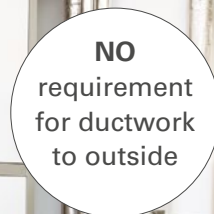


Reco-Air by Halton - Recirculating kitchen extract units for all electric catering equipment
UL listed models / Floor or void installation / M.A.R.V.E.L. compatible



Main technologies and options



High efficient 3 stage filtration
Removes large and small grease particles as well as smoke



Food grade activated carbon
Removes odours



Filter monitoring
Constant control of the filter load



Fan monitoring control platform
Fan speed control (constant airflow)



Balance control
Adjusts the supply vs exhaust



Halton Touch Screen
Unique and intuitive LCD user interface for all systems



Halton Connect
Faster commissioning and maintenance



Halton Care Services
Smart maintenance & optimisation services

Recommended combinations

To further enhance the performance of your kitchen, whether talking about the energy savings, safety, Indoor Environment Quality (IEQ) or the kitchen's impact on the environment, here are couple of combinations with other Halton products or technologies we recommend you.



MA.R.V.E.L. Compatible
Up to 64% reduction in exhaust airflow rates

Description of the main technologies



Reco-Air by Halton RAH recirculating units work at the heart of a kitchen ventilation system serving all electric catering equipment and achieving complete recirculation of exhaust air with no requirement for ductwork to outside.

RAH units' highly efficient filter technology removes particulates and odours. The processed air is independently certified as clean to be re-introduced as supply air.

RAH units eliminate long ductwork to outside when they become too costly or when they simply are impossible to install. Technical constraints on buildings' structure, restrictions linked to listed activities or historic sites, co-ownerships opposed to the degradation of the facades aesthetic or to odor nuisance risk... all these challenges can easily be overcome with recirculation units..

In addition to providing opportunities to install kitchen operations in previously unfeasible locations, RAH units significantly reduce fire risk. They also simplify planning procedures.

Globally Cost effective

- RAH units reduce CAPEX investment. They eliminate the costly fire-rated duct work to atmosphere thus reducing the construction and installation costs.
- They also reduce the utility usage and plant requirement with a compact design, an ease of assembly and flat pack options.
- RAH units enable establishing a restaurant wherever you chose i.e. where it is of most value, whatever the technical or environmental challenges.
- Traditional extract duct work requires regular specialist cleaning. RAH units significantly reduce maintenance regimes when accessing duct systems and plant is difficult and time consuming.

- When combined with Halton's Capture Jet™ hoods or ventilated ceiling, the installation and operating costs are even more reduced. They reach the lowest possible level when M.A.R.V.E.L. optimization airflow technology is also used.
- RAH units are a cost efficient alternative to traditional extract when there's no easy route to atmosphere.

Reduced fire risk and emissions control

- RAH units significantly reduce fire risk by eliminating ductwork to outside and suppressing grease deposits after the unit.
- RAH units reduce the need to pierce buildings' fire compartments.
- For high risk operational environments with the most stringent fire safety requirement, RAH units can be in addition installed in their own fire compartment. Whether located in or outside the main fire compartment, wherever a fire occurs, there's no risk RAH units contributing to the fire spreading.
- The contaminants produced by commercial kitchens are no longer expelled to outside thus removing the risk of nuisance on the neighbourhood and possible legal actions.

Distant monitoring

- Equipped with Halton Connect IoT (Internet of Things) platform with advanced 24/7 distant monitoring capabilities.
- Highest value of ownership thanks to Halton Connect & Care smart services offering.

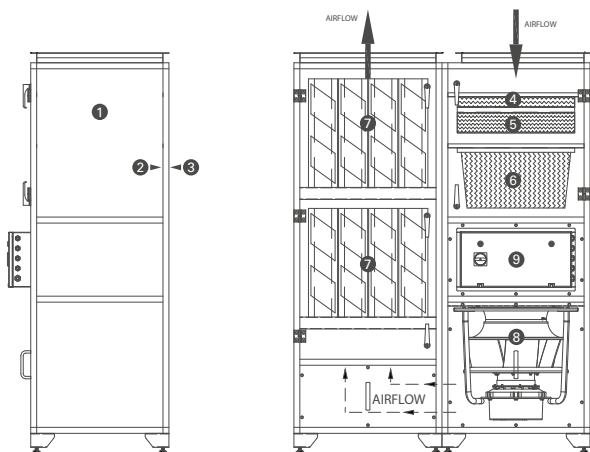
Flexible at many respects

- RAH units can be located internally or externally, adjacent to or remote from the kitchen. The unit can be hung within ceiling voids giving flexibility to equipment layout and also eliminating the requirement for certain planning processes.
- RAH units enables adding cooking appliances in existing kitchens without the need to deeply modify the ventilation system.
- RAH units facilitate internal layout flexibility. They are easily retro-fitted or relocated.

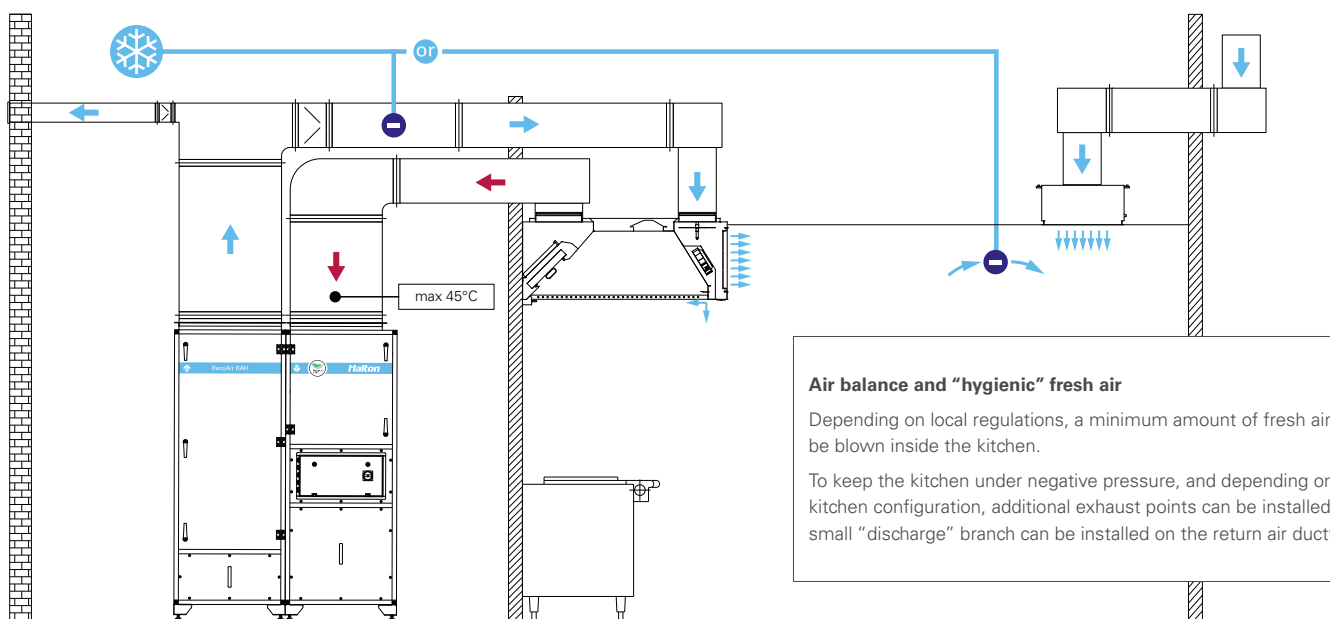
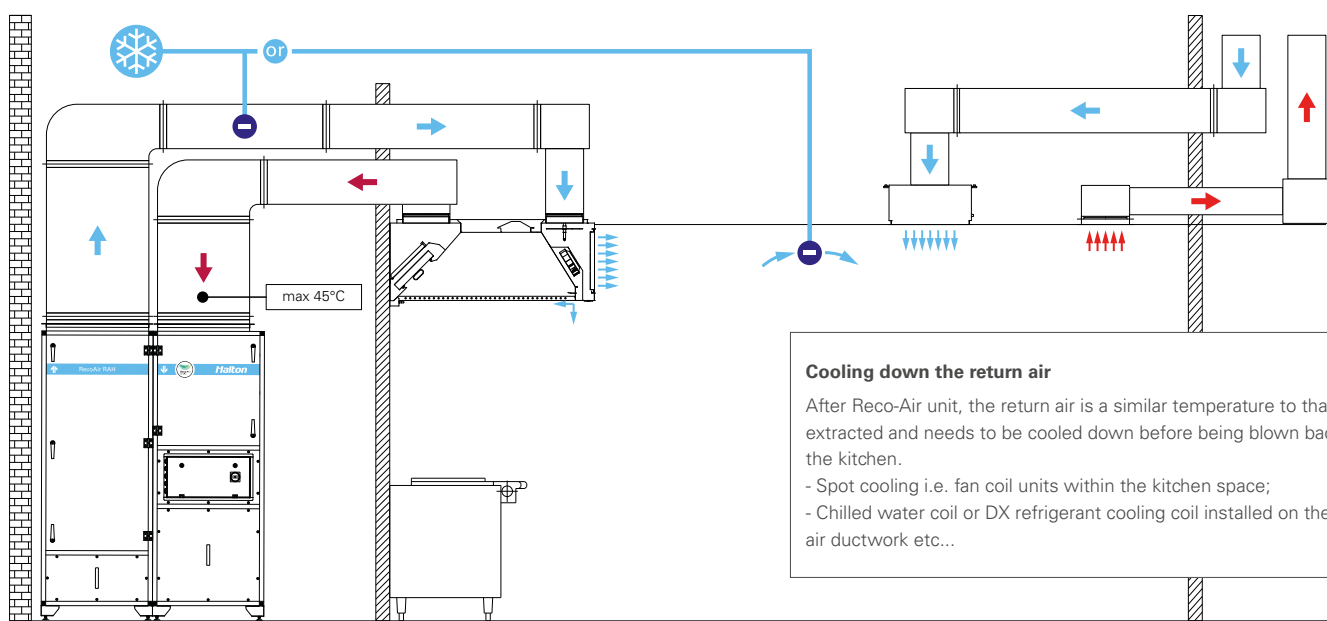
Independently tested

- Air Cleanliness Study by Validair.
- Acoustic survey report by Applied Acoustic Design.

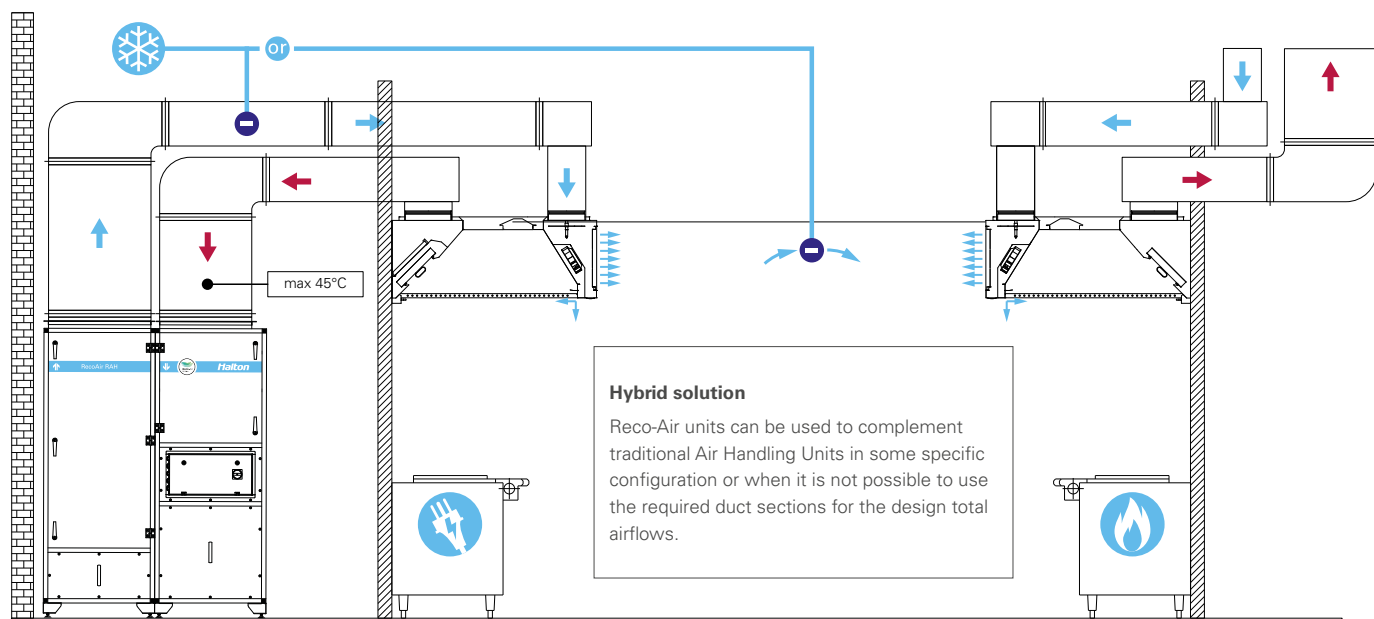
Technical descriptions and operation



CODE	DESCRIPTION
1	25 mm double skin panel, 45 kg/m ³ density mineral wool insulation
2	Galvanized steel finish to interior
3	Plastisol finish external (Blue as a standard)
4	F1 Filtration stage 1 / Large grease particles removal Grade G4 / Coarse 60-70% (ISO 16890)
5	F2 Filtration stage 2 / Fine grease particulate removal Grade M6 / ePM2.5 50% to coarse 85% (ISO 16890)
6	F3 Filtration stage 3 / Smoke removal Grade E10 / 85% MPPS (EN 1822)
7	F4 Filtration stage 4 / Odour removal Food grade activated carbon filters
8	EC plug fan, 400V/50Hz, suitable for 0 to 10 V signal control
9	Control box











Hybrid solutions



Quick selection data

General




			$\Delta P_{st} \text{ min}$												
	[m³/s]	m³/h	[Pa]	[mm]	@ 400V/50Hz [A]	[m] ⁽¹⁾	W	D	H	W	D	H	W	D	H
RAH 0.5	0.5	1800	250	Ø310	4	1.5	880	685	2155	-	-	-	2100	880	775
RAH 0.8	0.8	2880	180	Ø310	4	2.5	1100	850	2155	-	-	-	2100	850	1200
RAH 1.0 (2)	0.9	3240	250	Ø355	7.2	3.0	1500	700	2005	2050	700	1625	3580	825	700
RAH 1.5 (2)	1.2	4320	320	Ø355	7.2	4.5	1540	1130	2005	2050	1130	1665	3580	895	1130
RAH 2.0 (2)	1.8	6480	250	Ø450	8	6.0	1540	1430	2005	2050	1430	1665	3580	895	1430
RAH 2.5 (3)	2.25	8100	320	2x Ø450	16	7.5	1815	1540	2005	2050	1815	1665	3580	895	1815
RAH 3.0	2.7	9720	320	2x Ø450	16	9.0	2370	1500	2005	2050	2115	1665	-	-	-
RAH 4.0	3.6	12960	250	2x Ø450	16	13.0	2970	1500	2005	-	-	-	-	-	-

(1) Max hood length typically connected to the unit. Final design exhausts airflow rate to be calculated based on the cookign appliances.

(2) UL listed models.

(3) DA Double Side Access- Access required front and rear of the unit.

Weight and number of filters





					RAH 0.5	RAH 0.8	RAH 1.0	RAH 1.5	RAH 2.0	RAH 2.5	RAH 3.0	RAH 4.0
A [kg]					385	440	542	753	914	1142	1380	1693
B [kg]					-	-	605	792	1022	na	na	-
C [kg]					436	520	594	857	1020	1269	-	-
F1	G4			592 x 287 x 48 mm				1		1		
	Coarse 60-70% (ISO 16890)			592 x 592 x 48 mm	1	1	1	1	2	2	3	4
F2	M6			592 x 287 x 96 mm				1		1		
	ePM2.5 50% - Coarse 85% (ISO 16890)			592 x 592 x 96 mm	1	1	1	1	2	2	3	4
F3⁽¹⁾	E10			592 x 287 x 296 mm				1		1		
	85% MPPS (EN 1822)			592 x 592 x 296 mm	1	1	1	1	2	2	3	4
F4				φ154 H620 mm	20	30	32	48	64	80	96	128

(1) F3 incorporates a 25 mm header & sealing gasket. Enhanced grades of filter are available upon request.

RAH

Recirculating kitchen extract units for all electric catering equipment
UL listed models / Floor or void mounted

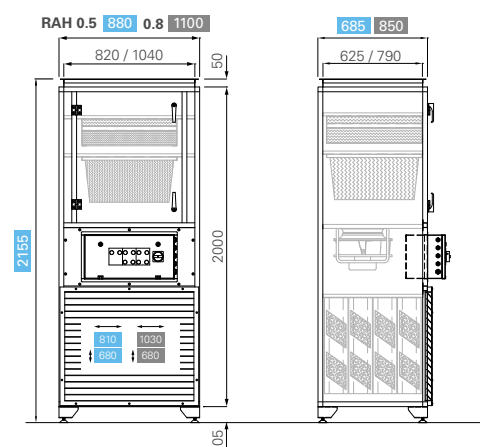
Design duty, SFP, dwell time & noise breakout

	 	 	$\Delta P_{st \min}$	$P_{ext \max}$	SFP ⁽¹⁾	Carbon filters dwell-time	LpA ⁽²⁾
	[m³/s]	[m³/h]	[Pa]	[Pa]	[kW/m³/s]	[s]	[dB(A)]
RAH 0.5	0.5	1800	250	600	0.80 ... 2.58	0.228	41 ... 58
RAH 0.8	0.8	2880	180	410	0.91 ... 2.17	0.214	49 ... 55
RAH.1.0 (2)	0.9	3240	250	1180	1.45 ... 2.82	0.203	53 ... 61
RAH 1.5 (2)	1.2	4320	320	905	1.43 ... 2.67	0.228	57 ... 61
RAH 2.0 (2)	1.8	6480	250	360	1.27 ... 2.44	0.203	53 ... 60
RAH 2.5	2.25	8100	320	560	1.44 ... 2.99	0.203	59 ... 68
RAH 3.0	2.7	9720	320	530	1.36 ... 2.77	0.203	58 ... 67
RAH 4.0	3.6	12960	250	360	1.27 ... 2.44	0.203	56 ... 63

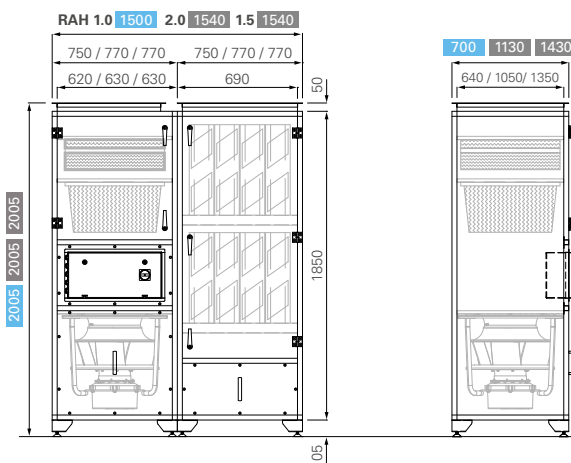
(1) Specific Fan Power (filters clean and dirty) (2) Casing breakout @1 m free-field (filters clean and dirty)

Dimensions (floor units)

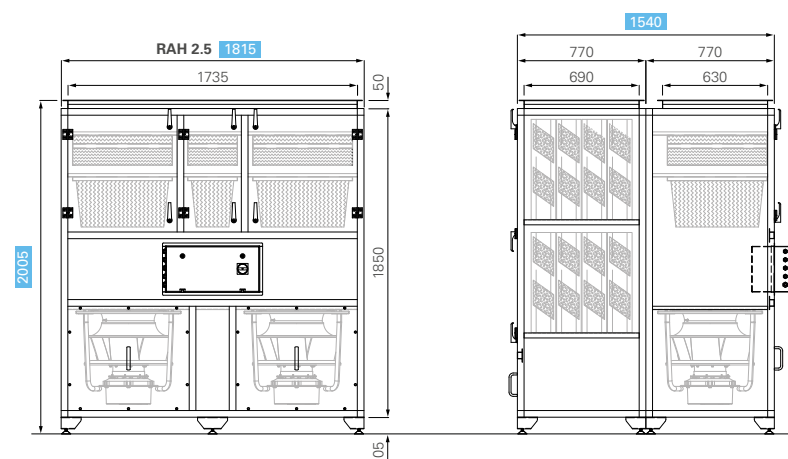
RAH 0.5 RAH 0.8



RAH 1.0 RAH 1.5 RAH 2.0



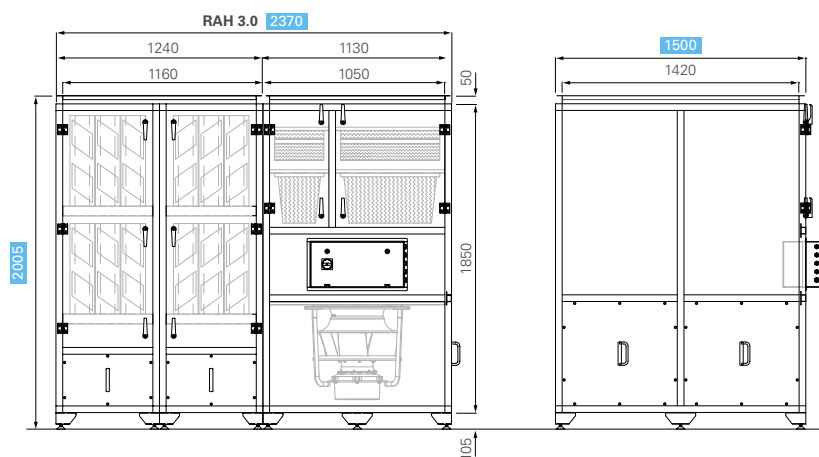
RAH 2.5



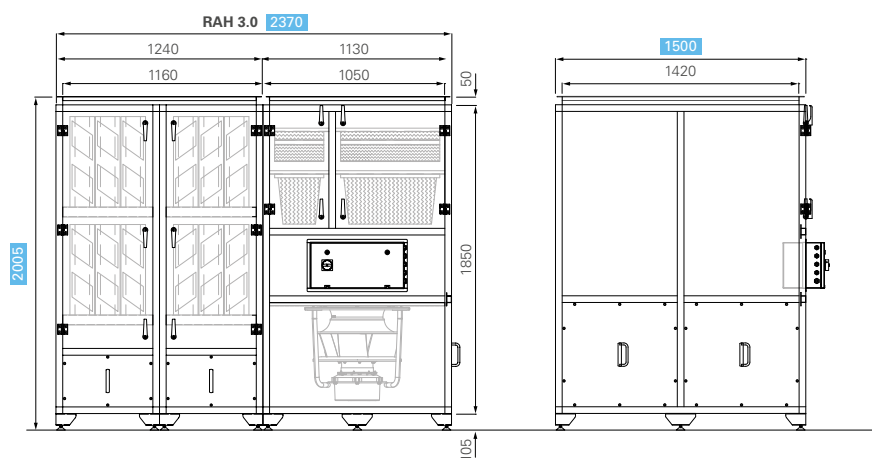
RAH

Recirculating kitchen extract units for all electric catering equipment
UL listed models / Floor or void mounted

RAH 3.0

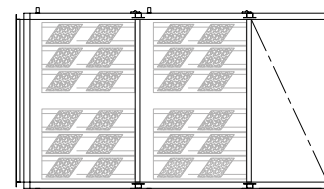
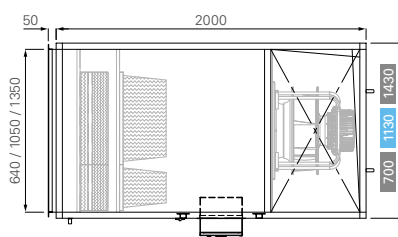
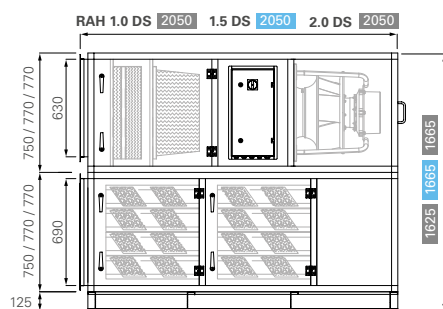


RAH 4.0



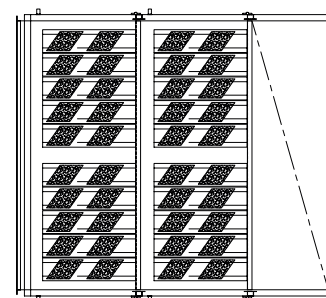
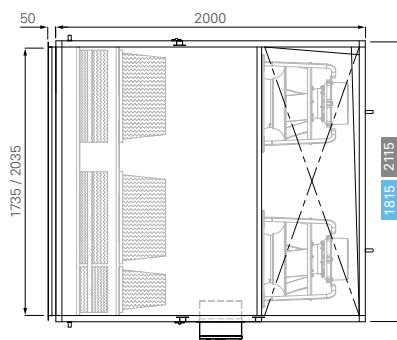
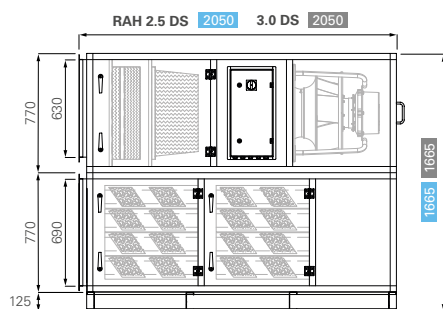
Dimensions (double stack floor units)

RAH 1.0 DS | RAH 1.5 DS | RAH 2.0 DS



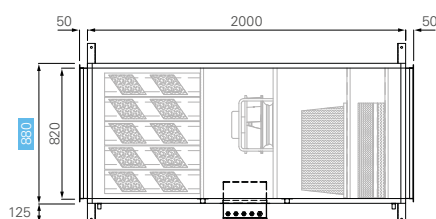
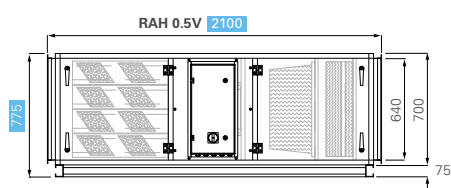
RAH

Recirculating kitchen extract units for all electric catering equipment
UL listed models / Floor or void mounted

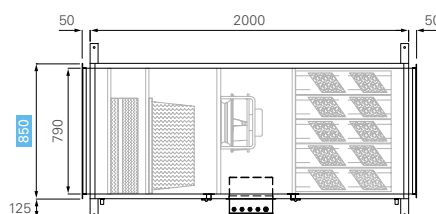
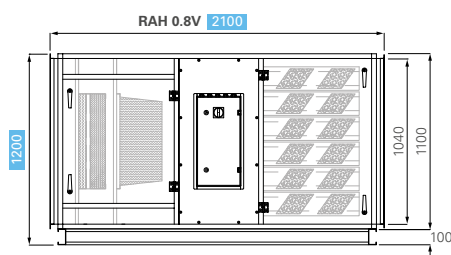


Dimensions (ceiling void units)

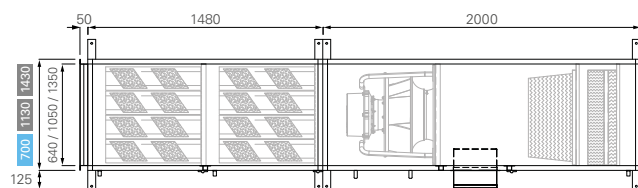
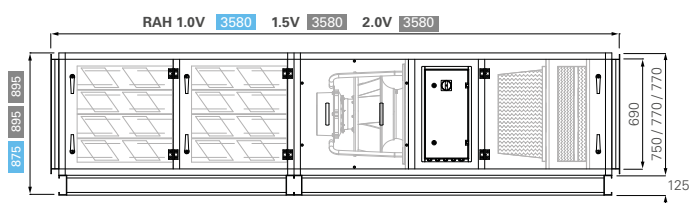
RAH 0.5 V



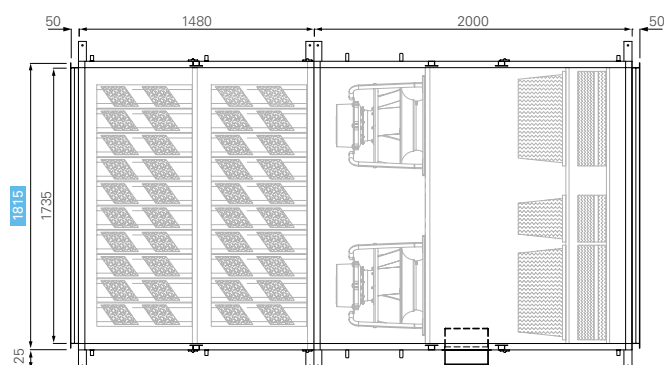
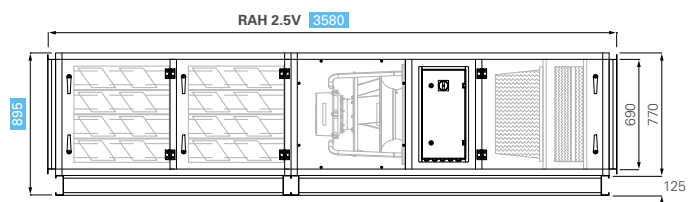
RAH 0.8 V



RAH 1.0 V RAH 1.5 V RAH 2.0 V



RAH 2.5 V



Halton Connect IoT control platform



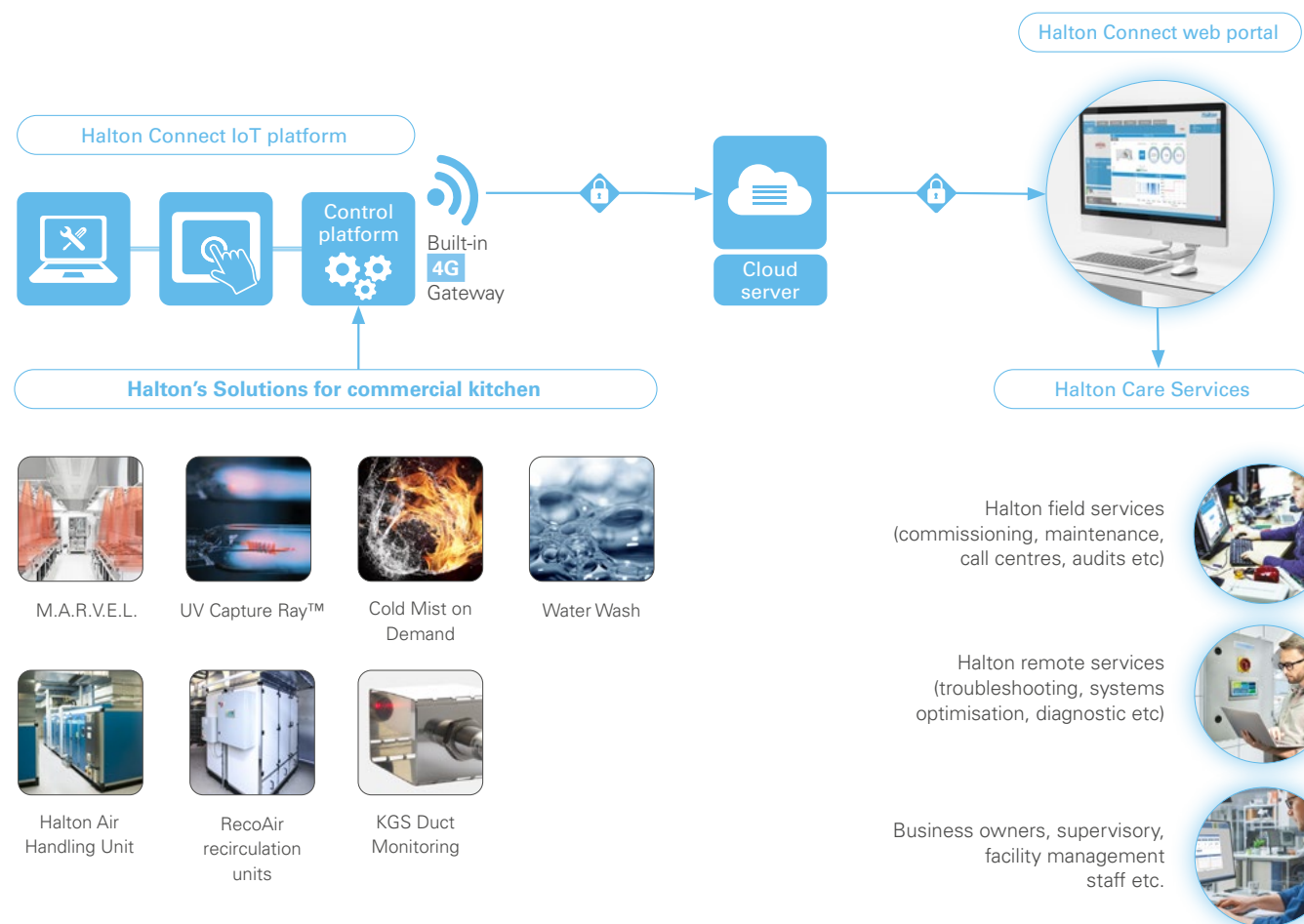
- Allows deeper analysis by our engineers to optimise set points or adjust the equipment utilisation, in order to keep the systems efficiency at design level or even improve it during the entire kitchen(s) life cycle.
- Secure as designed to operate as a fully independent system in your building.

Halton Connect enables Halton Care smart services. They directly contribute to the Highest value of ownership and peace of mind for the business owners. Together with Halton Connect, they also add value to kitchen designs.

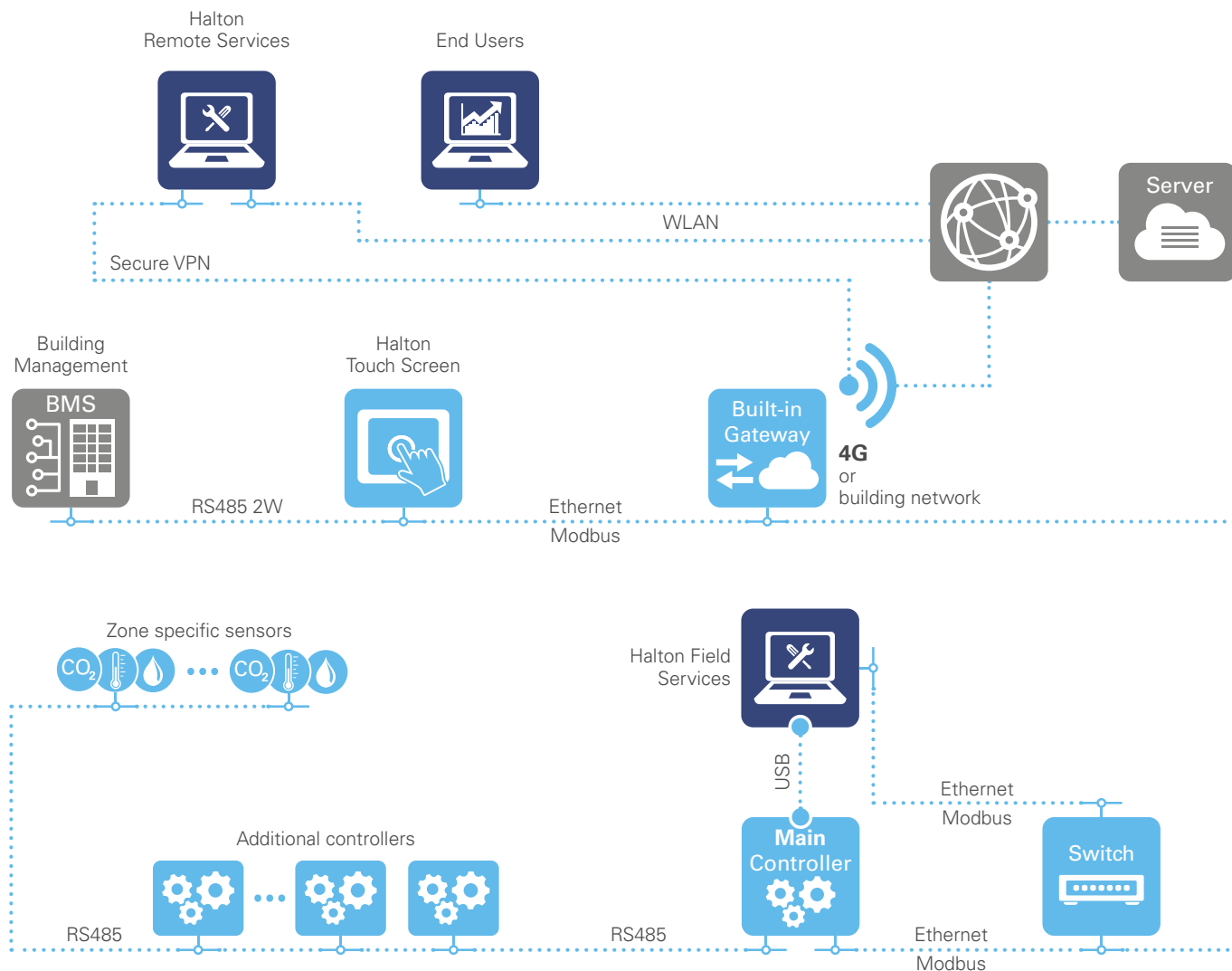
- Predictive maintenance based on the data analytics of the systems. Visits are planned depending on the real needs and replacement parts use is optimised.
- Lowest risk of ventilation down time due to a wrong manipulation or equipment fault.
- Better view on the competitiveness through predictive costing.
- Option for automatic adjustment of the maintenance contracts duration.
- Option for Software maintenance and update of Halton Connect.

Benefits

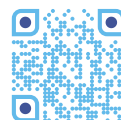
- 24/7 monitoring of Halton's solutions for commercial kitchens.
- Access to Halton Connect cloud-based and intuitive web portal that provides detailed information about the systems' operation and data analytics.
- Automatic systems' faults notification and editing of simplified automated analytics reports.
- Option for advanced automated data analytics reports (energy savings, water savings, cooking appliances usage etc.).



Operation and safety



The built-in 4G gateway of Halton Connect is designed to operate as a fully independent system in your building. The data traffic toward the cloud is secured by a VPN (Virtual Private Network) and with SSL encryption protocol (Secure Sockets Layer). Halton Connect also has the ability to send information to the BMS (Building Management System).



Read our white paper about Halton Connect Secure



Halton Touch screen enables relaying part of the information available on Halton

Connect web portal. It is typically installed directly in the kitchen, for the end users to have anytime a quick overview of the ventilation's operation, whatever the number of Halton's technologies and systems installed.

Suggested specification

RAH Reco-Air recirculating kitchen extract unit

The recirculating extract unit shall be Halton Brand, Reco-Air by Halton RAH range. It is equipped with a full air treatment system to remove grease, steam, smoke and odours from the extract air.

The unit shall be supplied complete, fully pre-wired from factory and ready to be installed. The following specifications shall be fully observed.

General Unit Construction

- Unit shall be constructed with 25 mm double skinned panels galvanised steel finish internally and blue Plastisol finish external. They shall be insulated using 45 kg/m³ density mineral wool to ensure good acoustic performance & thermal properties.
- Depending on unit size, the panels shall be mounted on a 30 or 40 mm satin anodised aluminium Pentapost framework with powder coated black adjustable support feet or base frame.
- Access doors to the main filter sections shall be lift off or mounted on hinges, equipped with lockable black handles for an access by Authorised Personnel only. Fan(s) access door(s) shall be screwed.

Specific Requirements

- As a minimum requirement, each unit shall incorporate the following grade filter media:
 - Coarse 60-70% (ISO 16890) – Large grease particulate removal.
 - ePM2.5 50% to coarse 85% (ISO 16890) – Fine grease particulate removal.
 - E10 85% MPPS (EN 1822) – Smoke removal.
 - Food Grade Activated Carbon cylinders – Odour removal minimum dwell time shall be 0.2 seconds.
- As a minimum requirement, each unit shall incorporate the following fan assembly:
 - EC Plug fan, 230 or 400 V (depending on unit capacity).
 - Single / Three phase, suitable for 0 to 10V signal control.
 - Unit Duty to suit current DW/172 Specific Extract Flow Rate (SEFR) or supplier's recommendation when applicable as well as design requirements.
 - Max. ambient working temperature to suit specific application.
 - Each fan shall be Inverter Controlled, so fan speed ramps up as the filter pressure increases to maintain a constant air volume flow rate at the cookline / hood.

Control platform & Interface Requirements

- The control platform shall be Halton Brand, Halton Connect. It shall include a unique LCD user interface, common to all technologies of the manufacturer. It shall also have advanced distant monitoring capabilities enabling future premium services, including a predictive maintenance of the systems.

- The control platform shall ensure the unit ceases to function if any of the following scenarios arise:
 - A unit filter access door is left open or slightly open.
 - Filters are removed or left out of the unit.
 - The Fire Alarm system is activated.
 - The registered filter pressure drop across any of the primary 3 sets of filters exceeds pre-set warning levels & reaches critical levels.
 - The unit Isolator is turned Off.
 - A system Timeclock- external controls- is not calling for system activation.
 - A remote Shut-off safety feature- external controls- has been activated.
- **[Option]** An electrical interlock system shall be incorporated, to disable all essential cooking equipment whenever a 'No Air Flow' status is present.
- See enclosed the full and specific descriptions of Halton Connect.

Air Commissioning / Testing

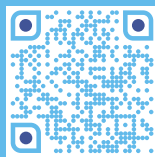
- The unit(s) shall be delivered pre-commissioned from factory.
- On completion of any RecoAir unit installation, the air volume flow rates to extract & return air ductwork must be verified by a suitably qualified commissioning engineer & a report produced as point of record.
- All test points are sealed with proprietary plugs on completion of this operation.

Measures for unit's Service & Maintenance

- When planning the installation of the recirculation unit – however configured- adequate clearance must be allowed to facilitate safe operative replacement of the filter media & fan(s).
- To comply with Specific Landlord / Authority approvals – a Service Contract is required. It is highly recommended to use a suppliers' accredited service partner.
- Evidence of same must be made available prior to formal approval being acknowledged.

Reco-Air Unit Noise Breakout

- In normal 'Internal' instances, breakout noise from the unit shall not exceed 60 dB(A) when measured at 1 metre (free field).
- Where Specific Authorities enforce lower noise levels, the unit construction shall be modified accordingly.



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