



# Application Note

Heliport Integration  
TECAN Freedom EVO Liquid Handlers

## Abstract:

The Heliport thaw station from Box Scientific provides fast safe and reproducible thawing for large sample arrays. An additional feature of this system is its easy integration with Tecan Freedom EVO liquid handling systems.

A basic integration with a Tecan Freedom EVO 200 was performed to demonstrate the capabilities of the integrated system. Incorporating the unique features of Tecan Freedom EVO systems it is possible to create seamless integration between sample prep and processing.



## Setup:

- 1) Heliport was positioned in the auxiliary space behind the main working area. In proper position, its front face is flush to the rear face of labware carriers mounted in the main work area.
- 2) The Heliport's remote relay cable was connected to an available 3-pin connector on the Freedom EVO's SMIO board, port J21 in this example.
- 3) 8 carrier cradles were mounted in portrait configuration across the length of the Heliport Deck



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## Method:

- 1) Each plate carrier position on the Heliport was created and mapped in the Evoware software.
- 2) Variables were set for the selected SMIO port to provide continuous 24vdc power when activated.
- 3) A basic aliquotting script was selected for the evaluation. The script was designed to transfer 10ul aliquots from a Matrix 96 microtube rack with pierceable caps, to matching positions on a secondary Matrix microtube rack.
- 4) The starting sequence of the script was modified to include a preliminary thaw interval of 35 minutes. The aliquotting script was set to begin immediately upon completion of the thaw interval, retrieving racks in sequence from each of the 8 mapped carrier positions and delivering them to a common location for aliquotting.
- 5) The SMIO port was programmed to remain active until the last tube rack was retrieved from the Heliport for aliquotting. By this method all samples were held at sustained equilibrium up to the point of retrieval.



- 6) A mixing step consisting of eight rapid 180 degree x-axis rotations by the gripper arm, were scripted to occur between removal of the racks from the Heliport deck, and transfer to the aliquotting location.
- 7) Eight sample racks containing oligonucleotide primers in a 1XTE buffer solution were transferred from -20C storage to each of the 8 positions on the Heliport deck.
- 8) The Heliport control switch was set to "Remote" and the script was commenced through the Evoware software.



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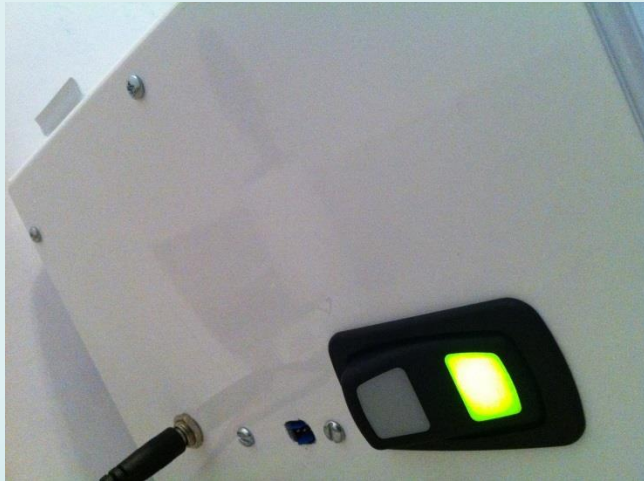
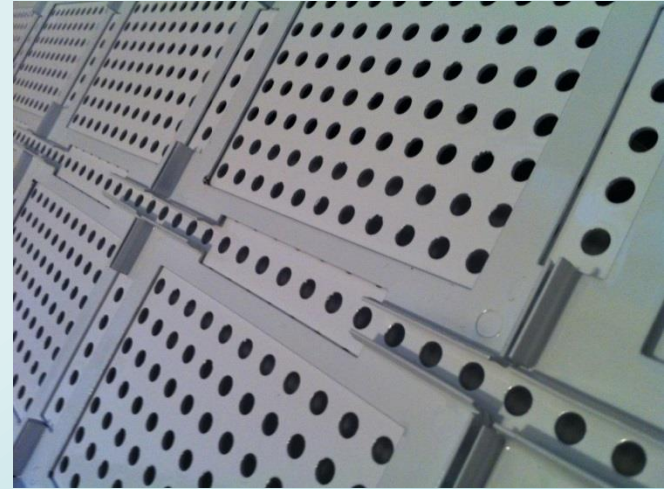
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## Results:

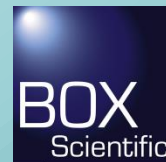
Execution of the automated script completed successfully and without error. Total runtime, including the 35 minute thaw interval was 47 minutes. Compared to a benchtop thaw/mix protocol and automated aliquotting, a time savings of roughly 100 minutes was attained representing a 68% time reduction.

In addition to time and labor savings, the controlled thawing conditions yielded obvious indications of reduced temperature variability across samples and across script iterations. Consistent rates of ice loss was observed both within individual Matrix racks and across the 8 racks used, indicating successful elimination of edge effects and hot/cold zones.



## Conclusions:

This evaluation confirms both the integration capabilities of the Heliport thaw station, and the benefits it affords to the end of process integrity, reproducibility and productivity gains. These benefits are relevant and translational to a broad spectrum of high throughput processes within the life sciences where a high level of sample homogeneity is required, especially over many iterations or long timescales



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# Heliport Specifications:

<b>Product:</b>	Heliport thaw station
<b>P/N:</b>	300-70000
<b>Dimensions (cm):</b>	
L	76.5
W	19
H	13
<b>Power Source:</b>	120VAC to 12VDC/3.0A wall wort
<b>Power Requirements:</b>	12VDC/1.4A
<b>Fans</b>	7 x 92mm
<b>I/O</b>	3 way lighted switch (all fans )
<b>Other modes:</b>	Remote- remote I/O via remote port/cable
<b>Max fan airflow (cfm):</b>	315
<b>Weight (lbs):</b>	6
<b>Shipping container:</b>	corrugated box/cut foam insert
<b>Packaged weight (lbs)</b>	11
<b>Package Contents:</b>	Heliport, accessory cradles(11), manual, power supply (boxed), remote I/O cable (1)
<b>Container Dimensions(cm):</b>	
L	101.5
W	29
H	27



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