




**Industry & Facilities Division**  
**Third Party Inspection Report**

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<b>INSPECTION REPORT No. INY-AYE-25.008.IR.01</b>		<b>Revision No. 00</b>
<input type="checkbox"/> Initial <input type="checkbox"/> Interim <input checked="" type="checkbox"/> Final <input type="checkbox"/> Resident <input type="checkbox"/> Remote		
Inspection requested by: Fire Spyder™ System		
Inspection performed as Recognised Authority:		<input type="checkbox"/> Yes, : (Recognition) <input checked="" type="checkbox"/> No
BV Job Nr: INY-AYE-25.008		

<b>Project:</b> <i>Testing: Proof of Concept of high rise fire fighting and support system Fire Spyder™.</i>	<b>IPO Ref (If applicable):</b> <i>(BV internal P/o)</i>
<b>BV Client:</b> <i>Fire Spyder™ System</i>	<b>P/o nr: (client to BV)</b>
<b>Manufacturer/Vendor:</b> <i>Fire Spyder™ System</i>	<b>P/o nr: (client to Manufacturer)</b>
<b>Sub-Vendor (If applicable):</b> <i>N/A</i>	
<b>Inspection Location (Address):</b> <i>University of Fire Prevention and Fighting (UFPF), 3<sup>rd</sup> campus, Dong Nai Province, Vietnam</i>	<b>Previous Inspection:</b> <i>NA</i>
<b>Inspection Location (GPS Coordinates):</b> -	<b>Next Inspection:</b> <i>NA</i>
<b>Inspection performed on:</b> <i>15<sup>th</sup> Jan 2025</i>	<b>Total No. of Inspection Days:</b> <i>01 day</i>

MATERIAL / SUBJECT OF INSPECTION	ITEM / TAG Nr	QTY As per P/O	QTY Offered for inspection
<input checked="" type="checkbox"/> <b>Refer to attachment section J instead</b> <i>(Indicate if separate material list is provided in attachment)</i>			
To observe and confirm the functionality and operational timings (reflex times) of the exterior firefighting and support system known as Fire Spyder™.	-	-	01 system

A – INSPECTION RESULT		
<input type="checkbox"/> <b>Satisfactory</b> <b>(Without comments)</b>	<input type="checkbox"/> <b>Satisfactory with comments</b> <b>(Any of trailing Punch or Non Conformity items is still open)</b>	<input type="checkbox"/> <b>Not Satisfactory</b> <b>(NCR raised during the inspection)</b>
<b>Summary:</b> (for details refer to section E) <p>As per client requirement, BV witnessed the operational functionality and deployment of exterior high rise firefighting system and method consisting of winches, a suspended fire hose + monitor (mounted on a triangle plate), drones and (pre) installed anchor points. The general result was found as detail in section E.</p>		
<b>Open Non-Conformities:</b>	<input type="checkbox"/> Yes, details in section G <input checked="" type="checkbox"/> No	
<b>Open Punch List Items:</b>	<input type="checkbox"/> Yes, details in section H <input checked="" type="checkbox"/> No	
<b>Release Note Issued:</b>	<input type="checkbox"/> Yes, number(s): <i>(Release Note number)</i> <input checked="" type="checkbox"/> No	
<b>BV Traceability Stamping:</b>	<input type="checkbox"/> Yes,  <input checked="" type="checkbox"/> No	



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On behalf of Bureau Veritas <b>BV Inspector:</b> Tran Tinh Minh Trai (Name and Signature)	On behalf of Bureau Veritas <b>BV Coordinator:</b> Mai Hoang Khanh (Name and Signature)
BV Office: BV Vietnam - HCM Office	Inspection Report Date: 23 <sup>rd</sup> Jan 2025
<b>Distribution:</b> <input checked="" type="checkbox"/> <b>CLIENT</b> <input checked="" type="checkbox"/> <b>BV</b> <input type="checkbox"/> <b>MANUFACTURER</b> <input type="checkbox"/> <b>OTHER:</b>	<b>Attachments Report:</b> <input type="checkbox"/> Yes, details in section J <input checked="" type="checkbox"/> No

<b>B - REFERENCE DOCUMENTATION:</b>					
					<input type="checkbox"/> <b>Refer to attachment section J instead</b> <i>(Indicate if separate document list is provided in attachment)</i>
Title	Reference n°	Rev.	Approval status	Approved by	Date
Proof of Concept Operations	-	1	-	-	01/2025

<b>C – ATTENDEES</b>		
Name	Position	Representing
Tran Tinh Minh Trai	Inspector	Bureau Veritas Vietnam

<b>D - MEASURING &amp; TESTING EQUIPMENT USED</b>			
			<input type="checkbox"/> <b>Refer to attachment section J instead</b> <i>(Indicate if separate equipment list is provided in attachment)</i>
Equipment Type	Equipment Identity n°	Last Calibration Date	Expiry Date
Nil			

<b>E - INSPECTION DETAILS</b>
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<b>E – General</b>
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As per the client's requirements, BV observed the Proof of Concept of the Fire Spyder™ exterior high-rise firefighting and support system, detailed as follows:

The Fire Spyder™ system utilizes two drones, each carrying a suspended cable with a pulley, to facilitate the vertical deployment of a fire hose and nozzle. Directed to (pre)-installed anchor positions, the drones perform a coordinated handover, or handshake, with fire personnel, transferring the pulleys and cable. Fire personnel then secure the pulleys to the anchors which are located above the fire floor. Once the setup is rigged, a winch system raises the hose and nozzle to the fire floor. The nozzle's position can be easily adjusted by varying the winch wire(s) length, allowing precise targeting and support. After positioning, the fire pump is activated to initiate exterior firefighting operations at height and provide critical support to high rise operations.

<b>E1 – Details of Witness (W) &amp; Hold (H) Inspection Points</b>
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"Reflex time for this Proof of Concept is defined as the period from when the fire crew exits their vehicles to the moment water is applied to the fire, including the delivery of a high-rise hose pack to the staging floor when using pre-installed anchors.



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The observed reflex time during this Proof of Concept (when using pre-installed anchors) consists of the following distinct stages:

1) Fire crew from vehicle exit to anchor floor:

Observed time: 1m20sec

2) Handshake with drone:

Observed time: 10sec

3) Connection of pre-installed anchor with pulley and cable:

Observed time: 10s

4) Winch time lifting of hose, nozzle, and hose pack to staging floor:

Observed time: 40sec

5) Continued lifting from staging floor to fire location:

Observed time: 35sec

This gives a total reflex time of 3m 05s (with preinstalled anchors). During this Proof of Concept, it was also demonstrated that in situ installation of anchors in concrete took an extra 49 seconds.

Parameters for this Proof of Concept:

- Tower height: 21m

- Fire floor height: 12m

- Staging floor height: 9m

- Outgoing nozzle pressure: 5 bars (= 72.5 psi)

- Maximum winch speed: 20m/min (= 66 ft/min)

- Hose diameter: 51mm (2 inch)

- Smooth bore nozzle diameter 19mm (0.75inch)

## E2 – Details of Monitoring and Surveillance Patrols

☐ Tick if conducted during the visit

N/A

## E3 – Documentation review

☐ Tick if conducted during the visit

N/A

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## F – HEALTH, SAFETY & ENVIRONMENT COMMENTS

(Comment on Observations and Actions Taken During the Inspection)

The inspection activities carried out in site complied with:

- BV HSSE requirement
- 2 min for my safety
- Contractor HSE requirement

No further concern about HSE

## G- NON CONFORMITIES

☐ Refer to attachment section J instead

(Indicate if separate punch list is provided in attachment)

Item	Description	Status	Raised on	Report Nr.	Closed on	Report Nr.	Comments
-	Nil	-	-	-	-	-	-

## H – PUNCH LIST ITEMS

☐ Refer to attachment section J instead

(Indicate if separate punch list is provided in attachment)

Item	Description	Status	Raised on	Report Nr.	Closed on	Report Nr.	Comments
-	Nil	-	-	-	-	-	-

## I - DIGITAL PICTURES



Photo 01. The high rise test facility at the Fire Academy where the PoC was carried out.



Photo 02. The equipment is ready in place for testing



Photo 03. The triangle plate with quick coupling and nozzle that will be winched to the fire floor to fight the fire.



Photo 04. The triangle plate with quick coupling and nozzle that will be winched to the fire floor to fight the fire.

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Photo 05. The triangle plate at level fire floor, ready to apply water.	Photo 06. Water is applied to the fire.

## J – ATTACHMENTS

Item	Attachment Name	Total Pages	Description
1	Proof of Concept Operations_Ver. 1	-	-
END OF REPORT			