



# Chilled Beams and Radiant Panels

# A life cycle with comfort and flexibility

**Wellbeing-enhancing and flexible buildings are a global trend.** With focus on people and their work, the indoor climate quality is essential. Furthermore, economic considerations of energy efficiency and sustainability are key arguments when selecting the HVAC system. Chilled beams offer the perfect solution.

**Good indoor air fosters comfort and productivity.** Chilled beam systems provide excellent thermal comfort and draught-free conditions. Chilled beams operate silently, fulfilling even the highest acoustic demands of working, relaxing and healing environments. By operating with fresh air and dry cooling principles, chilled beams promote hygiene. The conditioned supply air volume can flexibly be controlled based on occupancy.

**Better indoor climate with lower carbon footprint.** In chilled beam systems, most of the heating and cooling capacity is transferred through water. The system optimizes the opportunity for free cooling and heating. For free cooling, outdoor air, ground, and sea water can be utilized. For heating, condensing boilers and heat pumps run more efficiently at lower temperatures.

In chilled beam systems, the outdoor airflow is optimised to cover hygienic and air quality requirements. More efficient ventilation uses less fan energy, smaller air-handling units and ductwork compared to traditional all-air systems. This leads to a highly efficient building with lower construction costs. Additionally, the total pressure loss can be optimised for a competitive, specific fan power level, leading to lower life-cycle costs as well.

**Good indoor air is sustainable.** Chilled beam systems feature a number of enduring life cycle elements for a low environmental impact compared to all-air systems. They are highly energy-efficient, easy to maintain, and simple to adapt as required. The operating principle of the chilled beam system is trouble-free and uncomplicated: no fans, filters, or condensation systems. Consequently, the system's maintenance need is low.



Halton ceiling-integrated, active chilled beams at Jindriska 16, Prague, Czech Republic.



Halton exposed active chilled beams at Skanska office, Atrium I, Warsaw, Poland.



## Concepts for maximal flexibility

Flexibility is one of the most important demands for high performance premises. There is a strong need for more freedom in positioning office and meeting areas.

With traditional systems, churn costs and project durations can be considerable in order to meet these needs. Halton offers solutions that change all this. While ensuring good working conditions and reducing churn costs to a fraction, the solution allows easy and cost-efficient layout changes without interruption to the space usage.

The system adaptability also gives unprecedented freedom in the design and installation stage. The system can be built from just one type of product as chilled beams are able to cover different usages and requirements. This gives the system a consistent appearance. Using just one type of product also makes the logistics chain easy.

### Change from offices to meeting rooms.

Chilled beams with integrated flexibility features allow users to determine the location of meeting and office rooms in a zone without limitations. With a broad operating

range, the air velocity, cooling, and outdoor airflow rate provided by the chilled beams are simply adjusted to meet the requirements of the new layout.

### Change from office rooms to open-plan office.

In office layout changes, thermal comfort conditions need to be adjusted to maintain user satisfaction. In case a partition wall is relocated close to a chilled beam and a workspace, the air velocity conditions must be controlled to prevent local draught. 25 % of the re-circulated room air is outdoor airflow. The most effective way to control conditions in a space is to adjust the amount of air induced through the coil of the beam and afterwards released into the space.

Halton offers high user satisfaction in open-plan offices as well as separate office rooms: the indoor climate can be adjusted according to each person's wishes.

## Facts about Halton flexible air-water solutions

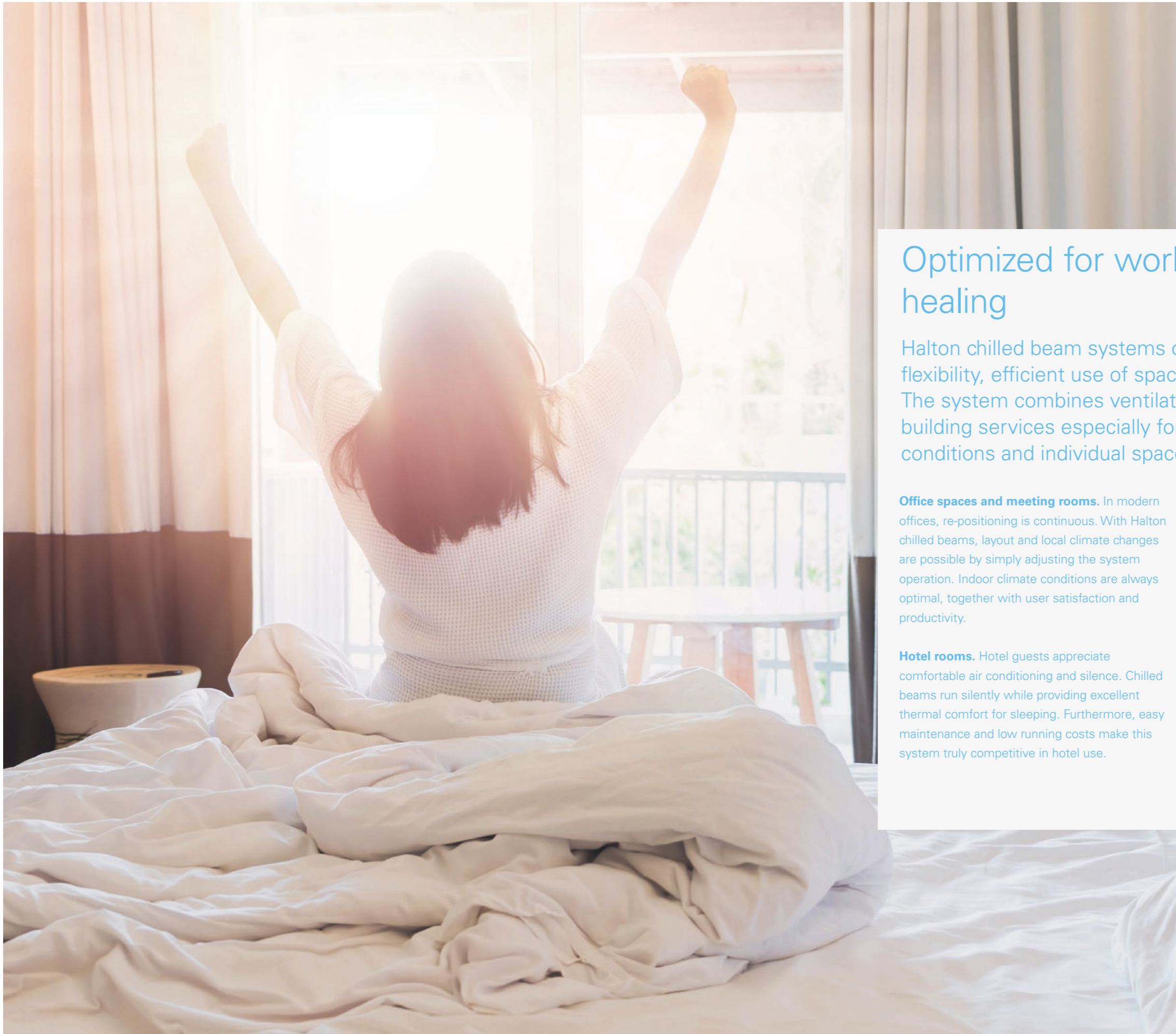
### Benefits for facility owners and building users:

- flexible positioning of offices and meeting rooms
- fast layout changes with minimal interruption and churn cost
- excellent indoor environment, high user satisfaction
- minimal energy and maintenance costs

### Benefits for design and construction teams:

- large beam operation range for fast design and only one specification
- consistent appearance enables attractive architecture
- adaptability reduces need for redesigns in layout changes
- easy order-delivery and site logistics process





## Optimized for working, relaxing and healing

Halton chilled beam systems offer unique comfort and flexibility, efficient use of space and an economical life cycle. The system combines ventilation, cooling, heating, and other building services especially for spaces where high-quality conditions and individual space control are important.

**Office spaces and meeting rooms.** In modern offices, re-positioning is continuous. With Halton chilled beams, layout and local climate changes are possible by simply adjusting the system operation. Indoor climate conditions are always optimal, together with user satisfaction and productivity.

**Hotel rooms.** Hotel guests appreciate comfortable air conditioning and silence. Chilled beams run silently while providing excellent thermal comfort for sleeping. Furthermore, easy maintenance and low running costs make this system truly competitive in hotel use.

**Hospital ward rooms.** The importance of proper thermal and acoustic comfort can not be underestimated in the healing process. The chilled beam system is a fully cleanable, dry coil solution that also promotes safety of the indoor environment. In large hospital buildings, efficient life cycle performance creates considerable savings.

**Retail stores.** Retail outlets are often high spaces with demand-based mixing ventilation. In such environments, chilled beams are used to create additional cooling to keep conditions pleasant as load variations occur.



## Solution to match your needs

Halton offers various chilled beam types that suit even the most challenging architectural, constructional, and functional requirements. Chilled beams offer various installation options from suspended ceiling to concealed and exposed models.

**Active chilled beams.** Active chilled beams are connected to the ventilation ductwork and water pipework. Most of the cooling and heating capacity is transferred through water. The primary air is supplied through the beam to the room. This induces the room air to circulate through the beam's heat exchanger, and the beam mixes the primary and circulated air before diffusing it into the room.

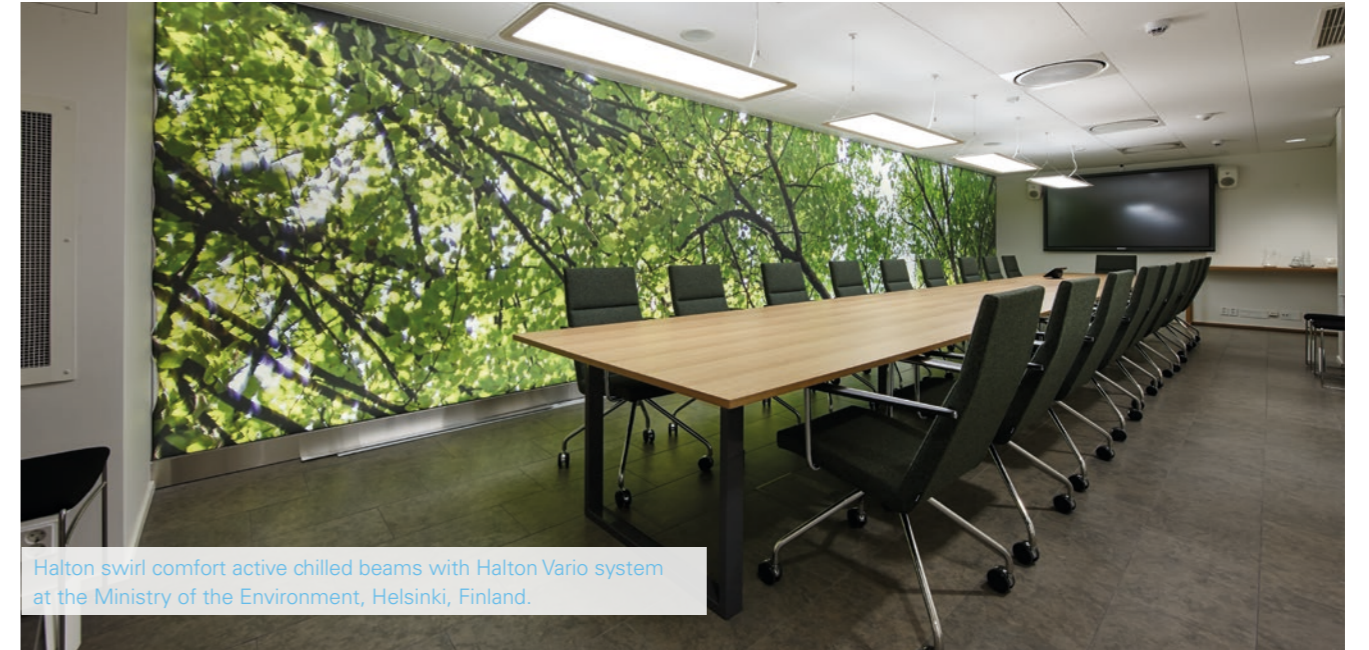
Such units are used for ventilation, cooling and heating in offices, healthcare facilities and hotels both in new construction and renovation projects. Advanced adaptability, excellent indoor conditions and efficient life-cycle cost performance make active chilled beams an attractive option.

**Passive chilled beams and radiant panels.** Passive chilled beams contain a heat exchanger, and they are used to provide additional cooling. The operation is based on natural convection. Radiant panels can be used for both

heating and cooling and the operation is mainly based on radiation. Ventilation is realized by using a separate system e.g., ceiling diffusers or displacement ventilation. Passive beams can also be positioned close to glazed facades or windows as perimeter beams to offset perimeter zone solar loads.

Passive chilled beams and radiant panels are best suited for environments with continuous cooling needs, even when the space is unoccupied. For example, hallways in transportation hubs have large variations in occupancy and periods with very low ventilation needs.

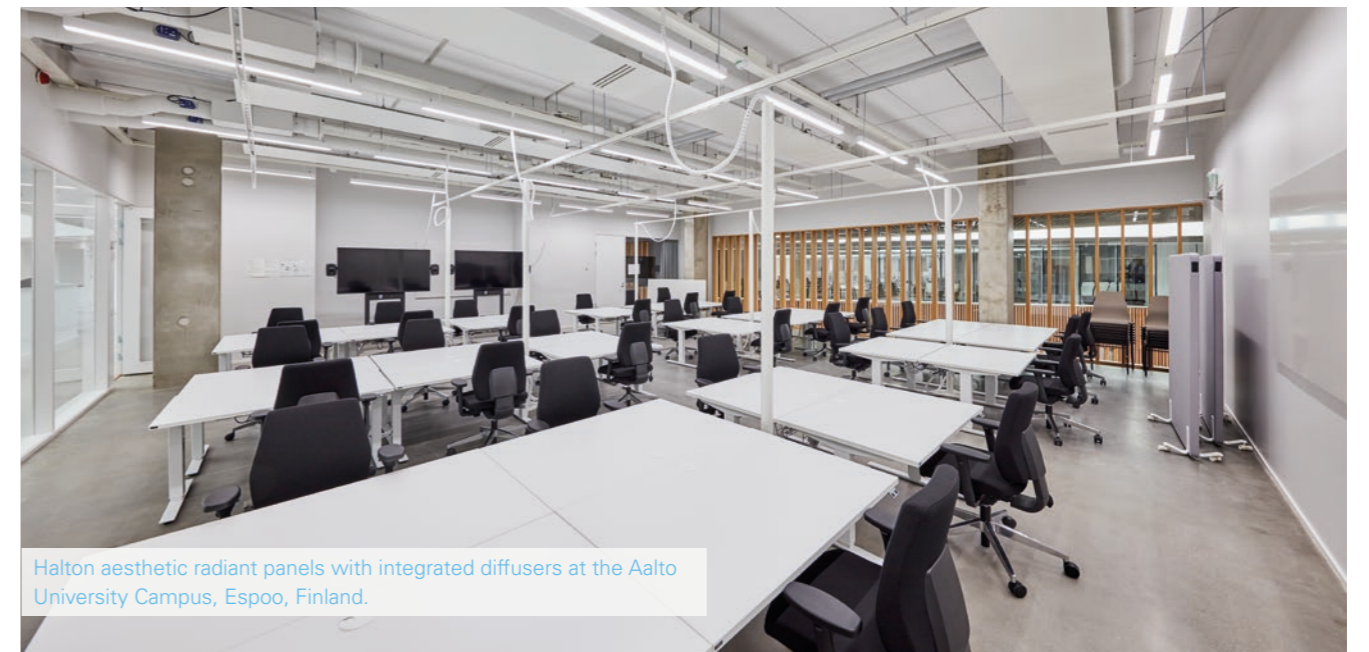
**Customized service beams.** Functionally, these can be either active or passive beams, radiant panels, or a combination of the two. The customized beams are tailor made to specific customer demands. This option further enhances the beams' suitability to special architectural and constructional environments.



Halton swirl comfort active chilled beams with Halton Vario system at the Ministry of the Environment, Helsinki, Finland.



Halton integrated bulkhead chilled beams at the Ministry of the Environment, Helsinki, Finland.



Halton aesthetic radiant panels with integrated diffusers at the Aalto University Campus, Espoo, Finland.

# Halton chilled beam and radiant panel selection

**Halton is a leading chilled beam manufacturer.** To meet the highest standards, all Halton products are tested to the finest detail at Halton's R&D facilities. To ensure top quality and full environmental responsibility, Halton complies with the ISO 9001 and ISO 14001 quality systems. Halton chilled beams are also Eurovent certified.

Extensive range of applications.

Halton's wide range of chilled beams offers the right solution for various room applications with varying cooling or heating needs.

### Office and meeting rooms.

Adaptable, active chilled beams Halton Rex Integrated VAV (R60) and Halton Rex Exposed VAV (REO) are used both in offices and meeting rooms, and they enable free locating of meeting rooms due to their adaptability feature.

Active chilled beams, Halton Rex 600 (RE6), Halton Rex Exposed (REE), Halton Rex Expander (RXP), Halton CSW

and Halton CBD with constant airflow rate and boost function are optimised for office use.

Passive chilled beams Halton CPA and Halton CPT are designed to provide additional cooling together with a separate ventilation system. Radiant panel Halton Ava Individual (AIN) is designed to provide radiant cooling or heating.

Customised service beams are active or passive chilled beams or radiant panels tailored to the space's interior design.

### Hotel guest rooms.

Halton CBH, Halton CHB and Halton CHH offer silent conditions for guest rooms. Units are installed either exposed, concealed or hidden into a bulkhead structure for freedom in room interior design. Chilled beams are low in maintenance, as they do not use fans or filters, and have considerably lower maintenance costs than e.g., fan coil systems.

### Hospital ward rooms.

Based on dry coil operation without condensation collection or filters, chilled beams require only limited maintenance. Chilled beams are also fully cleanable. Halton Vita Patient Rex (VPR), a hygienic, active chilled beam, provides a silent, comfortable, and stable indoor environment in patient rooms and other environments with high hygienic needs and variable conditions. Halton Vita Patient Ava (VPA), a complete room unit with integrated radiant cooling and heating combined with a unique protective airflow pattern, is highly hygienic and easy to clean.

### Retail stores.

Active and passive beams are used either as a primary cooling system or as an additional cooling system for all-air solutions. System selection and sizing are based on total outdoor airflow rate and required cooling capacity.

### Airports.

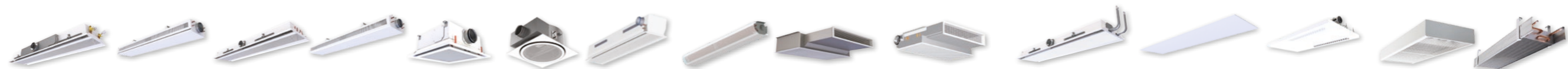
Gate passages have high outdoor airflow rates and extremely high cooling capacity requirements. In compact passages, passive chilled beams are a rational solution for generating additional cooling for an all-air system and for maintaining specific outdoor airflow rates within reasonable limits.

### Customised service beams.

Customized chilled beams can feature a variety of ceiling mounted accessories in an all-in-one solution:

- Light fittings
- Occupancy sensors
- Smoke detectors
- Space for sprinklers
- Acoustic panels
- PA systems
- Electrical connections and cabling

Offsite manufacturing speeds up installation, improves and ensures quality, and offers a low-risk, one-source responsibility option.



	Active VAV chilled beams		Active chilled beams										Radiant panels		Passive chilled beams	
	Halton Rex Integrated VAV (R60)	Halton Rex Exposed VAV (REO)	Halton Rex 600 (RE6)	Halton Rex Exposed (REE)	Halton Rex Expander (RXP)	Halton CSW	Halton CBD	Halton CBH	Halton CHB	Halton CHH	Halton Vita Patient Rex (VPR)	Halton Ava Individual (AIN)	Halton Vita Patient Ava (VPA)	Halton CPA	Halton CPT	
Installation	Suspended ceiling	Exposed	Suspended ceiling	Exposed	Suspended ceiling	Suspended ceiling	Suspended ceiling	Exposed/Bulkhead	Suspended ceiling/Bulkhead	Suspended ceiling/Bulkhead	Suspended ceiling	Exposed/Suspended ceiling	Suspended ceiling/Exposed	Exposed	Suspended ceiling	
Dimensions	Width (mm)	595	432	595	414	595	595	295	295	800, 1000, 1200	1000	594	592, 892, 1192	1200	315... 615	305... 605
	Height (mm)	230	210	195	182	220	244	240	230	265	250	196	35	341	100, 200, 300	100, 300
	Length (mm)	1200... 3600	1800... 3600	1200... 3600	1200... 4800	600... 1200	595	1200... 3000	1800... 5000	925	925	1800, 2400, 3000, 3600	600... 3000	2400... 3000	1200... 5000	1000... 5000
	Duct connection size (mm)	160	160	125	125	125/160	125	100	100	125	125	125		160		
Accessories	Halton Velocity Control*	x	x	x	x							x				
	Halton Air Quality Control** (manual or motorized)			x	x	x	x					x				
	Operation Mode Damper*** (OMD)	x	x													

\* Halton Velocity Control enables airflow pattern adjustment for enhanced thermal comfort.

\*\* Halton Air Quality Control enables fine tuning of the unit (manual) or boost function (motorized).

\*\*\* Halton Operation Mode Control enables flexible adjustment of room airflow rate upon occupancy.



Halton ceiling-integrated active chilled beams, Jungmannova, Czech Republic.



# About us

Halton is passionate about indoor environments. We offer business-enhancing products, systems, and services for comfortable, energy-efficient, and safe environments to customers who value people's wellbeing. Halton is involved from target-setting to facility use and focuses on creating positive indoor environment experiences for people.

Contact us at:  
[www.halton.com](http://www.halton.com)

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