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# TECHNICAL SEMINAR ONLINE: UPDATE ON FIRE SUPPRESSION AGENTS

**BEM APPROVED CPD/PDP HOURS: 6**

**REF. NO.: IEM22/HQ/475/S (W)**

*\*Disclaimer: Participant needs to attend the course at least for 45 minutes in order to receive the CPD*



**Date:**

15 December 2022, Thursday

**Time:**

9.30 am - 5.00 pm

**Venue:**

Zoom Online

**REGISTRATION FEES:**

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## **Tentative Program**

<b>9.30 - 10.15 am</b>	<b>Kigali HFC Phasedown Plan for Malaysia and the Impact of Global Warming</b>	<b>Ir. Chen Thiam Leong</b>
<b>10.15 - 10.45 am</b>	<b>Question &amp; Answer Session</b>	
<b>10.45 - 11.30 am</b>	<b>Certification of CO2 and Clean Agent Suppression Systems - Form C1, C2, C3</b>	<b>Ir. Wong See Foong</b>
<b>11.30 am - 11.50 am</b>	<b>Question &amp; Answer Session</b>	
<b>11.50 am - 12.00 noon</b>	<b>Morning Break</b>	
<b>12.00 - 12.45 noon</b>	<b>Inert Gas Suppression System</b>	<b>Johnson Kiew Jai Huat, SRI</b>
<b>12.45 noon - 1.00 pm</b>	<b>Question &amp; Answer Session</b>	
<b>1.00 - 2.00 pm</b>	<b>Lunch Break</b>	
<b>2.00 - 2.45 pm</b>	<b>Aerosol Suppression System</b>	<b>Muhammad Haswan, Pyrogen Manufacturing Sdn. Bhd.</b>
<b>2.45 - 3.00 pm</b>	<b>Question &amp; Answer Session</b>	
<b>3.00 - 4.00 pm</b>	<b>FK 5112 Fire Suppression System</b>	<b>Bryan Lee Yuen Hwa, VIC</b>
<b>4.00 - 5.00 pm</b>	<b>Q &amp; A Session and Closing</b>	

# Synopsis

## **Kigali HFC Phasedown Plan for Malaysia and the Impact of Global Warming**

**By: Ir. Chen Thiam Leong**

The Kigali Amendment to the Montreal Protocol entered into force on 1st January 2019. The Amendment is targeted at the phase-down of Hydrofluorocarbons or HFCs, which are known substances with high Global Warming Potential (GWP). Malaysia being an Article 5 country, is required to meet the obligations for reduction in consumption of HFCs in accordance with the phase-down targets of the Kigali Amendment.

The urgent need for mankind to address global warming and climate change requires no further elaboration as evidenced by the recent global havoc of flood, drought, fire and more. Although consumption of HFCs in the fire industry accounts for only 7% (by kg in weight) of the total HFC consumption nationally, however, its total impact on global warming is many times higher due to the high GWP of the HFC types in use. The fire industry has in the past performed excellently in response to phasing out the Ozone Depletion menace, and there is no reason why a similar response to addressing Global Warming cannot be met.

In a 2006 seminar themed “Cutting through the Haze”, the author highlighted a dire need for the industry to be duly informed and clearly understand the comprehensive issues involving the properties, viability and long term availability of the various available fire suppression clean agents including their respective quality assurance programs on proprietary design, installation and maintenance. Therefore, it is now timely for a revisit as to where the industry should be heading to address this new era of sustainability goals.



# Synopsis

## FK 5112 Fire Suppression System

By: Mr. Bryan Lee Yuen Hwa

FK-5-1-12 is an environmentally sustainable clean extinguishing agent that has undergone numerous testing to determine its safety, usage, and performance as a clean fire extinguishing agent. With the Kigali Amendment being aggressively implemented, the western countries are spear-heading the usage of FK-5-1-12 as the main suppressant for Fire Suppression Systems. Malaysia is also committed to protecting the environment and has agreed to reduce the consumption of HFC by 2045.

The FK-5-1-12 was developed since the 1990s, however it wasn't widely used due to its higher cost and limited production in comparison to other fire suppression agents. Most of the system components used for the FK-5-1-12 are similar to the HFC-227ea system components. The replacement of HFC-227ea to FK-5-1-12 is simple, quick, and efficient. In comparison to inert gases, the FK-5-1-12 has a simpler installation process with small storage space.



# Synopsis

## Inert Gas Suppression System

**By: Mr. Johnson Kiew Jai Huat**

The inert gas fire suppression system uses single or mixture of natural gases as an extinguishing agent to put out fire by reducing the oxygen percentage in an enclosure. The oxygen concentration is reduced by the application of inert gas to a level that combustion is no longer supported and at the same time it is sufficient to support respiration for a period of time. It is one of the clean gas agents to substitute halon gas in firefighting purpose.

There are four types of inert gas system which are:

- i.IG01 (100% Gas Argon),
- ii.IG55 (50% Gas Argon + 50% Gas Nitrogen),
- iii.IG100 (100% Gas Nitrogen),
- iv.IG541 (52% Gas Nitrogen + 40% Gas Argon + 8% Carbon Dioxide).

Gas Argon and Nitrogen are naturally present in the atmosphere and thus it brings neither greenhouse effect nor ozone depleting potential. It is non-conductive, non-corrosive, chemically inert, colourless, odourless and it bring the least thermal shock comparatively. Moreover, it does not produce any by-product under high temperature. Therefore, Inert Gas System is going to be one of the promising clean gas systems locally and globally.





## *Synopsis*

### **Aerosol Suppression System**

**By: En. Muhammad Haswan,  
Pyrogen Manufacturing Sdn. Bhd.**

Introduction to Condensed Aerosol technology, how fire is extinguished, the available Standards and Test Protocols, impact on the environment and the applicable usage of this technology. As an example, a case study where Pyrogen is used in Indian Railways to protect electrical cabinets in their train cars.

## *Speaker's Bio*

Muhd. Hazwan Abd. Rahman is a Senior Project Engineer at Pyrogen Manufacturing Sdn Bhd. Graduated with a Masters of Engineering in Manufacturing System, has 8 years of experience in the fire industry primarily involved in R&D, Certification, Testing and Commissioning of fire suppression systems namely condensed aerosol systems, inert gas systems and hydrocarbon systems. Planning, managing and coordinating installation projects is part of his on-site responsibilities.

# *Synopsis*

## **Certification of CO2 and Clean Agent Suppression Systems - Form C1, C2, C3**

**By: Ir. Wong See Foong**

The first Bomba Directive No. 1/2007 relating to the requirement for approval of fire safety systems and materials was issued in 2007 whereby the process of submitting the Forms C1, C2 and C3 was implemented. The amendment to the Bomba Directive No. 1/2012 was issued on 10 May 2012, elaborating on the Forms C1, C2 and C3 and including the relevant standards for the fire safety systems and products in the list of items applicable.

The application of carbon dioxide extinguishing systems which by all definitions is also a clean agent is of special interest. Since it is also a clean agent, the requirement for Forms C1, C2 and C3 should also apply. Without this submission process and due to cost saving reasons, the common practice is that the fire contractor sources for the fire system components and gas separately and assemble the system on site all by themselves. Whether the system has been installed in accordance with the relevant standards is uncertain. To address this problem, the enforcement of Forms C1, C2 and C3 for CO2 systems is likely in the near future.

It has been 10 years since the last Bomba Directive and the type of clean agents has been changing rapidly especially with Malaysia signing recently the Kigali Amendment on 21 October 2020 to phase out HFC. The presentation is intended to go through the process of obtaining Bomba approval for the new clean agents coming into the market.