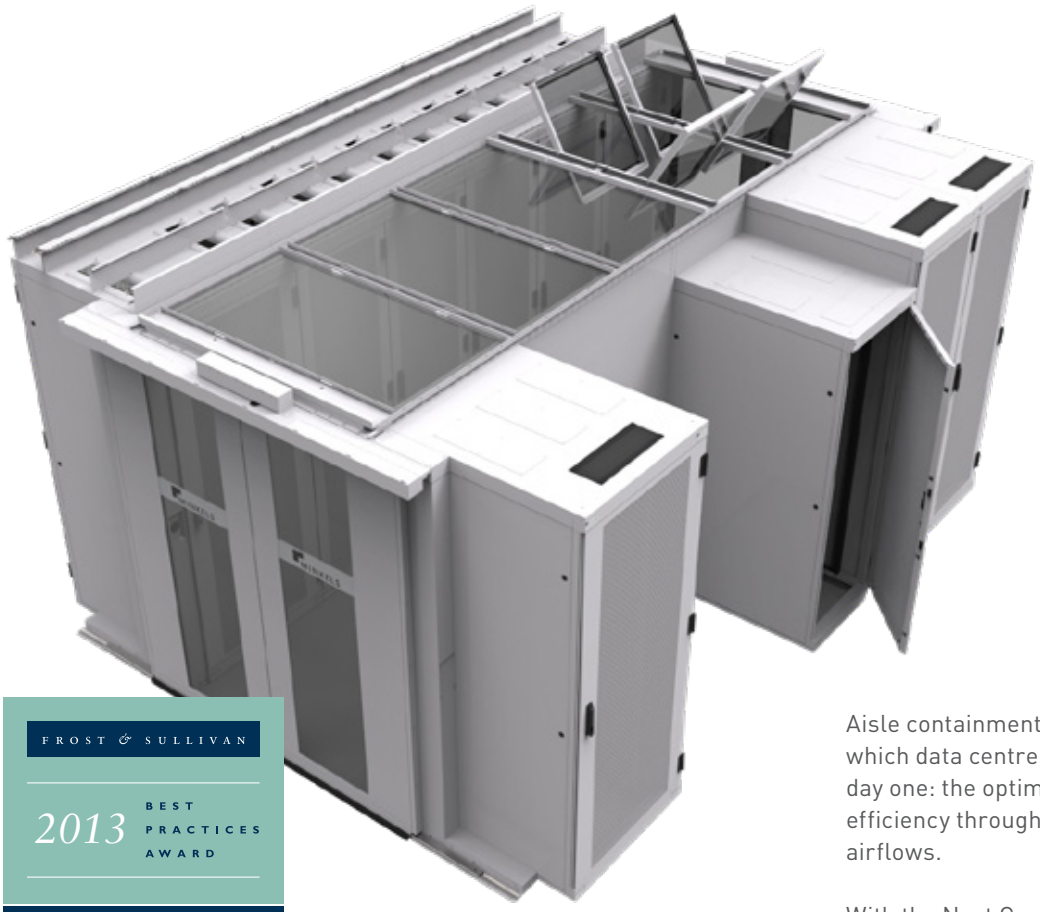
TECHNICAL DATA

AISLE CONTAINMENT

MINKELS
A brand of legrand

MINKELS
A brand of legrand

Cooling aisle containment



FROST & SULLIVAN
2013 BEST PRACTICES AWARD
EUROPEAN RACKS & CABINETS ENTREPRENEURIAL COMPANY OF THE YEAR AWARD

Next Generation Corridor

Aisle containment is the solution to the challenges which data centres have been presented with since day one: the optimisation of cooling and energy-efficiency through the separation of hot and cold airflows.

With the Next Generation Corridor and the Free Standing Corridor, Minkels offers data centre managers and owners 'future-proof' solutions which offer the flexibility and modularity needed to be able to anticipate the dynamic of the modern day data centre. Minkels offers the best solution for every situation with the Next Generation Corridor and the Free Standing Corridor. The choice of a certain solution will depend on both the required flexibility and the building structure (existing, renovated or new).

The main difference between the Free Standing Corridor and the Next Generation Corridor lies in their realisation of the expansion of the number of racks. In the case of the Free Standing Corridor, the containment is placed in one go and filled with new racks, racks with a non-standard dimension or racks by other brands as time goes on. In the case of the Next Generation Corridor, an expansion in the number of racks means the expansion or addition of a containment.

Watch the Free Standing Corridor and Drop Away Panels clip on the Minkels YouTube channel:

Youtube.com/c/minkelshq

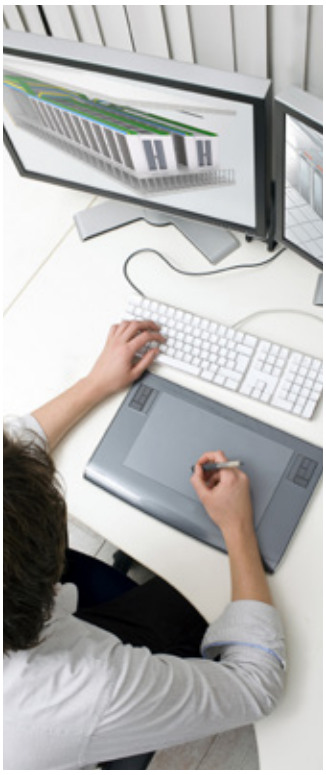
	AISLE CONTAINMENT	
Features	Next Generation Corridor	Free Standing Corridor
Integration differing cabinet depths	●●●	●●●
Integration differing cabinet heights	●●○	●●●
Integration differing cabinet widths	●●○	●●●
Integration differing brands of cabinets	●○○	●●●
Modularity	●●○	●●●
Integration sensors	●●●	●●●
Expansion with extra cabinets	●●○	●●●
Row-based cooling	●●●	●●○
Integration fire suppression systems	●●●	●●●
Initial investments*	●●○	●●●
Separation of hot and cold air	●●●	●●●
Pivoting roof	●●●	●●●
Cold corridor setup	●●●	●●●
Hot corridor setup	●●●	●●●
Avoidance of hotspots	●●●	●●●
Possibility for energy-efficiency	●●●	●●●
Power per m^2	●●●	●●●
Cable management on top of cabinet**	●●●	●●○
Busbar integration	●●●	●●○
Transverse wall	○○○	●●●
Adjustable side wall	●●○	●●●
Flexibility in adaptation or replacement of cabinet	●○○	●●●

* including supporting cabinets (necessary)
** Minkels-development

Free Standing Corridor

MINKELS
A brand of legrand

Next Generation Corridor



The Next Generation Corridor is the ultimate answer to the ever increasing demand for flexible and modular solutions. In the form of the Next Generation Corridor, Minkels lifts modular thinking and energy-efficient data centre design to a higher level. Important features of the Next Generation Corridor are:

Modularity
Through the highly modular concept of the Next Generation Corridor, Minkels offers extensive possibilities to implement a Corridor solution in a phased and thus cost-efficient manner.

Flexibility
Because of its modular design, the Next Generation Corridor is flexible and thus can be adapted to fit the specific building environment.

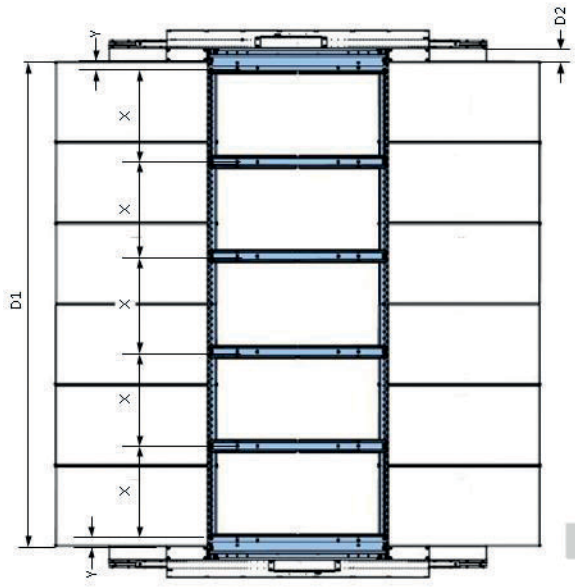
Ease of installation
Modularity in the construction details ensure that the solution is easily and cost-efficiently installed.

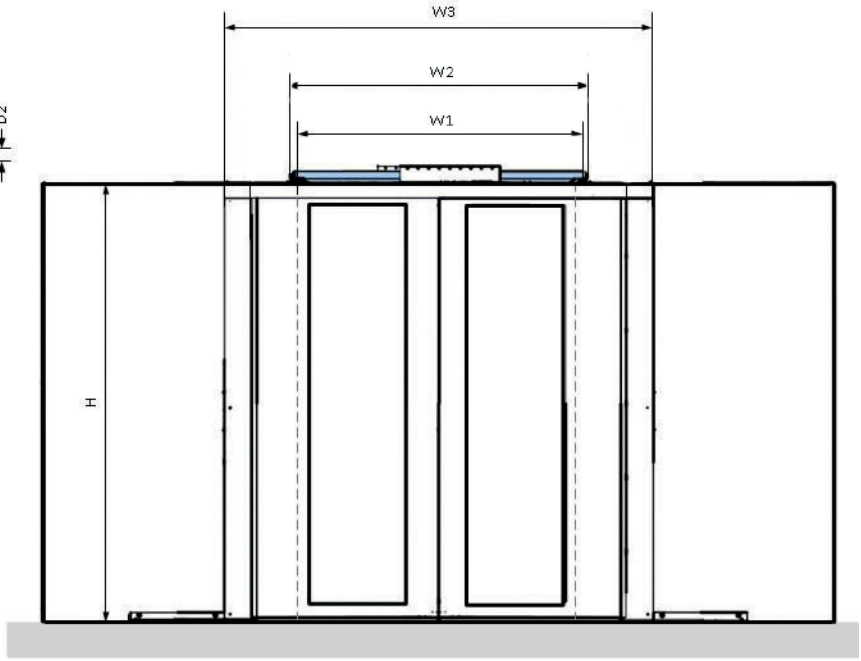
Energy-efficiency
With the Next Generation Corridor, Minkels offers a solution which is more energy-efficient than other Corridor-models on the market.

Optimal integration
The Next Generation Corridor can be integrated with row-based cooling systems which bring cooling close to the heat source, but also with more traditional forms of cooling which require a raised floor. In addition, this concept offers plug & play integration with e.g. fire detection and suppression systems, monitoring sensors and access control.

Corridor – Standard		
Aisle width	mm	Variable between 1000-1800 Standard width: 1200 & 1800
Overall width	mm	Aisle width + 150
Standard row height	mm	2000 / 2200 / 2400
Overall height	mm	Row height + 55
Overall roof width	mm	Roof system width +150
Colours		RAL 7047 / RAL 9011
Materials		Powder coated sheet metal
Working conditions		Max. 5 - 40°C / 20 – 80% RV
Standardisation		CE

Portal - optional		
Depth	mm	100
Width post	mm	350
Total width portal	mm	1950





W1 = Aisle width
W2 = Total width roof system
W3 = Total portal width
D1 = Corridor length
D2 = Portal depth
H = Height

X = Panel size
Y = Flexible start/end panel

MINKELS
A brand of legrand

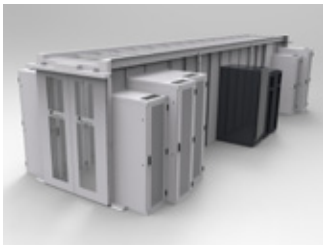
Free Standing Corridor

When the highest amount of flexibility is required, the Minkels Free Standing Corridor is the most optimal solution. The Free Standing Corridor is a fully self-supporting aisle containment system, with which closed off aisles can be created independent from the IT-racks –which is not usual in the data centre market.

‘Pay-as-you-grow’ solution

Immediately after implementation, the Free Standing corridor reaches the same energy-efficiency as a regular aisle containment system with IT-racks would. The Free Standing Cold corridor can be used for both cold isle containment and hot isle containment. The system –a modular design consisting only of a carrying construction, wall panels, roof panels and sliding doors- offer corporate and commercial data centres a cost-efficient ‘pay-as-you-grow’ solution in order to create energy-efficiency at low initial investments (CAPEX).

Minimal initial investments



The Free Standing Corridor can be used in combination with an existing infrastructure and already fitted racks, and drastically improves the airtightness and with this the energy-efficiency. The Free Standing Corridor can also be used for a new room where the end user will fill the corridor themselves based on their own demands and requirements, or those of a customer. This allows for a start with a minimal initial investment. Depending on the length of the corridor, racks can be added stepwise while the required airtightness is maintained.

Free standing frame

The free standing frame carries the sliding door systems, roof systems, corridor walls and vertical panels/chimneys, without any support other than the floor onto which the entire construction is installed. The frame consists of two sheet metal rigid door portals at the beginning and end of the construction and modular, plate steel beam sections. The minimum length of the free standing frame is 1800 mm and can be added onto with 600 mm sections. The maximum length of the free standing frame is 26400 mm. You can choose between a light grey (RAL 7047) or black (RAL 9011) Free Standing Corridor. The standard walkways are enclosed by the containment system, and have a width of either 1200 or 1800 mm.

Minkels Free Standing Corridor		
General		
Aisle width	mm	1200 / 1800 [1]
Net aisle width	mm	1370 / 1970 [2]
Free height available for use (H)	mm	2220 / 2420
Overall height (T)	mm	2385 / 2585
Module length (M)	mm	1800 – 26400 in 600 [3] increments
Colours		RAL 7047 / RAL 9011
Materials		Sheet steel, powder coating
Operating conditions		Max. 5 to 40°C / 20 to 80% RH
Air flow optimisation		Yes
Standards		Not applicable
Portal		
Portal type		Double
Portal depth	mm	100
Sliding door system		Fully compatible with the Minkels Next Generation Cold Corridor sliding door portfolio
Extension Portal		
Usage	mm	With a module length (M) of > 9600
Portal depth	mm	100
Adjustment range		With a Freestanding Cold Corridor module that exceeds 12.6 metres in length and is equipped with pivoting roof, the adjustment position of the extension portal in combination with the crossbeam also depends on where the roof rails for the pivoting roof are positioned. They must be positioned vertically in line with each other. Please contact Minkels Sales if they need to be positioned differently.
Distance	mm	between portal and extension portal is max < 9300
Assembly method		Fully free-standing. Portals must be screwed into the floor
Lengthwise beams		
Segment lengths	mm	1000, 1200, 1600, 2400 (400mm length wise beam is included per portal)
Maximum length that can be bridged without support (S)	mm	3700. Distance between vertical supports
Roof system		Fully compatible with the Minkels Next Generation Cold Corridor portfolio [4]
Crossbeam		If module length (m) >12,6m
Vertical support of lengthwise beams		
Dimensions	mm	Height (H) x 50 x50
Adjustment		Continuously adjustable
Adjustment range	mm	3300 +/- 350 with respect to the assembly position [5]
Attachment to the length wise beam		Using a knob

1 Optimum aisle widths between the racks. Non-standard aisle widths can be achieved by placing the racks used at a different position under the length wise beams

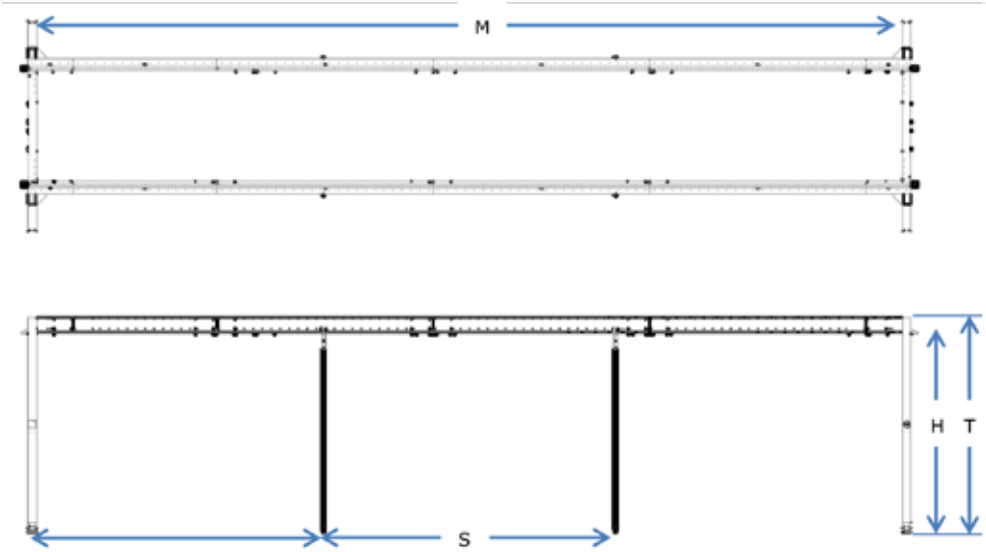
2 Aisle width between the wall panels (if applicable)

3 Module length > 9.6 metres requires an extension portal; module length > 12.6 metres requires an extension portal with crossbeam; module length > 18.6 metres requires 2 extension portals with crossbeams. Please contact Minkels Sales if you require a module that exceeds 26.4 metres in length.

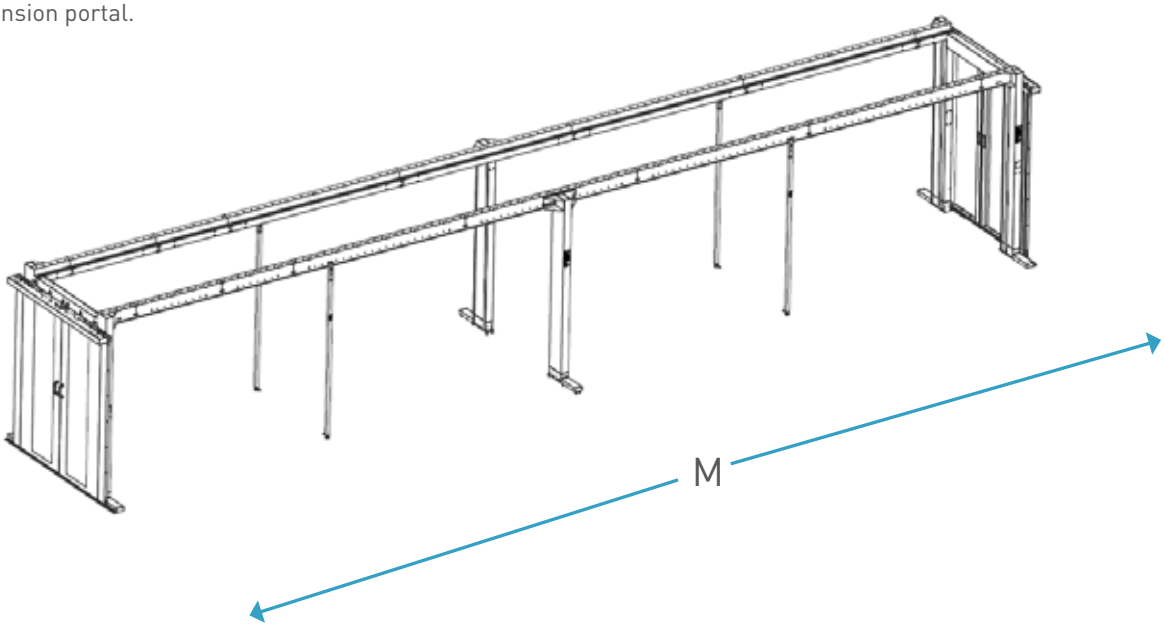
4 The complete roofing portfolio of the Minkels Next Generation Cold Corridor can be applied in the Minkels Free Standing Cold Corridor concept. The function of the roof rails is however integrated into the length wise beams.

5 The position of the vertical supports should be determined using the information given in the user manual and/or installation manual. The vertical supports may only be moved if the maximum width that can be bridged unsupported (3.7m) is not exceeded.

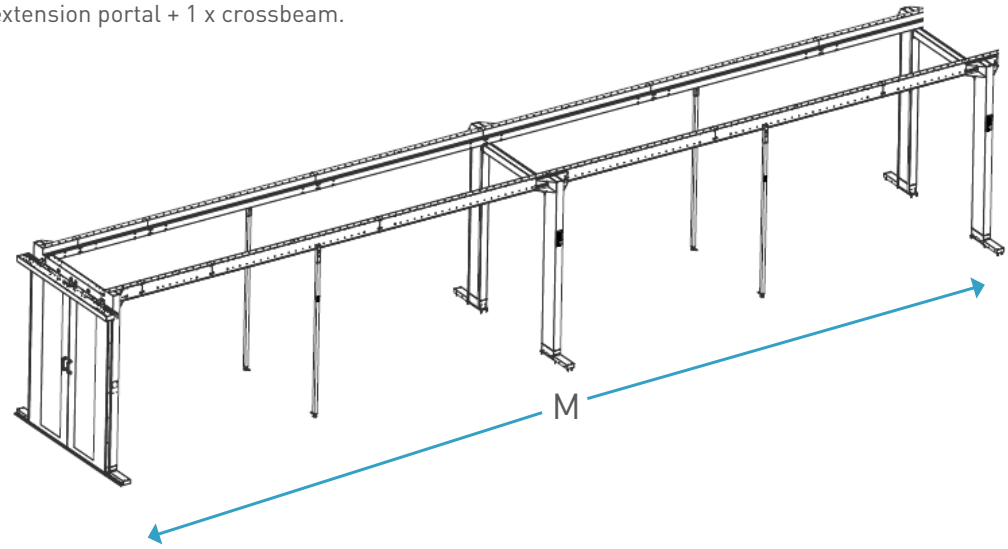
Free Standing Corridor structure for a module length (M) of maximum 9.60 metres.



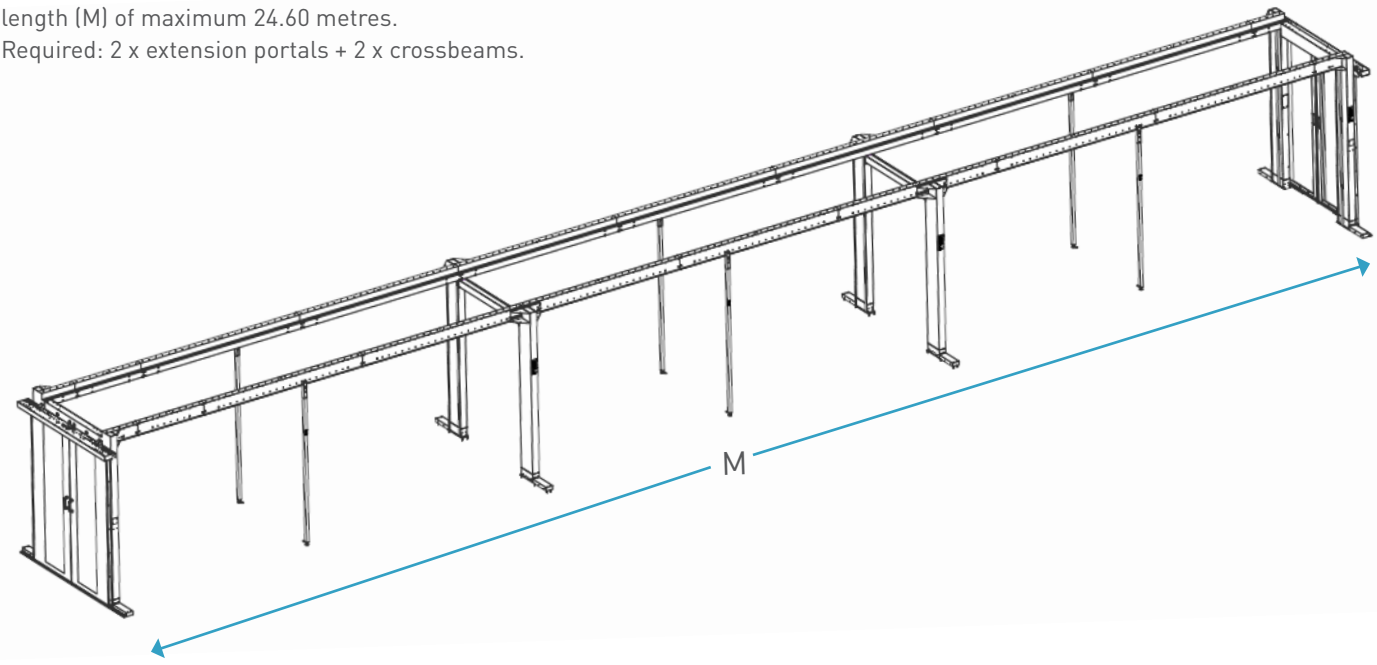
Free Standing Corridor structure for a module length (M) of maximum 12.60 metres.
Required: 1 x extension portal.



Free Standing Corridor structure for a module length (M) of maximum 18.60 metres.
Required: 1 x extension portal + 1 x crossbeam.



Free Standing Corridor structure for a module length (M) of maximum 24.60 metres.
Required: 2 x extension portals + 2 x crossbeams.



MINKELS
A brand of legrand

Door systems

Minkels offers self-closing sliding doors, with which you can close off your aisle containment in an airtight seal. The self-closing sliding door system is available in two different colours, RAL 7047 and RAL 9011. During the closing of the doors, a soft closing mechanism prevents the doors from unexpectedly striking against each other. The door panels have been fitted with safety glass panels to ensure the safety of persons and to allow light to enter the containment, as well as to provide the possibility of viewing the walkways from outside the containment.

Sliding door system		
Door type		Single, double
For aisle widths	mm	1200 + 1800
Clear door opening	mm	1000
Heigth door opening	mm	Heigth door system -70
Depth of beam	mm	170
Heigth of beam	mm	70
Width door system	mm	1950
Door closing		Soft close
Door synchronization		No
Opening - outside		Manual
Opening - inside		Manual

Options	
Self closing	Door synchronisation incl. automatic closing of doors
Electronic door system	Door synchronisation incl. motorized opening and closing of doors

Security options	
Door position indicator	Magnetic contacts
Electronic lock*	Electronic locking of the sliding door system
Power consumption Electronic lock	17 W
Operation - inside	Push button
	Motion sensor
Operation - outside	Push button (Standard)
	Key Switch
	Motion sensor
	Key Pad
	RFID - Card reader

Electronic Door system*		
Standardization		NEN-EN 16005
Clear door opening	mm	1000 mm
Heigth door opening	mm	Heigth door system -100
Depth of beam	mm	200
Heigth of beam	mm	100
Width door system	mm	2100
Electrical supply		230V - 50Hz/60Hz
Power consumption		180 W
Power connection		SCHUKO, C13, Cee-form, BS, No cable - Standard 5 m cable length
Safety		Electrical sliding system is equipped with anti-oppression system
		In the event of a power failure, the doors can be opened manually (fail-safe)

*Portal necessary

Roof systems

For your Next Generation or Free Standing Corridor, a choice can be made between a **high transparency roof**, **Drop Away Panels**, an **active pivot roof** or a **passive pivot roof**.

High Transparency roof
Your aisle containment can be fitted with a high transparency roof. These roof panels provide a high light permeability/light transmission, up to 83%. The roof panels are installed onto rails, separate from the server cabinets.

Drop Away Panels FM Approved

Drop Away Panels ensure the seamless integration of aisle containment solutions with sprinkler or water mist systems. In the case of a fire in the data centre, the plastic Drop Away Panels automatically soften and fall down so that they do not form an obstruction when sprinklers are activated. The system is specifically designed for use with sprinkler installations which activate at 74 degrees Celsius and upwards.

Active pivot roof or Passive pivot roof
Through the use of rotating panels, this type of roof allows for the roof panels to automatically open. This ensures that fire suppression gasses or fluids can reach the enclosed construction.

Passive pivot roof: The activation of the rotation panels occurs through use of thermic fuses which are activated at 57 degrees Celsius.

Active pivot roof: The activation of the rotation panels occurs through the release of electromagnets which are engaged by a micro controller which is part of the system. The system can be tested using a special test function. The activation takes place through the fire alarm control panel. The fire detection can take place through smoke or heat, for example.

Roof rail system		
Rail lengths	mm	250 / 500 / 1000 / 1500 / 2000
Rails interconnected		Yes
Height adjustment	mm	10
Sealing		Finished with air tight seal

Roof system - options		
Integration panel - sensors		
Supporting sensors		Minkels Varicontrol-S
Mounting sensors		Toolless
Cable entries	mm	2x ø13,5 - rubber grommet
Integration panel - Fire extinguisher*		
Pipe throughput	mm	1x ø35 - rubber grommet

*Only i.c.w. High Transparancy Roof system

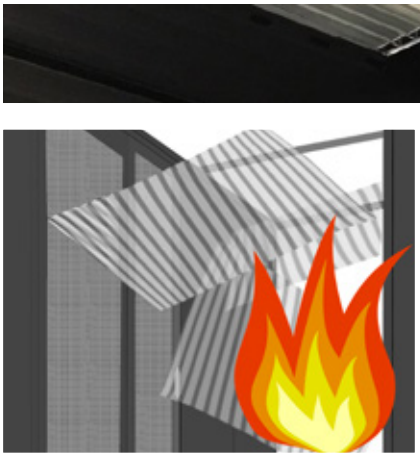
Roof system - 'High Transparancy'		
Aisle width	mm	1200 / 1800
Start panel - range	mm	Flexible start/end panel, 100-175
Available pitch	mm	600 & 700 mm
Transparancy		83%
Panel material		Double layered safety glass
Roof panel fixation		square key lock
1200 mm aisle width		
Segments		1
weight / segment	kg	600 --> 10,4 kg 700 --> 12,6 kg
Roof width	mm	1350
1800 mm aisle width		
Segments		2
weight / segment	kg	600 --> 7,6 kg 700 --> 9,2 kg
Roof width	mm	1950

Roof system - 'Pivot Roof' - Passive		
Aisle width	mm	1200 Max roof panel overlap: 300mm over the roof of the racks (per side)
Safe roof rail height	mm	2400
Free standing height	mm	Roof height -300
Required free height above roof rails	mm	Roof height +400
Start panel - range	mm	Flexible start/end panel 150-225
Available pitch	mm	700 & 800
Transparancy		72%
Panel material		Lexan EN13501-1 B S2 d0
Activation temperature		57°, fuse
Segments		2
weight / segment	kg	700 --> 9,8 kg 800 --> 11,4 kg

Roof system - 'Pivot Roof' - Active		
Aisle width	mm	1200 Max roof panel overlap: 300mm over the roof of the racks (per side)
Safe roof rail height	mm	2400
Free standing height	mm	Roof height -300
Required free height above roof rails	mm	Roof height +400
Start panel - range	mm	Flexible start/end panel 150-225
Available pitch	mm	700 & 800
Transparancy		72%
Panel material		Lexan EN13501-1 B S2 d0
Roof panel fixation		Electro magnets
Segments		2
weight / segment	kg	700 --> 9,8 kg 800 --> 11,4 kg
Roof activation		Potential free input on controller
Roof panel status indication		Yes, potential free output on controller
Power supply indication		Yes, potential free output on controller
Power supply controller		230V - 50Hz/60Hz - 5A (C14, cable optional)
Power consumption		+/- 10W/m
Maximum Corridor length per controller	m	10

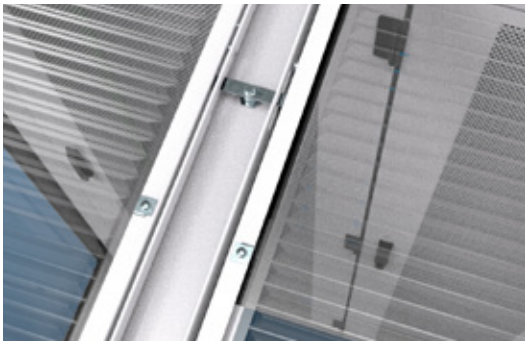
Roof system - 'Drop Away Panels'		
Aisle width	mm	1200 / 1800
Start panel - range	mm	Flexible start/end panel 100-175
Available pitch	mm	700
Roof panel material		PVC - vinyl
Drop Away Panel weight	kg	0,16 kg
Roof panel fixation		square key lock
1200 mm aisle width		
Segments		1 panel with 2 Drop Away Panels
weight / panel	kg	3,0
Roof width	mm	1350
Transparancy *		81 %
1800 mm aisle width		
Segments		1 panel with 3 Drop Away Panels
weight / panel		4,5 kg
Roof width		1950 mm
Transparancy *		83,5 %
Mounting method		Fixation on independent roof rails
Certified		UL Ceiling Panels for use Beneath Sprinklers BLME.R4036
Approval		FM Approval Class Number: 4651

* Transparency in % depending on total length Next Generation Corridor by the use of the filling panels



BENEFITS OF THE DROP AWAY PANELS

- Lightweight material: the panels do not cause any danger to people and equipment.
- The panels are suitable for Next Generation & Free Standing Corridor, and can also be used for retrofit.
- No height restriction: suitable for 2000 & 2200 mm high corridors.
- Drop Away Panels are available in standard width of 1200 mm.
- Extra safety-feature: the grounding of the metal framework construction.
- FM Approved



MINKELS
A brand of legrand

Wall systems

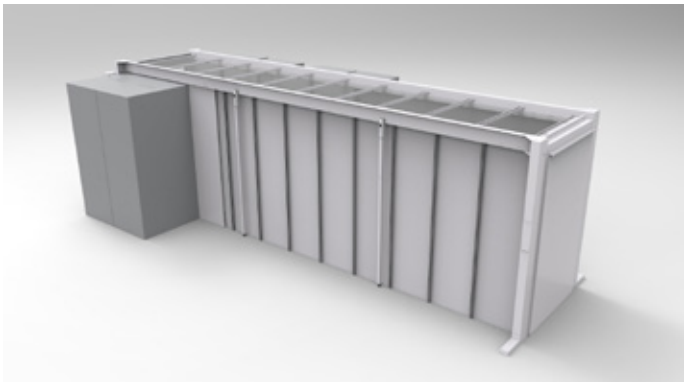
Minkels highly values the efficient cooling and optimal airtightness of her aisle containments. Many different racks with possibly differing dimensions can be present in an aisle containment system. For this reason, Minkels offers an extensive portfolio of wall systems for the Next Generation and Free Standing Corridor.

Wall systems Next Generation Corridor		
Standard width	mm	300 / 600 / 800
Standard width (end of row)	mm	1200 / 1800
Standard heights	mm	2000 / 2075 / 2200 / 2275 / 2400
Wall thickness	mm	25
Construction		Sandwich plate (XPS - core)
Material		HPL - RAL7047 / RAL9011
Mounting method		Plate parts are mounted in steel U-profiles on floor and roof rails.
Retrofit / specials		Optional, on request

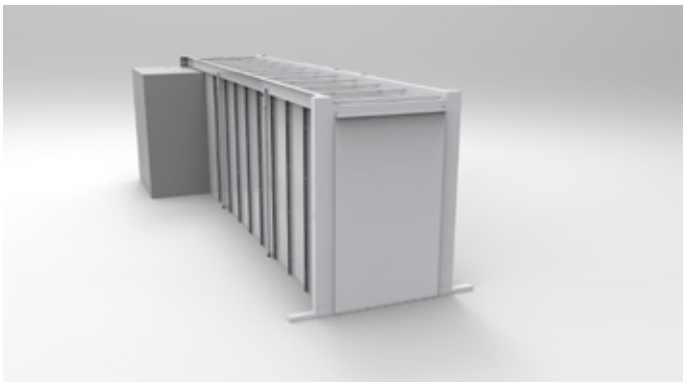
Wall systems Free Standing Corridor		
Flexible steel wall panels		
Full height	mm	2200 / 2400
Standard width	mm	600
Variable widths	mm	50 till 400 [1]
Wall connection		Using quick-fit connectors (cross-head)
Filler panels		
Width	mm	500 -1000
Height	mm	100 – 600 [2]
19" cut-away		Optional – 3U
Partition wall		
Width	mm	1200 / 1800
Height	mm	2200 / 2400
Connection		Quick-fit connector to the vertical supports of the lengthwise beams or using a quick-fit connection to the adjacent wall

1 If other dimensions are required, please contact the Minkels sales department.
2 The filler panels can be made/ordered in whatever size is required. Please note: assembly strips should be taped to the underlying construction (e.g. the rack).

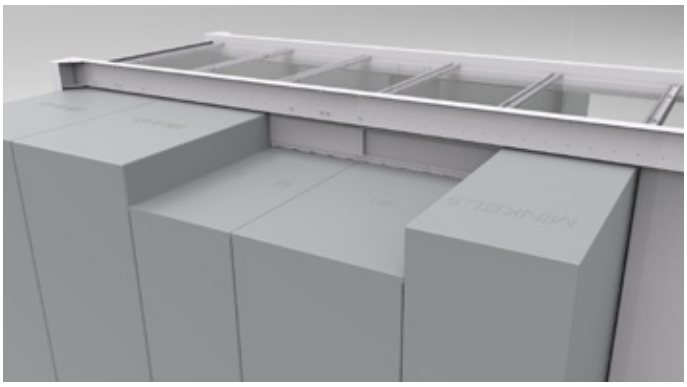
Apply a cross wall for a spread investment.



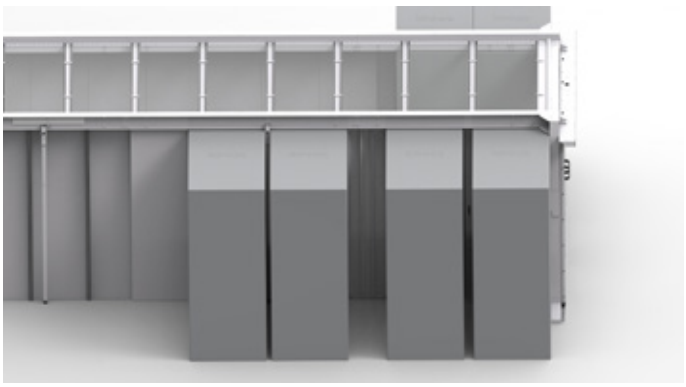
Fully airtight Free Standing Corridor thanks to wall panels.



End wall instead of a sliding door.

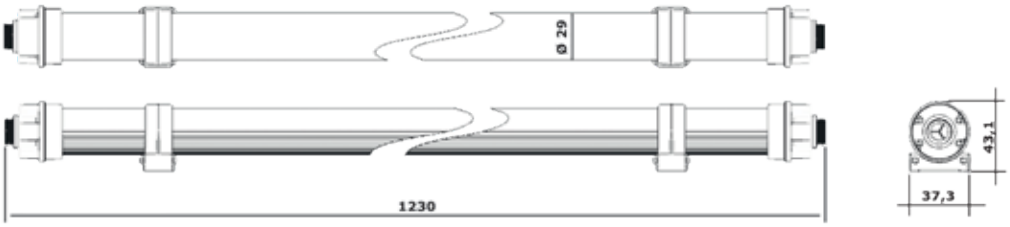


Top filler panels.



Minkels can supply suitable filler panels for any open parts.

LED Lighting



Energy-efficient Led Tubes deliver improved visibility in data centres, providing a safer and healthier working environment. Safety certification to the highest level, IEC 62471:2006, offers the user a guarantee of exceptional eye protection. These LED Tubes are optimised for the Next Generation Corridors.

The LED Tubes are exceptionally easy to install. With highly adjustable suspension points a Corridor can be fitted out with LED lighting in no time. And once fitted the LED Tube continues to offer outstanding flexibility. The option to rotate the tubes means that the illumination can be directed towards specific items of equipment. The high light intensity and energy efficiency of the LED Tubes makes them just the thing for Next Generation Corridors. These LED Tubes provide greatly improved visibility, particularly where black racks are used. The LED Tubes can easily be expanded using extension cables: these are then concealed with neat cover caps so that the unit forms an attractive whole. Each LED Tube can be fitted with a motion sensor, allowing the lamps to switch off automatically if no movement has been detected for a specified period, a functionality that further underlines the energy-efficiency of this lighting solution for data centres.

MAIN FEATURES

• **Energy efficiency** – LEDs (Light Emitting Diodes) are small, solid lamps, highly energy-efficient and with an extremely long service life.
• **Safety guarantee** - Official IEC 62471:2006 certification means that this product complies with the most stringent safety requirements in the area of eye protection.
• **Powerful illumination** – 335 lux, delivering optimal working conditions in accordance with standard EN12464-1.
• **Simple installation** - Installing a LED Tube is simplicity itself thanks to the clever magnetic attachment system.
• **Flexibility** - Suitable for a wide range of rack formats and Corridor layouts, with options to rotate the installation position.
• **Integrated lighting** - The recesses for the LEDs, the connection cables and the small cover caps to conceal the cables give these units the appearance of a unified whole.

LED lighting – Next Generation Corridor		
Dimensions		
Length	mm	1200
Height	mm	43,1
Width	mm	37,3
Diameter	mm	37
LED tube diameter	mm	29
Lamp material		Polycarbonate PC-ABS
Mounting clamp material		Anodised aluminium
Weight of LED tube		505 g
Variants		With PIR sensor Without PIR sensor
Lux		Average 335 Lux
Energy class		A+
Colour temperature in Kelvin		5000°K
Colour rendering (CRI)		80
Dimmable		No
Angle of illumination		130°
Adjustable angle of illumination		Yes, with rotating LED Tube
Operating conditions for LED tube		Max. -20°C - 40°C
Storage temperature		Max. -40°C - 60°C
IP value of fitting		IP21
Impact resistance of fitting		IK08
Expected life time of LED lamp		35,000 hours
Input voltage		230 VAC/single phase/50 Hz
Current consumption in Watts		20 W
Circuit board (PCB)		FR 4
Connectable LED Tubes		Yes, using 10cm Male/Female LED Tube connector power cable + cover
Maximal length of serially connected LED Tubes		50 metres in series from a single power supply
Location of LED Tubes in Corridors		Left and right side of corridor. Each side is fed separately
Connection		C14/LED Tube connector – standard 4.0m cable length
Installation method		Attachment to joists using flexible, sliding N50 magnets
Corridor roof configuration*		Compatible with Next Generation roof structure
Quality mark		CE
In accordance with Directives		Directive 2004/108/CE Directive 2006/95/CE Directive RoHs 2011/65/EU Directive WEEE 2012/19/EU Directive 2012/874/EU
Standards		EN62471 EN12464-1

* Not in combination with Next Generation Corridor - Drop Away Panels

FOLLOW US TOO ON

Minkels.com

Youtube.com/c/minkelshq

Twitter.com/Minkels_HQ

Facebook.com/Minkels

Linkedin.com/company/minkels

MINKELS
A brand of legrand

MINKELS BV
Eisenhowerweg 12
P.O. Box 28
5460 AA Veghel
t. +31 (0)413 311 100
info@minkels.com