

Smart System



Smart Energy Saving[®]
Form and Function



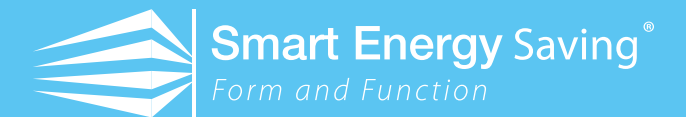
Smart Energy Saving kompanija je specijalizovana za usluge visokostručnog i efikasnog projektovanja, montaže i održavanja sistema klimatizacije, ventilacije, grejanja i rashladne tehnike u objektima različite namene.

Na domaćem tržištu uspešno posluje od 2005. godine pod imenom Polar, a 2011. smo zbog povećanog obima poslovanja prerasli u privredno društvo **Smart Energy Saving**.

Naše usluge pokrivaju svaki korak i sve aspekte instalacije i održavanja termotehničke i rashladne opreme, počev od projektovanja, preko izrade tehničkih proračuna, izbora i isporuke opreme, montaže, pa sve do obuke osoblja krajnjeg korisnika i redovnog servisnog održavanja od strane sertifikovanih servisera sa višegodišnjim iskustvom.

Smart Energy Saving već niz godina sarađuje sa najpoznatijim evropskim proizvođačima rashladnih, klimatizacionih i ventilacionih sistema. Kompletan asortiman naših proizvoda ispunjava najstrože kriterijume kvaliteta i bezbednosti.

U svakom aspektu našeg poslovanja smo posvećeni tome da našim klijentima obezbedimo maksimalnu sigurnost, garanciju kvaliteta i trajnosti ponuđenih rešenja.



Company **Smart Energy Saving** offers the service that includes highly professional and efficient design, installation and maintenance of air-conditioning, ventilation, heating and cooling systems in various type of facilities.

We have been successfully operating on the domestic market since 2005 under the name of Polar, and due to the increased volume of business we have grown into a commercial company called **Smart Energy Saving** in 2011.

Our services cover every step and every aspect of installation and maintenance of HVAC and cooling equipment, including design, engineering calculations, selection and delivery of equipment, installation, as well as staff training and regular servicing and maintenance.

Cooperation with the leading European manufacturers of cooling, air-conditioning and ventilation systems provides us and our clients with additional security and guarantees the quality of offered solutions.

SMART SYSTEM

Smart System je brend modularnih rashladnih komora, namenjenih za skladištenje prehrambenih i drugih proizvoda u objektima različitih namena kao što su supermarketi, pekare, restorani, hoteli, farmaceutski i industrijski pogoni i sl.

Mogućnost kombinovanja različitih veličina rashladnih panela i jednostavna montaža glavne su prednosti ove vrste komora, koje po svom izgledu i kvalitetu staju u rang sa proizvodima vodećih evropskih proizvođača.

Smart System podržava različite temperaturne režime, u zavisnosti od zahteva klijenta i standarda koje je potrebno ispuniti.



SMART SYSTEM

Smart System is one brand of modular cold rooms intended and designed for cooling and storing food and other products in facilities of different purposes such as supermarkets, bakeries, restaurants, hotels, pharmaceutical and industrial plants, etc.

The possibility of combining different sizes of cooling panels and simple assembly are the main advantages of this type of cold rooms, which in their appearance and quality can be competitive with the products of the leading European manufacturers.

Smart System supports different temperature regimes depending on requests of clients and standards that should be met.

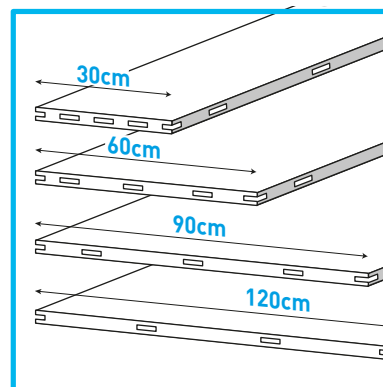
PANELI

Unutrašnji zidni i plafonski paneli sastoje se od čvrste poliuretanske pene, dvostruko obložene pocinkovanim limom debljine 0,6mm sa zaštitnom folijom. Opciono paneli mogu biti obloženi inox limom završne obrade Scotch-brite, debljine 0,8mm, sa zaštitnom folijom.

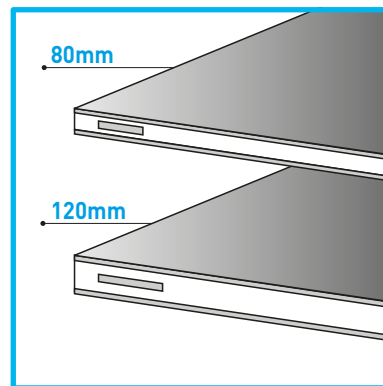
Paneli su dostupni u dve standardne debljine – 80mm i 120mm i četiri standardne širine od 300, 600, 900 i 1200mm. Standardna unutrašnja visina prostorija može biti 2000, 2400, 2800 ili 3200mm. Dimenzije panela mogu se i menjati, u skladu sa posebnim zahtevima klijenata i dimenzijama komore.

Komore čiji je režim hlađenja iznad 0°C izrađuju se od panela debljine 80mm, u varijanti sa ili bez podnih panela.

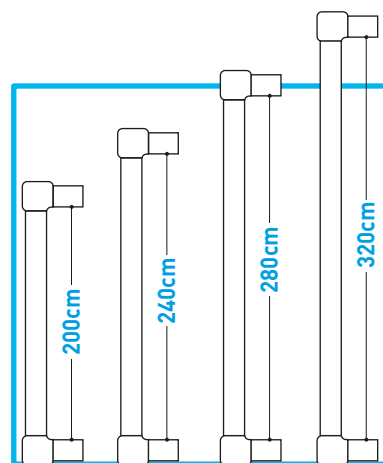
Komore čiji je režim hlađenja ispod 0°C izrađuju se od panela debljine 120mm, isključivo u varijanti sa podnim panelima.



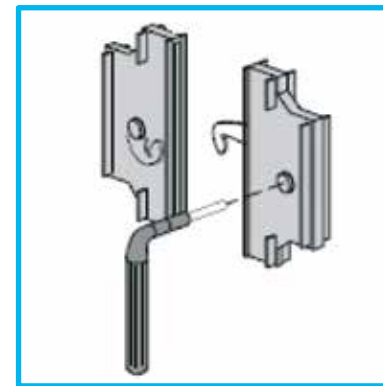
ŠIRINA / WIDTH



DEBLJINA / THICKNESS



VISINA / HEIGHT



SPAJANJE / CONNECTION



DETALJ / DETAIL

PANELS

Internal wall or ceiling panels contains of solid polyurethane foam double coated with galvanized metal sheet with thickness of 0.6 mm and with protective foil. Optionally, panels can be delivered with AISI 304 stainless sheet steel, finished with Scotch-Brite treatment with protective film.

Panels are available in standard thickness of 80 mm and 120 mm, and standard width of 300 mm, 600 mm, 900 mm, and 1200 mm. Standard internal height of rooms may be of 2000 mm, 2400 mm, 2800 mm and 3200mm. Panel dimensions can be modified in accordance with individual requests of clients and chamber dimensions.

Rooms which cooling regime is above 0°C are done of panels with thickness of 80 mm in version with or without flooring.

Rooms which cooling regime is below 0°C are done of panels with thickness of 120 mm exclusively in version with flooring.

PODNI PANELI

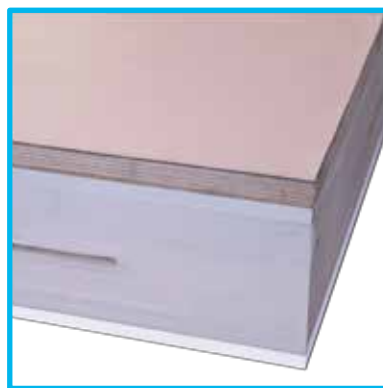
Podni paneli u standardnoj izvedbi izrađeni od poliuretana, dvostuko obloženog pocinkovanim limom debljine 0,7mm sa zaštitnom protivkliznom pvc folijom u sivoj boji, uz dodatno pločasto ojačanje koje je zalepljeno na metalnu ploču poliuretanskim izolacionim slojem ubrizganim pod visokim pritiskom gustine $43\text{kg/m}^3 \pm 2\text{kg/m}^3$.

Opciono, podni paneli mogu biti isporučeni u oblozi od nerđajućeg čelika debljine 0,8mm ili aluminijumskog rebrastog lima.

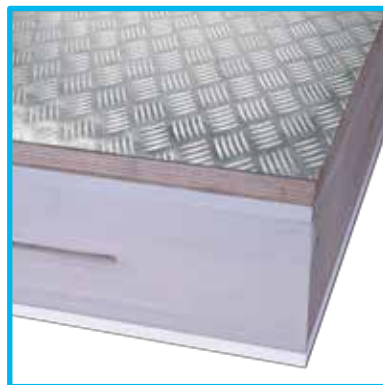
Opcija **A**, standardna izvedba: pocinkovani lim debljine 0,7mm sa zaštitnom protivkliznom pvc folijom

Opcija **B**: INOX AISI 304, dekorativni lim debljine 0,8mm

Opcija **C**: Aluminijumski rebrasti lim debljine 2/3mm



A



C

FLOOR PANELS

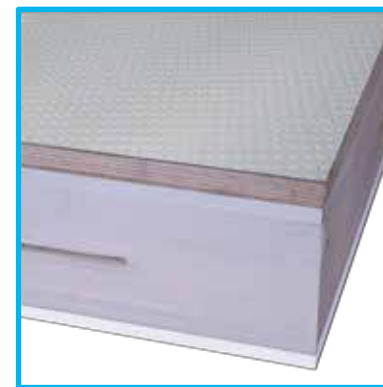
in standard manufacture are made of polyurethane double coated with galvanised metal sheet with thickness of 0,7mm and with grey protective foil and additional reinforcement of plywood glued to the metal plate with polyurethane insulation layer injected under high pressure with density of $43\text{kg/m}^3 \pm 2\text{kg/m}^3$.

Optionally, the floor panels may be delivered in the stainless steel lining with thickness of 0,8mm or in aluminium lining with thickness of 2mm.

Option **A** – standard: galvanized metal sheet with thickness of 0,7mm and protective foil

Option **B**: INOX AISI 304 stainless sheet steel with thickness of 0,8mm

Option **C**: aluminium ribbed sheets with thickness of 2/3mm



B

TEHNIČKE KARAKTERISTIKE

Izolaciono jezgro panela čini poliuretanska pena na vodenoj bazi (PUR) bez hlorofluorougljenika (HFC), gustine 41kg/m³ ± 2kg/m³, zatvorenost ćelija 95%, sila prijanjanja >100kPa, sila sabijanja ≥150kPa, oblast primene -40°C do 60°C.

Koeficijent prenosa toplote Uinit. prema standardima EN13165 – EN14506		
Debljina (mm)	80	120
W/m²K	0,29	0,19

Usaglašenost sa zaštitom životne sredine:

- indeks potencijalnog globalnog zagrevanja GWP=950
- indeks potencijala za oštećenje ozonskog omotača ODP=0



TECHNICAL CHARACTERISTICS

Insulation core of the panel contains water based polyurethane foam (PUR) without chlorofluorocarbon (HFC) with density of 41kg/m³ ± 2kg/m³, cell closure of 95%, adhesion force >100Pa, compaction force ≥150kPa, and scope of application -40°C up to 60°C.

Heat transfer coefficient Uinit. According to standards EN13165 – EN14506		
Thickness (mm)	80	120
W/m²K	0,29	0,19

Compliance with environment protection policy:

- Global Warming Potential index GWP=950
- Ozone Depletion Potential index ODP=0

VRATA

Vrata na rashladnim komorama su zaokretnog tipa, sa poliuretanskom ispunom. Opremljena su šarkama, bravom za zaključavanje i gumenim kederom koji omogućava dobro dihtovanje i sprečava nepotrebne gubitke energije.

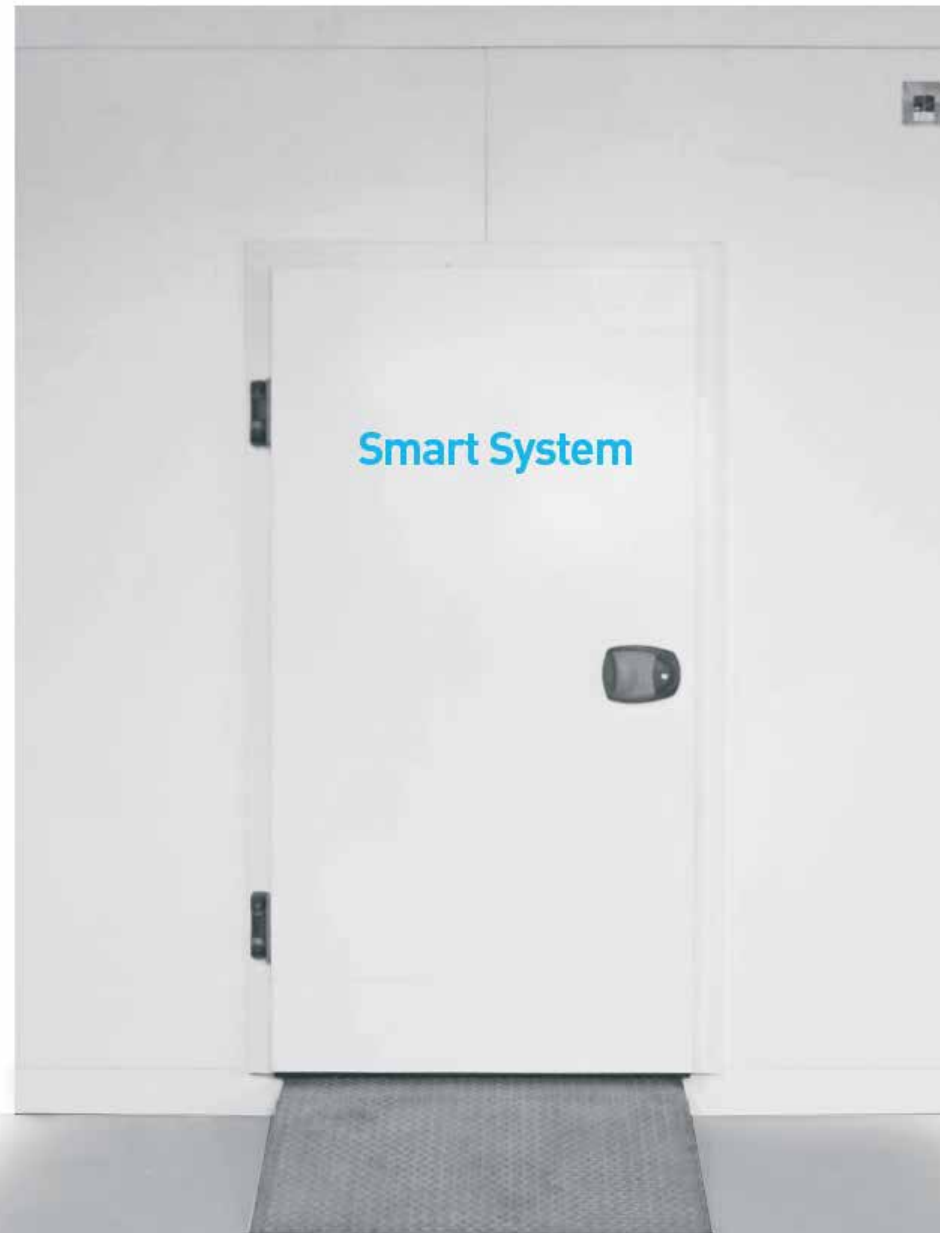
Vrata se isporučuju sa sopstvenim štokom, montirana direktno na panel istih osobina kao i zidni panel.

Standardna dimenzija zaokretnih vrata: 850x1900mm

Nestandardne dimenzije zaokretnih vrata:
dostupne širine: 650/800/1000/1200mm
dostupne visine: 1800/2000/2100/2200mm

RASHLADNI SISTEM

Smart System može biti isporučen u kompletu sa pojedinačnim ili centralnim sistemom hlađenja sa automatskim upravljanjem.



DOORS

Cold room doors are of rolling type with polyurethane filling; equipped with hinges, locking mechanism and rubber profile that provides very good sealing preventing unnecessary energy loss.

The doors are delivered with own door frame mounted directly to the panel of the same characteristics as the wall panel.

Standard dimension of doors: 850x1900mm

Options:
width: 650/800/1000/1200mm
height: 1800/2000/2100/2200mm

COOLING SYSTEMS

Smart System may be delivered in set with individual or centralised cooling system with fully automatic control.

STANDARDNA OPREMA

Standardnu opremu **Smart System** komora čine sledeći elementi:

Zidni i krovni paneli

Okretna vrata dimenzija 850x1900mm, sa sopstvenim štokom, montirana direktno na panel istih osobina kao i zidni panel. Vrata su opremljena šarkama, bravom za zaključavanje i gumenim kederom.

Sanitarni elementi – lajsne, vođenja i uglovi

Čepovi za pokrivanje rupa

Ključ za montažu

Tehnički crtež i uputstvo za montažu

U opciji sa podom, standardni paket je dodatno opremljen **podnim panelima**.

Kao deo standardne ponude, dostupne su sledeće dimenzije:

Debljina panela: 80mm i 120mm

Visina panela: 2000mm, 2400mm, 2800mm i 3200mm

Širina panela: 300mm, 600mm, 900mm i 1200mm

Minimalna dimenzija komore: 1200x1200mm

Maksimalna dimenzija komore: 5700mmx9900mm

Po posebnom zahtevu klijenta, komore mogu biti izrađene i u nestandardnim dimenzijama.

STANDARD PACKAGE

Standard package of Smart System cold room includes following elements:

Wall and roof panels

Hinged doors equipped with hinges, locking mechanism and rubber profile, dimension of the doors is 850x1900mm

Sanitary elements – profiles and angles

Panel caps

Wrench

Technical drawing and installation manual

If cold room includes floor, standard package is additionally equipped with **floor panels**.

Following dimensions are available in standard package:

Thickness of the panel: 80mm and 120mm

Height of the panel: 2000mm, 2400mm, 2800mm and 3200mm

Width of the panel: 300mm, 600mm, 900mm i 1200mm

Minimum dimension of cold room: 1200x1200mm

Maximum dimension of cold room: 5700mmx9900mm

Panel dimensions can be modified in accordance with individual requests of clients and chamber dimensions.

**DODATNA OPREMA/
ACCESSORIES**



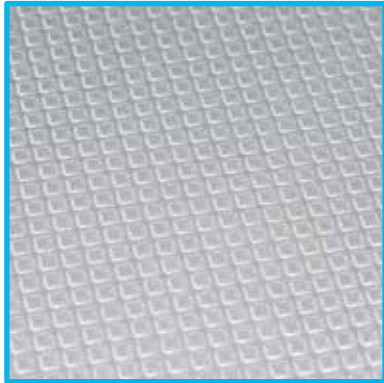
**Nestandardne obloge zidnih/plafonskih
panela ili vrata/
Non-standard lining of wall/ceiling panels
or doors**

INOX AISI 304 završne obrade Scotch brite,
debljine 0,6mm, sa zaštitnom folijom/
INOX AISI 304 finished with Scotch-Brite
treatment, thickness 0,6mm with protective film



**Nestandardne obloge
podnih panela/
Non-standard lining
of floor panels**

Aluminijumski rebrasti
lim debljine 2/3mm/
Aluminium ribbed sheets
with thickness of 2/3mm



**Nestandardne obloge
podnih panela/
Non-standard lining
of floor panels**

INOX AISI 304,
dekorativni lim
debljine 0,8mm/
INOX AISI 304 stainless
sheet steel with
thickness of 0,8mm

**Brave za vrata/
Hinges**

dostupne i u
inox verziji/
available in
inox version



**Kederi za vrata
i podove/**

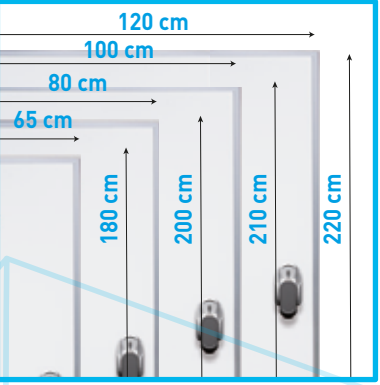
**Rubber
for doors**

Keder za plusnu komoru
Keder za minusnu komoru
Podna guma za
plusnu/minusnu komoru

Rubbers for plus regime
Rubbers for minus regime
Floor rubber for
plus/minus regime

**DODATNA OPREMA/
ACCESSORIES**

**Nestandardne
dimenzije
okretnih vrata/
Additional
dimensions for
hinged doors**



**Grejač štoka/
Door heater**

20W/m
30W/m
40W/m

DODATNA OPREMA/ ACCESSORIES



Trakaste zavese/
Strip curtains

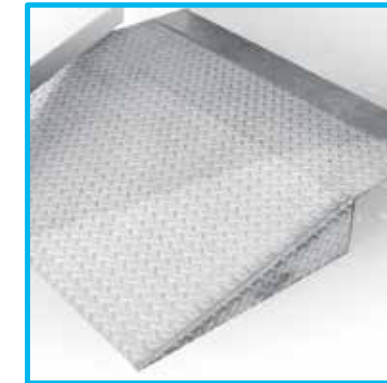


Ključ za sastavljanje panela/
Wrench for installation

Ventil za
izjednačenje
pritiska/
Compensating
valves



Ulazna rampa od inox-a
sa nagaznom podlogom
od aluminijuma/
Threshold made
of inox with aluminium base



DODATNA OPREMA/ ACCESSORIES

Police za komoru /
Shelves



INSTALACIJA

Površina na kojoj će biti montirana rashladna komora mora biti glatka i nivelisana.

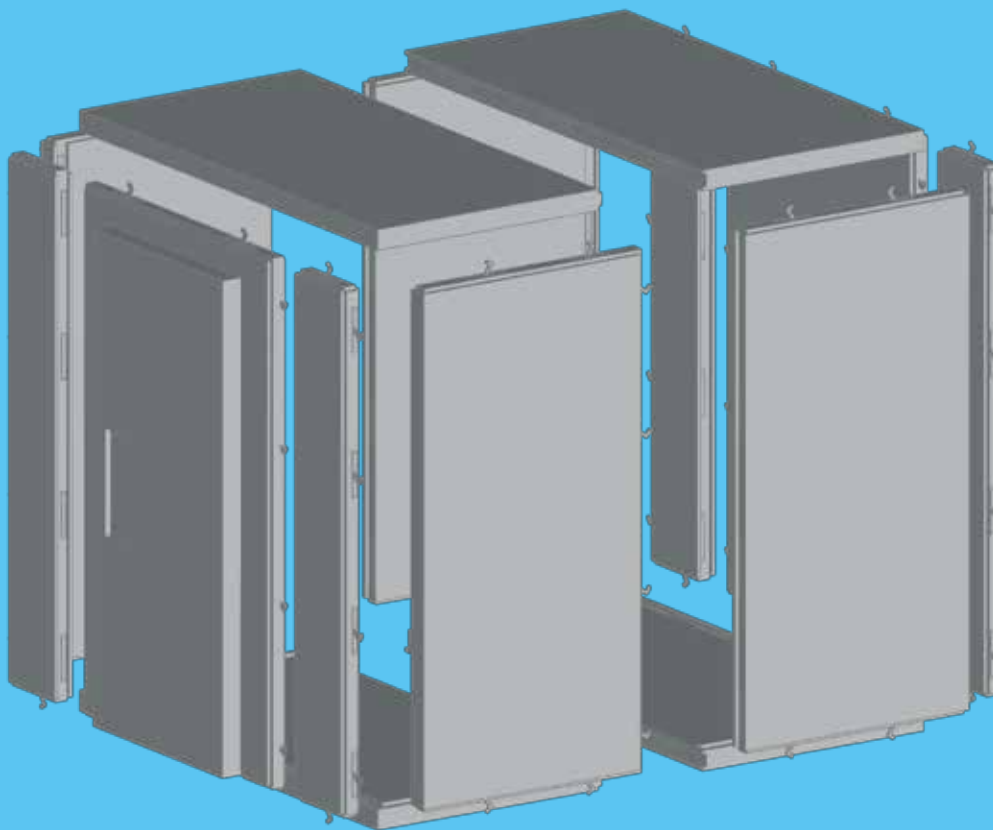
Smart System je vrlo jednostavan za montažu, ne zahteva mnogo vremena i vrši se prema dostavljenim upustvima koji su sastavni deo svake isporuke.

Paneli se montiraju pomoću posebnog sistema zaključavanja, ugrađenog prilikom izrade samih panela (tzv. muško-ženski spoj). Pored fleksibilnosti i brzine u sastavljanju, ovim sistemom ostvaruje se maksimalna izolacija i sigurnost duž svih spojeva.

Za potrebe montaže nije potreban alat izuzev ključa za montažu, koji se isporučuje u sklopu komore.

Sistem može lako biti izmešten, što omogućava dodatnu fleksibilnost.

Molimo Vas da imate u vidu da bi sve elektro radove, kao na primer radove na montaži grejnog kabla trebalo da izvodi kvalifikovano osoblje.



INSTALLATION

Surface where the cooling room will be installed must be smooth and levelled.

Smart System is very simple regarding mounting procedure; it does not take time and is done in accordance with instructions that are integral part of each delivery.

Panels are mounted by special locking system installed during manufacture (so called Gender connection). In addition to flexibility and fast assembly, this system provides maximum insulation and safety along all joints.

There are no tools needed for mounting except the wrench delivered in the set of the cooling room.

System can be easily moved which provides additional flexibility.

Please keep in mind that only qualified staff should mount all electrical works such as for example installation of heating cable.

Prednosti Smart System modularnih komora

- veliki izbor modela i aksesoara
- fleksibilnost u pogledu dimenzija
- jednostavna i brza montaža
- fleksibilno rešenje koje omogućava prenošenje komore sa jednog na drugo mesto
- lako čišćenje jer korišćenje silikona nije neophodno
- praktična i efikasna kontrola temperature

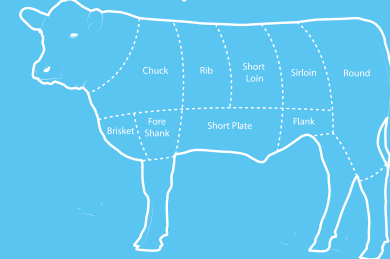
Advantages of the Smart System modular room

- Great models and accessories selection
- Great flexibility regarding dimensions
- Simple and quick mounting
- Flexible solution providing moving the room from one place to another
- Easy cleaning because application of silicone is not needed
- Simple and efficient temperature control

PRIMENA

APPLICATIONS

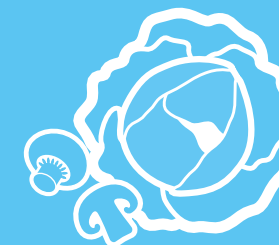
MESO / MEAT



MLEČNI PROIZVODI / DAIRY



POVRĆE / VEGETABLE



VOĆE / FRUIT



RIBA / FISH



MALOPRODAJA / RETAIL



VELEPRODAJA / WHOLESALE



HIPERMARKETI / HYPERMARKETS



HOTELI / HOTELS



RESTORANI / RESTAURANTS





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