessment, fume-hood types and configurations, biological safety cabinets (BSC) and classification, bio-safety containment labs (BSL) and classification, animal bio-safety labs (ABSL) and classification, as well as ventilation and exhaust system design, pressurization control etc. This presentation has been prepared and used for mentoring design professionals.

#### **2► Design of Pressurization Systems - Technologies in Room/Suite Pressure Control, Performance Evaluation and Design Practices**

The presentation covers some findings of a recent ASHRAE research project (RP-1344) for which the speaker led a research team on room pressure control study for critical and controlled environments. This presentation starts with the purposes of pressurization, how to achieve, basic mathematical relationship, room air-tightness, pressurization scenarios, typical pressurization criterion, control strategies such as direct pressure-differential, differential flow tracking, hybrid control and adaptive controls. New development on multiple-room (suite) pressure control strategies and automated room air-tightness test are discussed. Contamination (by particle, microbial, chemical fume, etc.) during door-in-operation condition and dynamic control strategies, airlock types and applications, and CFD simulation are presented and illustrated.

### **3► Fan Energy Conservation in Cleanrooms - Airflow Modeling and Demand Flow Control**

The presentation reflects the speaker's latest California Energy Commission research project (55045A/06-28) and discusses the strategies of cleanroom fan energy conservation, analyzing the Air Change Rate (ACR) of cleanroom vs. general-purpose room, it discusses the determination of ACR and problems in existing guidelines. The presentation also includes the new mathematical model which is an estimation tool to calculate ACR requirement based on room particle generation rate, AHU filters' combined efficiency, room HEPA efficiency, exposed surface particle deposition, outdoor particle concentration, and outdoor air/supply air ratio, in addition to room cleanliness classification. It further discusses the demand flow control through recirculation fan, fan-filter unit or fan-wall unit. Other fan energy conservation practices such as utilization of airlock or pressure stabilizer, low pressure drop air distribution system, utilization of network flow simulations to enhance flow effectiveness for cleanrooms are also addressed.

**ASHRAE Danube Chapter**. The heating, ventilating, air-conditioning and refrigerating industry affects the public's quality of life in many ways, from indoor air quality, to conserving energy in buildings, to the development of refrigerants that do not harm the environment. As part of its outreach to the community, the Chapter is sponsoring a presentation on (topic of speaker's presentation), featuring an internationally recognized expert in the HVAC&R field.

**ASHRAE**, founded in 1894, is a building technology society with more than 50,000 members worldwide. The Society and its members focus on building systems, energy efficiency, indoor air quality and sustainability within the industry. Through research, standards writing, publishing and continuing education, ASHRAE shapes tomorrow's built environment today. For more information, please visit [www.ashrae.org](http://www.ashrae.org).