

# TALK ON POWER PLANT FIRE FIGHTING SYSTEM

Reported by: Ir. Yeo Boon Kah and Mr. Sam Wei Yeow, Building Services Technical Division



Left: Mr. Sam Wei Yeow, Speaker  
Right: Ir. Yeo Boon Kah, Chairman  
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## INTRODUCTION

A talk on "Power Plant Fire Fighting System" was held at the IEM Conference Hall A, Bangunan Ingenieur, at 5.30 p.m., on 28 August 2003. The talk attracted very good response with more than sixty participants.

The talk started with an introductory speech by Ir. Yeo Boon Kah, Chairman of the IEM Building Services Technical Division. He gave some background on the talk and introduced the speaker, Mr. Sam Wei Yeow, an experienced designer for fire protection systems in power plants.

The talk was divided into three major areas:

- 1) Technical Talk and Discussion
- 2) Fire Fighting Photo Presentation
- 3) Question and Answers Section

The speaker started by introducing common fossil fuel power plant layout

concepts, followed by detailed discussions on the design, operation and maintenance requirements of the following common fire fighting systems inside power plants:

- 1) Fire Fighting Ring Main and Indoor/Outdoor Water Hydrant System
- 2) Fire Fighting Pump System
- 3) Water Spray Deluge System
- 4) Foam System

## TECHNICAL TALK AND DISCUSSION

### Fire Fighting Ring Main System

A brief introduction on general fire ring main routing concepts, recommended piping materials and thickness, locations of OS&Y isolation valves as per normal engineering practices and NFPA requirements was delivered by the speaker. Immediately after this introduction, the speaker proceeded to provide some detailed information on Indoor/Outdoor water hydrants, focusing mainly on hydrant pipe sizing, outlet flow rate, residual pressure and area coverage requirements as per NFPA 14.

### Fire Fighting Pump System

The speaker highlighted Electrical, Diesel and Jockey pump arrangement concepts, operation sequences and design requirements as per NFPA 20. A sample P&ID and piping arrangement drawing outlining the above-mentioned concepts was included in the given handouts to help the audience to better understand this subject. The speaker also carried out a brief discussion on pump size calculations, and then reviewed a typical fire fighting pump performance curve.

### Water Spray Deluge System

The water spray deluge system approach is similar to fire fighting pump concepts whereby a sample P&ID outlining the operation concept of a water spray deluge system was presented. A water spray deluge system is divided into two different systems, namely the wet system and the dry system. A brief discussion to highlight the differences between these two systems and their corresponding applications was included in this section.

### Foam System

One of the common uses of a foam system in a power plant is to protect the diesel oil storage tank. With this understanding in mind, the speaker touched

briefly on foam concentrations, various foam systems and system and application selection procedures. To enhance the importance of this system, a design concept, together with a conceptual P&ID, outlining the use of foam bladder tanks to protect the fuel oil storage tanks was brought to the audiences' attention.

#### **FIRE FIGHTING PHOTO PRESENTATION**

After the technical presentation, the speaker showed the audience various photos of power plant fire fighting systems taken at a power plant project undertaken by him in Vietnam. The photos included indoor/outdoor water hydrants, commissioning of a water spray deluge system on the generator

transformer, commissioning of a foam system on the fuel oil storage tank, etc. The audience could relate the photos shown to the previous technical discussions and, as a result, had a better appreciation and understanding of power plant fire fighting systems.

#### **QUESTIONS AND ANSWERS SECTION**

Fifteen minutes was allocated for the questions and answers section. Various topics relating to the technical talk were brought up for discussion. The audience also brought up some comments and suggestions to further improve the talk. This certainly benefited both the speaker and the audience. Finally, a summary of the talk was

presented by the speaker to complete the presentation.

#### **CONCLUSION**

The response to this talk was very good with the IEM conference room crowded with more than sixty participants. The audience found this talk very informative and educational. Encouraged by the good response, the IEM Building Services Technical Division is looking forward to conduct a one day seminar for its members, especially for those who were not able to make it on 28 August 2003.

A memento was presented to the speaker who took opportunity to thank all the attendees for their participation, feedback and comments to make the talk a success. ■