

Halton – Adaptable^{Climate}

– Concept for functional, productive and profitable changes



The challenge – workplace layout flexibility

Things change. Layout changes in workplaces are a rule, not an exception. Due to management reorganization, changes in business models, and technological innovations, companies may already change their workplace interior layout once a year. Building services are the major cost generator and a slowing, or even preventing factor in layout changes.





Mobility changes office work. People are no longer confined to one desk, and their work is increasingly dependent on social networks. Consequently, the trend is away from highly structured settings and units towards varied work environments. These needs must be provided for in a lean and agile way.

Business supporting facilities are adaptable.

Take business parks for an example: tenant companies and their needs are in constant change. Layout adaptability reduces periods without a tenant contract. It also makes short contracts more profitable. Furthermore, team rooms are taking an ever-increasing share of offices. In recent office developments, team

rooms have already been up to 40% of the total office floor area. The real demand is for unlimited freedom in repositioning offices and team rooms - without projects.

Companies respond to changes with informal interaction spaces, support for virtual work, and greater flexibility in work locations. Today, the office must adapt to frequent layout changes easily and economically. Does the indoor climate system in your office meet these needs? Or will churn costs (renovation, alteration, interruptions in work) slow down necessary changes, perhaps even prevent them? And should you include adaptability in the real estate evaluation metrics?



The solution - Halton Adaptable^{Climate}

Effective churn management increases functionality and real estate value. While a change has previously been costly and slow to implement, it can now be a source of competitive advantage.

Halton Adaptable^{Climate} enables fast layout changes while preserving excellent indoor climate conditions. New layout can be created easily when the tenant needs to make changes. What ever the layout plan or change, flexibility of the Adaptable^{Climate} system causes minimal

interruption to the work in the office. Ventilation and air conditioning need not be interrupted at all. Build new walls, tear down old ones. Place more people there, less over here. Yet, do not renovate the air conditioning, simply adjust it to meet the new needs.

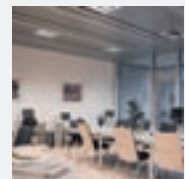
Change from offices to team rooms. The concept allows users to determine the position of team and office rooms in a zone without limitations. With a broad operation range, the chilled beams are simply adjusted to meet the requirements of the new layout.



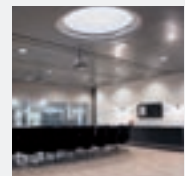
Change from office rooms to open-plan office. The concept ensures just as high a user satisfaction in an open-plan office as in separate office rooms: the indoor climate can still be adjusted according to every person's wishes. In addition, the concept allows free positioning of division walls. Again, the chilled beams are simply adjusted with regard to the new walls to provide optimal conditions.



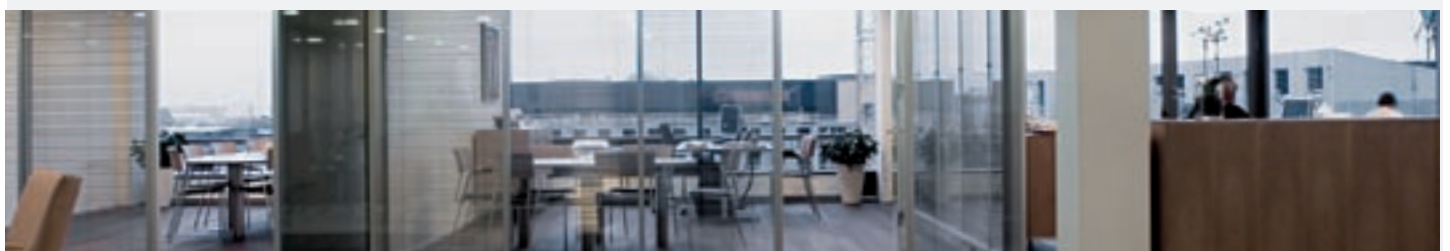
Complete building life that makes economical sense. In addition to creating advanced functional value to the client, the Halton Adaptable^{Climate} concept is efficient during the complete building life. The system takes the space and its usage into account and consume energy based on demand. The system characteristics support low energy and maintenance strategy.



Means for fast change. Halton is a renowned pioneer in the chilled beam technology. In addition to the excellent indoor climate, chilled beams offer highly competitive life cycle costs and unrivalled energy efficiency. The system is environmental friendly. Halton Adaptable^{Climate} concept and adaptable chilled beams add on to the benefits of the systems by incorporating unprecedented flexibility.

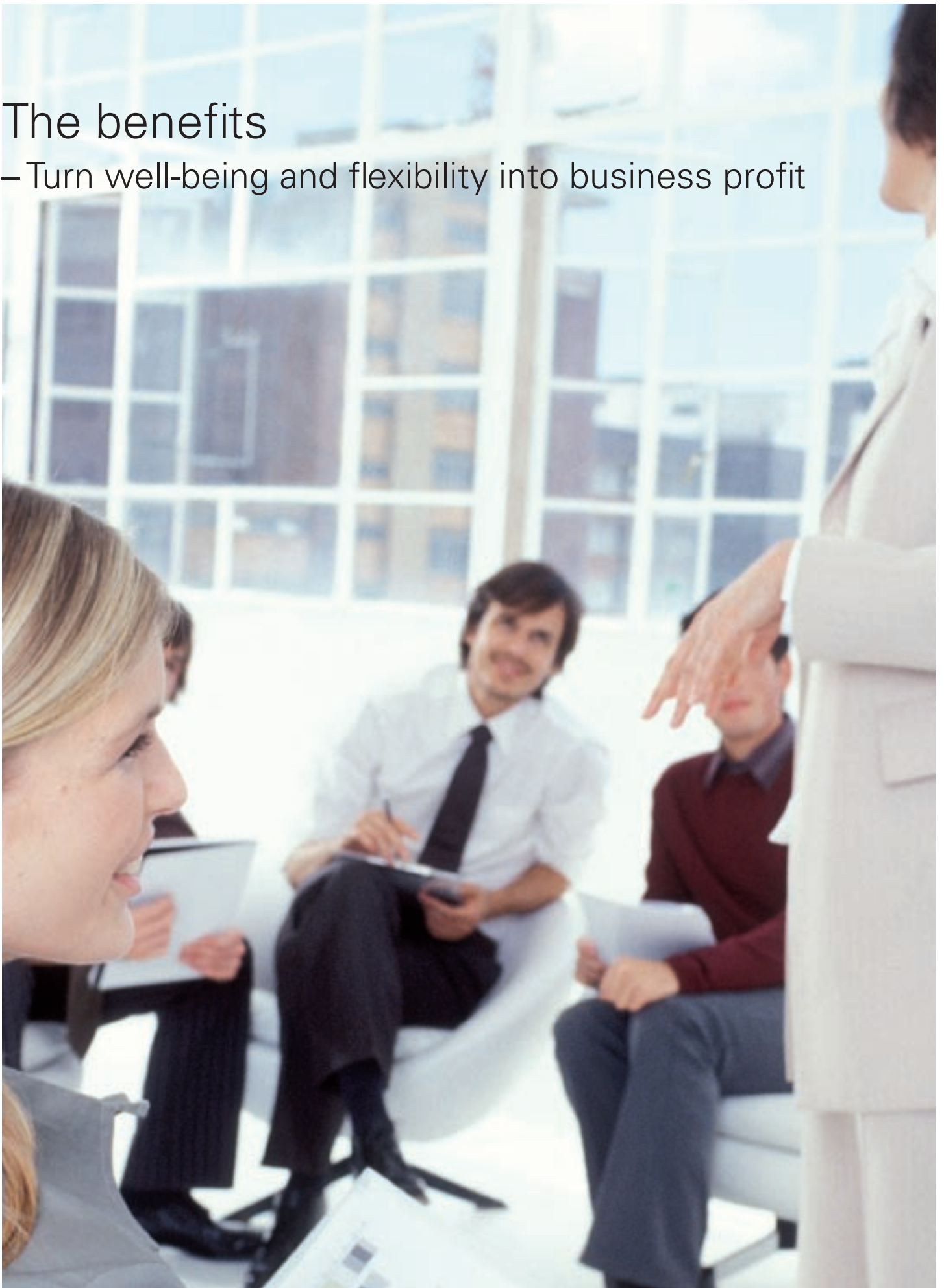


Halton offers also indoor environment management services that enable to manage facility risks and to maintain customer satisfaction by periodically auditing and adapting building's indoor environment and technical systems. Even a big facility portfolio cannot easily cover costs of malfunctioning buildings - that's why it makes sense to have indoor environment management program helping to prevent problems. And should they have already occurred, it helps to assess the effectiveness of improvements.



The benefits

– Turn well-being and flexibility into business profit



Good conditions support performance and innovation. Productivity of work is perhaps the major factor influencing business profitability. 90% of building lifetime costs consist of salaries of people working in the building, the rest being investment and running costs. Indoor climate conditions affect performance from 2 to 10%. Increase of just 1% in performance off-sets the annual cost of ventilation. And this really is in the best interests of the building users.

Likewise, innovation process and hence performance is supported with better, adaptable spaces. Innovative workplace combines more teaming and informal interaction spaces, supports individual and group work better, offers greater flexibility in work locations, and generally focuses on fitting the workplace to the work.

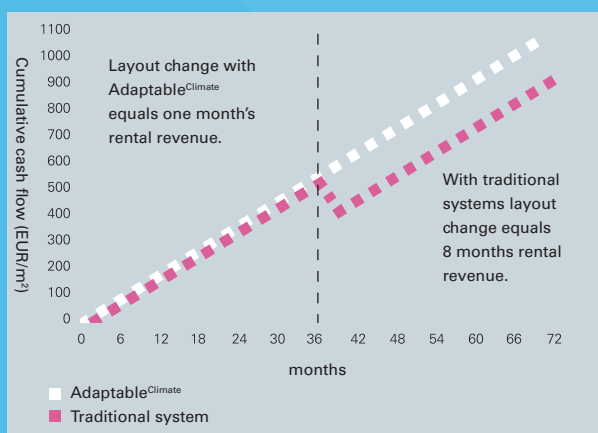
An adaptable space supports the core business process and creates fewer interruptions. Increased occupant satisfaction positively affects success in core business. Thus occupant satisfaction should be an important quality measure when evaluating the functionality of buildings.

Improve customer satisfaction and investment profitability. For the facility owner, the value of real

estate is based on the rental and sales revenue it generates. Rental revenue consists of utilization rate, property cost and rent level - all these factors are affected by the indoor environment and the quality of technical systems.

Good indoor climate is appreciated by building users. This is verified in the study of office workers' preferences by BOMA (Building Owners and Managers Association) and Urban Land Institute. Respondents ranked comfortable temperature (95 %), indoor air quality (94%), maintenance quality (93%), and facility manager's willingness to serve (93%) as the most important factors affecting user satisfaction.

Buildings that adapt quickly to varying needs and offer excellent indoor climate conditions improve customer satisfaction and loyalty. With the Halton AdaptableClimate concept, the time needed for adjusting the layout is considerably shorter than with traditional systems. This improves the utilization rate of the building. Faster layout changes make shorter lease contracts more profitable, and the possibility to change the layout at will without a long, costly project makes the premises more attractive to tenants.



The chart calculation is based on the following assumptions:

Rental revenue	18 EUR/m ²
Life cycle costs	3 EUR/m ²
Renovation of traditional system (3 months interruption of use)	100 EUR/m ²
Adaptable ^{Climate} adjustment (no interruption of use)	15 EUR/m ²

A 3-month lay out change can cost you 8-months' rental revenue. Read the facts, it's just simple mathematics.

The chart depicts two cases – one with traditional layout change, the other with Adaptable^{Climate}. The point is: in the layout change, the red line of traditional change shows a remarkable drop in revenues compared to the white line of Adaptable^{Climate}. Why?

First, with Adaptable^{Climate}, the layout change does not require closing down the office. With traditional systems, the office must be closed – in this case, for 3 months.

Second, with Adaptable^{Climate}, the layout change is fast and low cost – in this case, it equals approximately 1 month's rental revenue. With traditional systems, the layout change is costly – in this case, the total cost equals 6 months' rental revenue.

Consequently, a 3-month layout change causes a total of 8 months' loss of rental revenue compared with the Adaptable^{Climate} solution. Can you afford not to choose Adaptable^{Climate}?

The benefits

– Optimize the life cycle cost structure

The building life cycle costs comprise investment, running, maintenance and renovation costs. All these costs are determined to a high degree with the selection of the indoor climate system. Alternatives vary considerably in their adaptability, energy and maintenance patterns, and in their environmental impact.



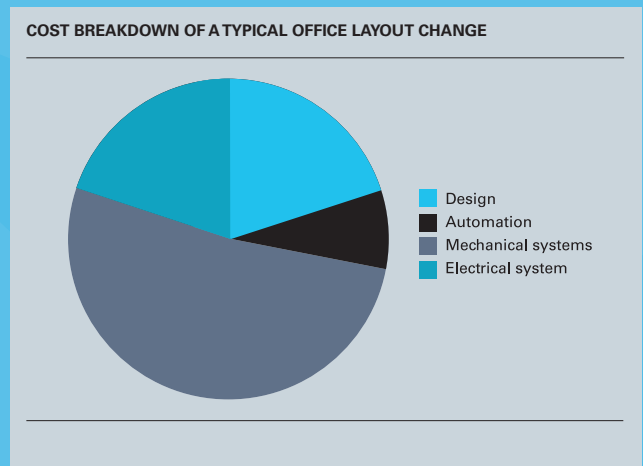
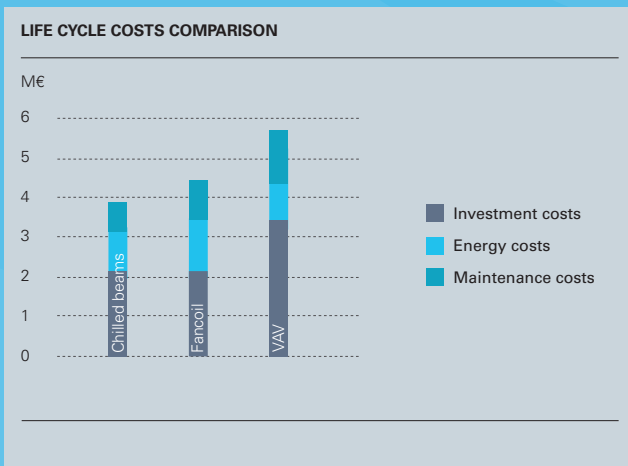
Life cycle efficient indoor climate. The way to ensure good indoor environment in a life cycle cost efficient manner is to choose the right system to the right space. Offices with a high cooling requirement and a moderate outdoor airflow demand are usually best equipped with chilled beam systems. Team rooms should be equipped with chilled beams with demand-based ventilation as the usage varies.

The chilled beam system creates excellent conditions with less energy and maintenance need. The system is a low temperature heating and a high temperature cooling system that optimizes the opportunity for free heating and cooling. More efficient ventilation uses less fan energy and smaller air-handling units and ductwork than traditional all-air systems. This leads to a highly efficient building structure with

lower construction costs. The operation principle of the chilled beam system is trouble-free and uncomplicated. Consequently, the system's maintenance need is low.

The concept for the fast change. Traditional solutions make each change a separate, expensive and time-consuming project. There will be interruptions to the use of workplaces, problems in controlling office conditions, noise and dust. At worst, a layout change means renovating the whole mechanical system.

With the Halton Adaptable^{Climate} concept, the indoor space can be fully utilized during layout changes. Changes in air conditioning are easy and highly cost-efficient. Measured in time, the adaptability means a higher building utilization rate.



Based on Consulting Engineering Olof Granlund Oy's life cycle cost analysis, the chilled beams system with a constant airflow rate in offices and a variable airflow rate in other areas is the most efficient and economic over a period of 20 years. With traditional solutions, the typical change costs are 50-100€/m². With the chilled beam system, the saving can be up to 90%.



The practice

– Support the core business with adaptable spaces

“At Nokia Siemens Networks, flexibility of premises and the indoor environment are important. We do not want to compromise on the quality of our indoor environment - compromises can never produce the best results.

Making changes should be easy. They should not automatically create the need for a building project. Ideally, when changes are required, the property management service should simply be able to send a professional who accomplishes the changes with a single screwdriver.”

Kari Siuru, Nokia Siemens Networks

1. Business demands change. The workplace layout can change as often as once a year. Flexibility no longer means just building or knocking down walls – building services must also adapt to continuous changes.

Future requirements can be prepared with various office space concepts. When making allocations for the required changes also building services systems are considered. Without prior preparation and flexible systems, disruptive changes and renovation work at regular intervals are likely.



2. New layout is required. Users can determine the positions of team and office rooms freely in a zone. Adaptability of the system effectively removes the need for redesigns in layout changes. With their broad operation range, only adjustments are needed for the Halton Adaptable Chilled Beams' air velocity, cooling and outdoor airflow rate to meet the requirements of the new layout.

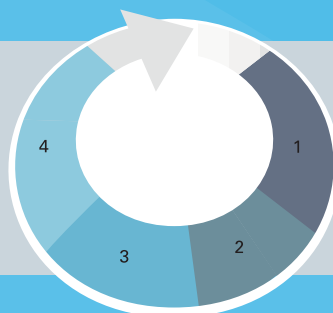
3. Workplaces are designed. Typically, layout changes involving the mechanical system cost 50-100€/m², excluding walls, IT, etc. With the Halton Adaptable Chilled Beams system, the costs invoked by a new layout are up to 90% smaller. This can be achieved by the system which only needs to be adjusted to meet the new requirements in office areas. In team rooms, adaptable air flow functionality is added only when needed.

Also the thermal comfort conditions are adjusted

to maintain the user satisfaction. In case a partition wall is relocated close to a chilled beam and a working place, the air velocity must be controlled to prevent draught. With the Halton Adaptable^{Climate} concept, user satisfaction can be just as high in an open-plan office as in separate office rooms: the indoor climate can still be adjusted according to each person's wishes.

4. Indoor environment is adapted. While the building is being used, the indoor climate condition is controlled to ensure the desired level.

Halton's verification service evaluates the user-perceived indoor climate. Occupant satisfaction surveys map the state of various indoor environment factors. The feedback analysis determines the user satisfaction and reveals any problem sources. Halton's verification service also covers the changes during the building life cycle, when the chilled beam system is adjusted due to new layout or relocation of work places.



1. Business demands change
2. New layout is required
3. Workplaces are designed
4. Indoor environment is adapted

User satisfaction measurement periodically

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