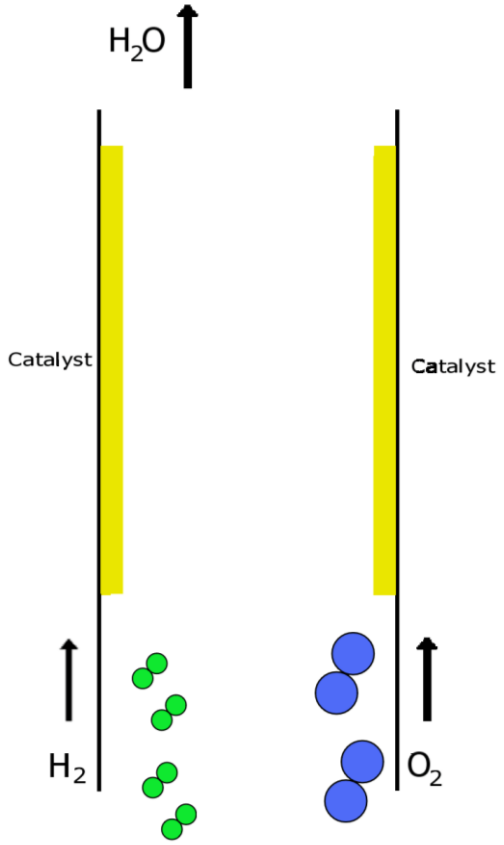
DHC系列 - 對流型除氫器

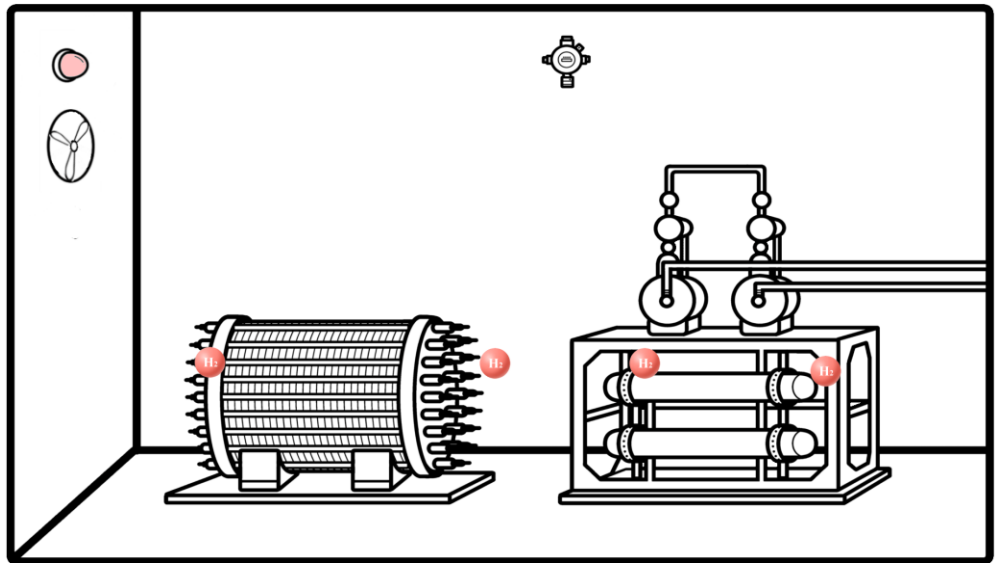
- 室溫下消除室內工作場所中洩漏的氫氣
- 無須用電，無耗材，無須燃料
- 通過UL見證檢驗

型號	最大氫氣洩漏處理量	尺寸 (mm) (不含吊掛固定件)	重量 (KG)
DHCVZ2B	2 LPH	121x46±1 (直徑 x 高)	0.27±0.05

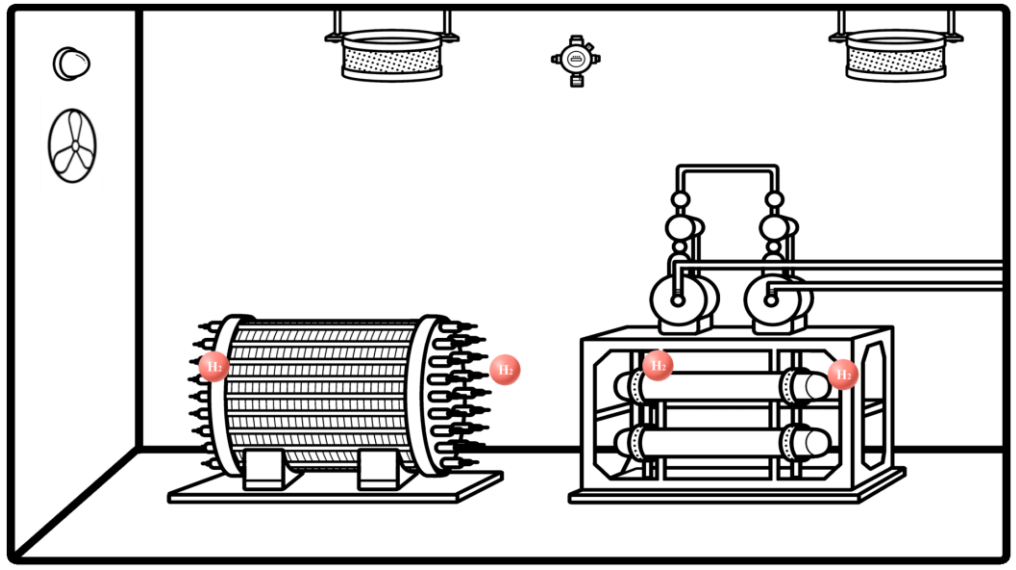


DHC運作原理及獨特價值

- **運作原理**：採用貴金屬觸媒在室溫下將氫氣轉化成水蒸氣，反應產生的熱量能提高觸媒催化效能並產生熱對流，達到除氫的作用。
- **獨特價值**：氫氣洩漏時，萬一發生排風、氫氣偵測器故障或停電，DHC是唯一可以消除氫氣降低爆炸危險的裝置。台灣地震頻繁，DHC可降低因地震造成氫氣洩漏及停電產生的風險。



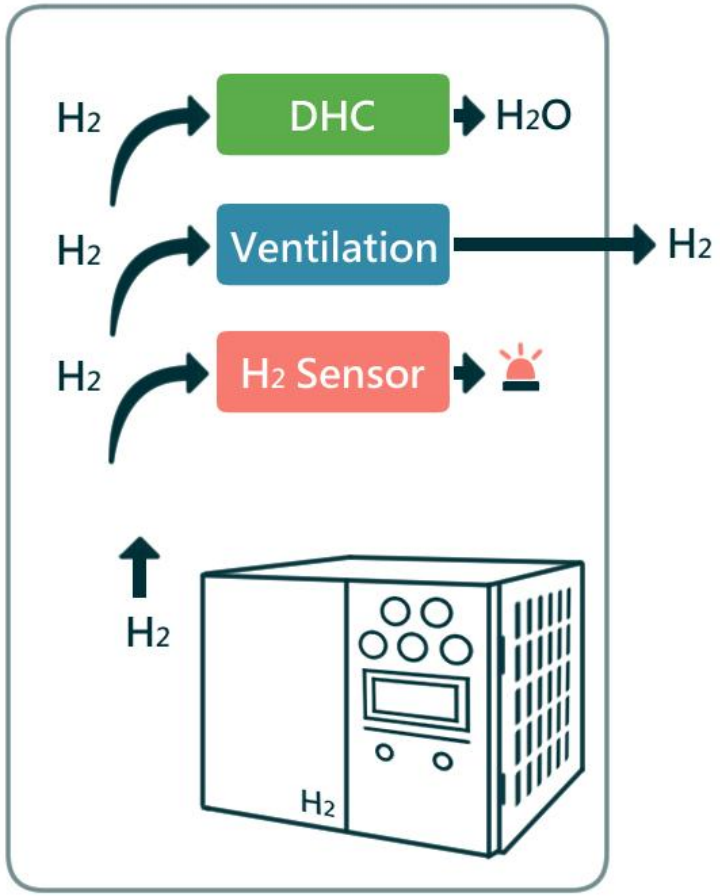
沒有DHC (容易發生氫氣蓄積)



有DHC (消除氫氣蓄積)

Video Source: https://www.youtube.com/watch?v=3jjC7JtBsgA

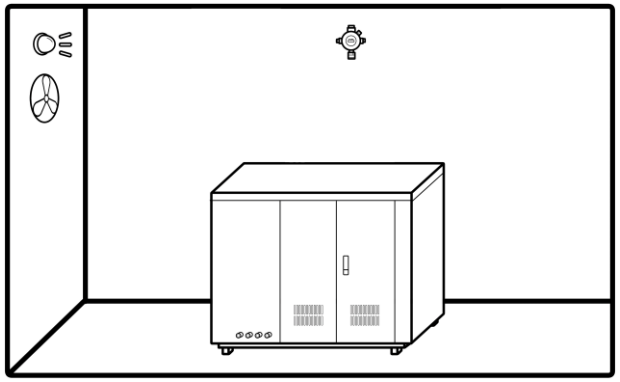
採用DHC建立多層次的氫氣洩漏安全防護機制



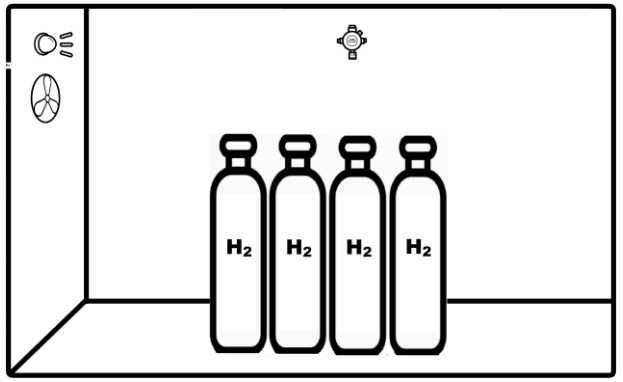
DHC – 氫氣安全守門員

- DHC可搭配氫氣偵測器與通風系統，協助建構多層次的安全防護機制。
- DHC無法取代也不會影響氫氣偵測器與通風系統的功能。
- 若僅依賴氫氣偵測器且通風不良時，氫氣洩漏時、容易累積產生危險。
- 在連續氫氣洩漏情境下，DHC 已證實能將氫氣濃度降至 4,000 ppm（10% LEL）以下，為處理人員帶來關鍵安全防護。

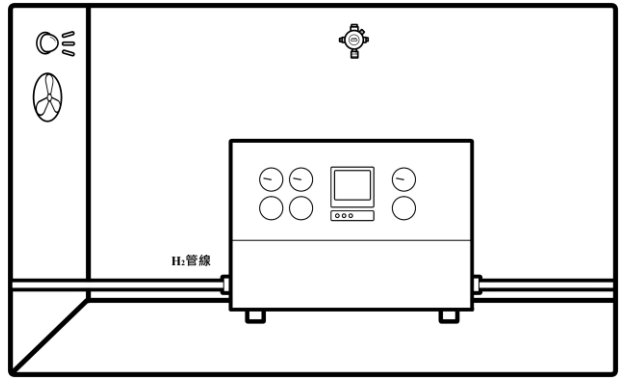
DHC使用情境



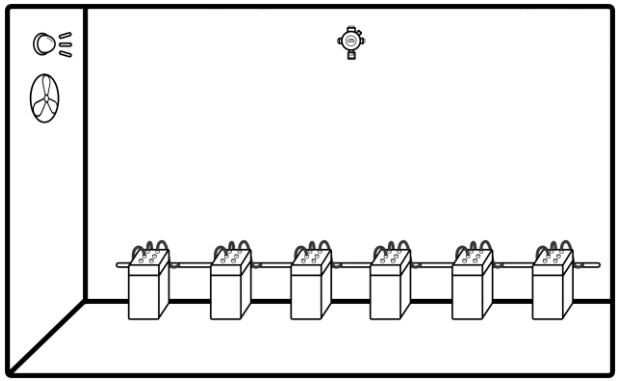
氫燃料電池



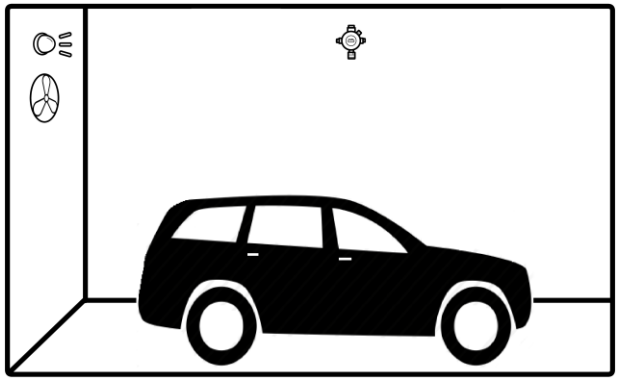
氫氣鋼瓶室/槽車間



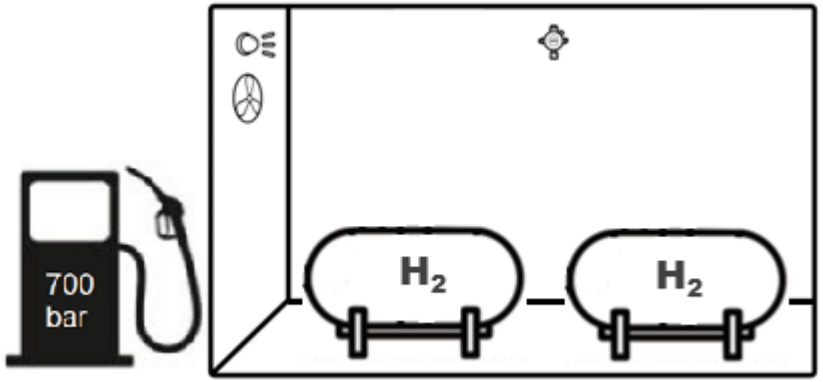
設備箱體內及作業間



鉛酸電池充電室



氫能車及室內停車場



加氫站

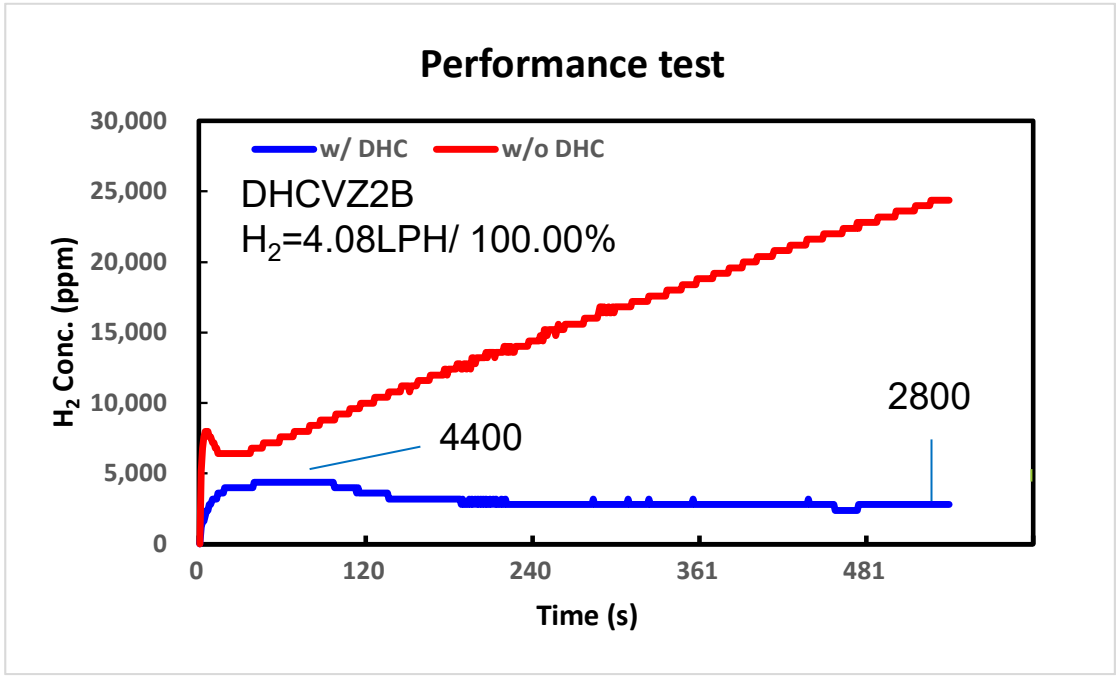
and more…

DHC的優點

- 增加安全性：即時消除洩漏之氫氣，避免累積產生爆炸
- 降低設備故障時的風險：若通風或感測器故障、停電等都可能會導致氫氣積聚。
- 安裝簡易、無須維護成本：只需安裝在天花板最高處即可運作，無須電源、耗材及燃料！
- 增加大眾對於氫氣的信心：一次事故將毀掉過去所有的努力成果
- 環境友善：透過氧化反應將氫氣轉換成水
- 增加工廠的安全保障
- 通過UL見證檢驗

UL 見證檢驗報告

- The 2 LPH DHC (DHCVZ2B) passed the verification of UL.



Test Procedure and Criteria:
Test procedure, document number QP24-D05B prepared by Toplus Energy Corp., as summarized below:

Test procedure:
Control group (without DHC):
1. Purge with CDA until the reading of hydrogen gas detector is zero for 300 seconds.
2. Input hydrogen gas. 68 sccm. ~4.08 LPH, 2X of the rated capacity.
3. Stop input hydrogen, when the reading of hydrogen detector is over 75 (30,000 ppm) or keeps in a specific range for 300 seconds.
4. Purge with CDA until the reading of hydrogen gas detector is zero for 300 seconds.
5. End the test.

Experimental group (with DHC):
1. Purge with CDA until the reading of hydrogen gas detector is zero for 300 seconds.
2. Install the DHC in the space.
3. Input hydrogen gas. 68 sccm for DHCVZ2B.
4. Stop input hydrogen, when the reading of hydrogen detector keeps in a specific range and the variation is between ±800 ppm for 300 seconds.
5. Purge with CDA until the reading of hydrogen gas detector is zero for 300 seconds.
6. End the test.

Criteria:
1. The max environmental hydrogen concentration is < 10,000 ppm
2. The stable environmental hydrogen concentration is ≤ 4000 ppm (reading of H2 detector ≤ 10), when the reaction reaches balance.

Test Observation:

Model	DHCVZ2B	
Test condition	w/o DHC	w/ DHC
Test box volume W x L x H (mm)	300 x 300 x 360	
Environment temperature before test (˚C)	28.8	29.2
Environment humidity before test (%RH)	25.5	32.2
Environment H_2 concentration after purge (ppm)	0	0
Inlet gas flow (sccm)	68	68
Environment temperature after test (˚C)	29.0	29.2
Environment humidity after test (%RH)	39.2	56.2
Max H_2 concentration during test (ppm)	30,800	4,400
Balance H_2 concentration (ppm)	N/A	2,800

Conclusion:
The measured values meet the criteria in test procedure.