TECHNOPOL SA
ENERGY SAVING MATERIALS

TECHNICAL DESIGN GUIDE

Cold Room & Freezer Panels

LiteSpan insulated sandwich panels — walls, ceilings, floors & doors for chiller and freezer rooms

Complete transportable cold room — 1145 mm tongue-and-groove wall and ceiling panels, insulated panel door and a galvanized forklift-channel base frame (Powernex Mozambique project model).

This guide covers Technopol's cold-room and freezer offering built around the **LiteSpan laminated sandwich panel** — coated-steel skins bonded to a fire-retarded EPS, PIR or StoneWool mineral-wool core — together with matching insulated panel doors and floor systems. It sets out the panel range, cores, selection and site-design rules for chiller (+4 °C) and freezer (−20 °C) rooms to the **AAAMSA/TPMA cold-store envelope specification**.

Chiller & freezer rooms | Insulated ceilings | Panel doors | Transportable modules | Cold-store envelopes | Fire-break walls

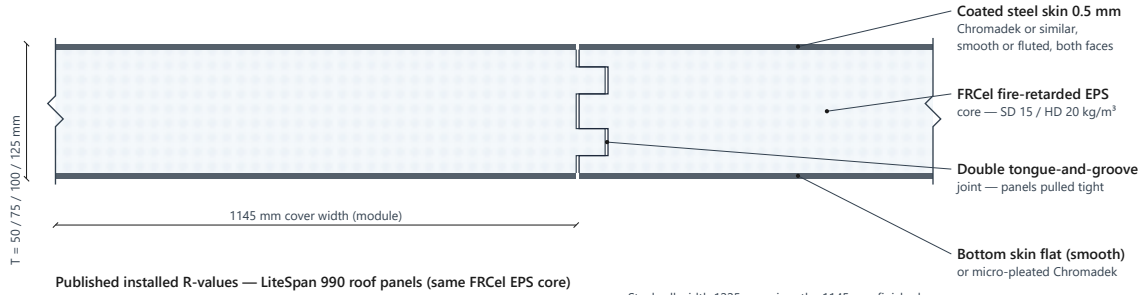
1 · The cold envelope — why laminated sandwich panels

A cold room is only as good as its envelope. Technopol's **LiteSpan** panels are laminated sandwich panels — two coated-steel skins bonded to an insulating core — that form the wall, ceiling and (where required) floor of a chiller or freezer as one continuous, low-conductivity shell. Each panel carries its own insulation, vapour resistance and washable hygienic surface, so a room is closed in quickly on a repeatable **1145 mm** module with no wet trades.

1145 mm	**R 1.43–2.86**	**+4 to −20 °C**	**B-s1,d0**
Wall & ceiling panel cover width (990 mm roof variants)	StoneWool panel 50–100 mm (m^2K/W)	Chiller and freezer rooms, delivered	Reaction-to-fire on FR EPS (not a minutes rating)

LiteSpan EPS panel — section through the joint

1145 mm cover · 0.5 mm coated steel skins · FRCel EPS core · double tongue-and-groove



Published installed R-values — LiteSpan 990 roof panels (same FRCel EPS core)

Core (mm)	75	100	125	150
R-value (m^2K/W)	2.3	3.0	3.7	4.4

No equivalent R table is published for the 1145 mm wall panel — confirm with Technopol.

- Steel roll width 1225 mm gives the 1145 mm finished cover.
- PU6 two-component urethane adhesive, 300–400 g/m² spread (TDS).
- Panels made to measured lengths per project.
- Ceiling variant: single-sided 0.3 mm pleated skin (project-verified).

Reaction to fire: B-s1,d0 (SANS 53501-1, IGNIS report IT 23-08-00009) — a reaction-to-fire classification of the panel and its FRCel core, not a fire-resistance (minutes) rating.

Horizontal section through the vertical joint of two adjacent panels — the 1145 mm module repeats; panel ends shown broken.

LiteSpan panel section through the vertical joint — 1145 mm module, ≥ 0.5 mm coated-steel skins, FRCel EPS core, pulled tight on a double tongue-and-groove.

Cores & joints

- **FRCel fire-retarded EPS** — SD 15 / HD 20 kg/m³; the standard cold-room core
- **PIR** — higher thermal performance (no fire-resistance rating — see §3)
- **StoneWool** — 120 kg/m³ mineral wool, Euroclass A1 non-combustible material
- Skins ≥ 0.5 mm coated galvanized / Chromadek, colour and Z/AZ options
- Joints: **tongue-and-groove** (male/female) plus interlocking **Crocodile Connector** cover channels with stainless pop-rivets

What you gain

- **Fast dry envelope** — walls, ceiling and doors from one panel system
- **Continuous insulation** with low thermal bridging at the joints
- **Hygienic, washable** steel faces for food and cold-store rooms
- **Made-to-measure** panel lengths and insulated doors per project
- **Transportable** modular rooms on galvanized base frames

Design in one line. Choose the core and thickness for the room temperature and span, keep every fixing steel and every rivet stainless, carry coolers and services on the building structure — never on the panels — and make every external vapour seal inspectable.

2 · Panel range, cores & dimensions

Panels are selected by core type and thickness to suit the room temperature, span and any fire requirement. The published capacities below are Technopol's own brochure data; the same panel is supplied in EPS, PIR or StoneWool cores on a 1145 mm wall/ceiling module (990 mm on IBR and standing-seam roof variants).

LiteSpan StoneWool wall & ceiling panel

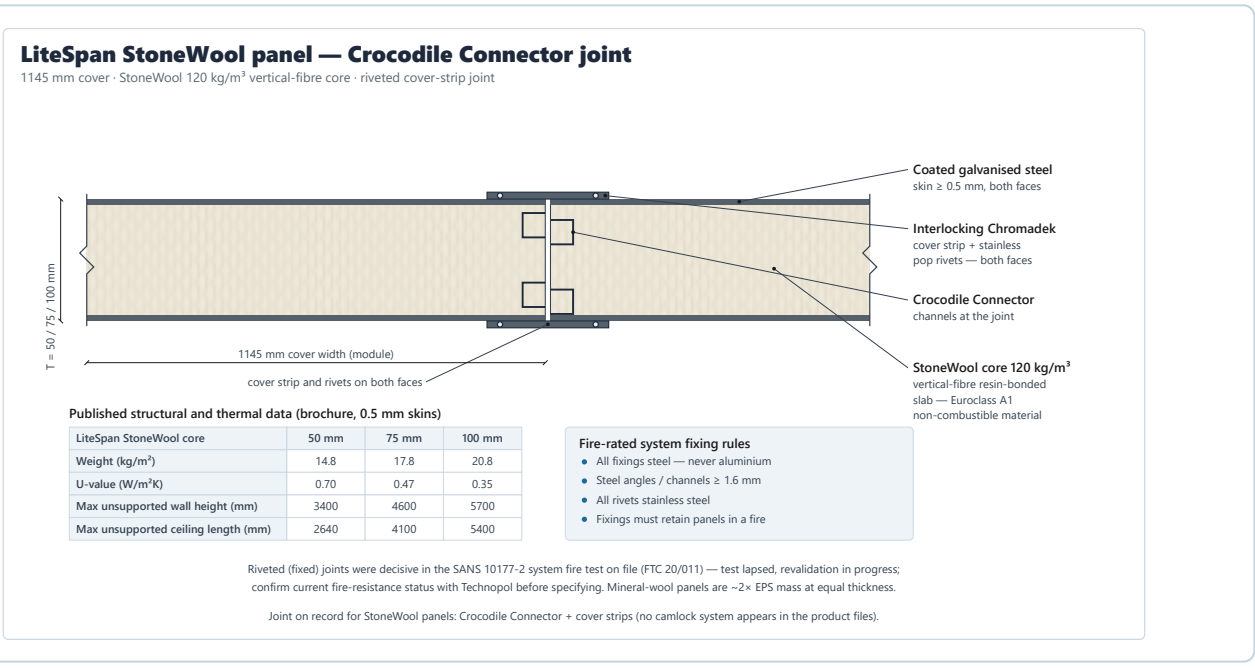
Core (mm)	Weight, 0.5 mm skins (kg/m²)	R (m²K/W)	U (W/m²K)	Max ceiling span (mm)	Max wall height (mm)
50	14.8	1.43	0.70	2640	3400
75	17.8	2.14	0.47	4100	4600
100	20.8	2.86	0.35	5400	5700

Verified from the LiteSpan StoneWool Wall Panel brochure. Core 120 kg/m³ mineral wool, λ ≤ 0.035 W/mK, Euroclass A1. (Brochure U/R column headers are transposed against the printed values; the physics-correct assignment is shown.)

LiteSpan 990 roof panels — installed R-value

Core (mm)	75	100	125	150
Installed R-value (m²K/W)	2.3	3.0	3.7	4.4

IBR and standing-seam roof panels, FRCel fire-retarded EPS core, 990 mm cover (standing seam = 2 × 495 mm pans, hidden-clip site-seamed). An allowable-load (ASD) chart per span is printed in the brochures.



StoneWool panel at the Crocodile Connector joint — riveted cover strips both faces, with the brochure weight / U-value / max-span table and the steel-only, stainless-rivet fixing rules.

As supplied on cold-room projects. Wall panels 1145 mm cover × 2500 mm high, cores 75 / 100 / 125 mm; matching ceiling panels supported on the perimeter walls; panel-calc inputs EPS 20 kg/m³ (HD), 0.5 mm skins (1225 mm roll → 1145 mm cover). No temperature-to-thickness table is published yet — confirm selection with Technopol.

Standard skin colours

- Frost White
- Dove Grey
- Sandstone Beige
- Anthracite Grey
- Quartz Grey
- Signal Brown

Dark Dolphin appears on the colours sheet but not the roof brochures — confirm the current standard range with Technopol.

3 · Design & site considerations

Thickness for temperature

Match the core and thickness to the room. Delivered projects use 75 / 100 / 125 mm cores across chiller (+4 °C) and freezer (−20 °C) rooms, with the coldest rooms taking the thicker cores. Confirm the final selection with Technopol.

Spanning & support

Use the published capacities — StoneWool max unsupported **ceiling 2640 / 4100 / 5400 mm** and **wall height 3400 / 4600 / 5700 mm** for 50 / 75 / 100 mm, and the 990 roof allowable-load chart. On small rooms the ceiling bears on the perimeter wall panels (min **50 mm** bearing).

Ceiling & cooler loads

Evaporators, coolers, meat rails and walkways are **dead load carried by the building structure or an independent frame — never by the panels** (AAAMSA/TPMA). Ceiling hangers stainless, aluminium or hot-dip-galvanized only, stressed to **≤ 1/3 of ultimate**, insulated and vapour-sealed.

Vapour control & condensation

The warm side is the outside. Keep the vapour seal continuous and **inspectable** at every external joint; insulate and seal all hanger and penetration points. Ventilate the void between an insulated ceiling and the roof sheeting; keep gutters external with weir overflows.

Fixings & metals

All fixings **steel, not aluminium**; steel angles/channels **≥ 1.6 mm**; **all rivets stainless**. Avoid dissimilar-metal (steel–aluminium) contact to prevent galvanic corrosion.

Thermal movement & floors

Unprotected external faces can reach **90 °C** — check thermal bow/stress. Restrain walls against buckling and secure the wall base against progressive collapse. Freezer floors need an insulated build-up with vapour membranes and, for hard-frozen rooms, sub-slab heating (see §4.2); floor-panel density and load rating to be confirmed with Technopol.

Fire — what may be claimed. Technopol's FRCel fire-retarded EPS core and the LiteSpan panel built on it carry a **Class B-s1,d0** reaction-to-fire classification to **SANS 53501-1** (test report IT 23-08-00009) — lowest smoke, no flaming droplets. This is a **reaction-to-fire material class, not a fire-resistance (minutes) rating**. A StoneWool mineral-wool core is **Euroclass A1** non-combustible as a material. EPS and PIR cores are combustible; where a fire barrier is required use a StoneWool core or add a Firestop board and design the fixings to hold the panels in place during a fire. Historic SANS 10177-2 **fire-resistance certificates have lapsed and are being revalidated — do not rely on a minutes rating** until a current certificate for the specific build-up is confirmed. The PIR-cored panel **did not achieve a fire-resistance rating** in test; no FR rating may be claimed for PIR.

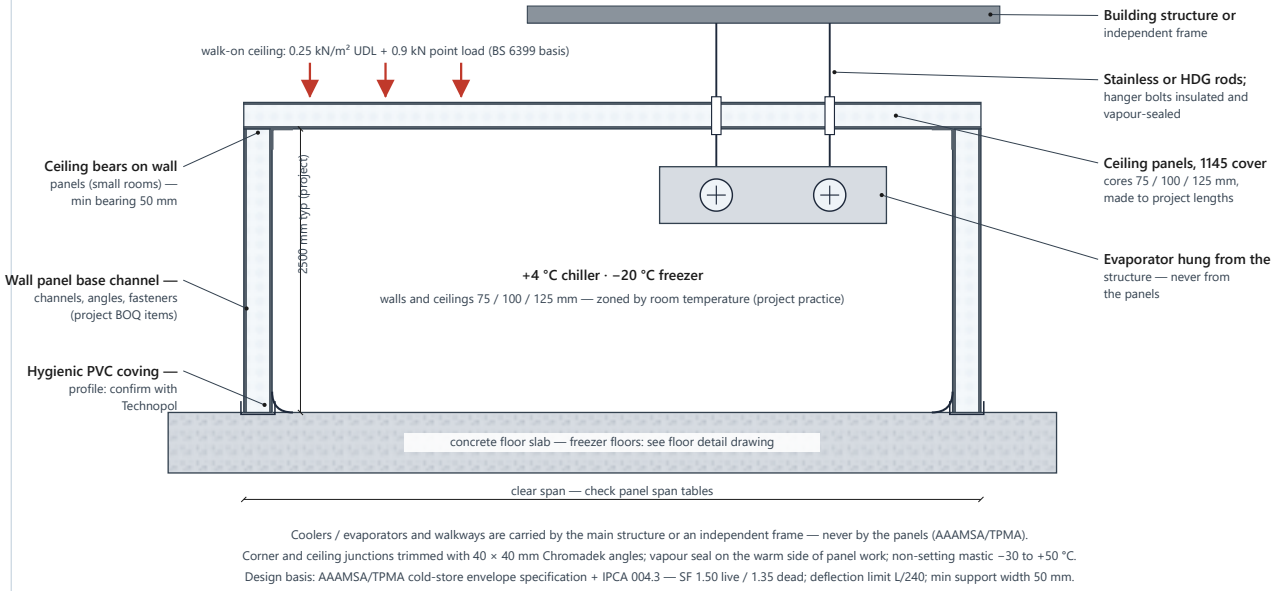
Design basis: AAAMSA/TPMA General Specification for Cold Store Envelopes (2006); support steelwork to SANS 10162-2 / 10160 / 10100 / 1200H(A); walk-on ceiling load case 0.25 kN/m² UDL + 0.9 kN point, SF 1.50 live / 1.35 dead, deflection L/240 (per the AAAMSA extract — confirm the governing clause). Cold-room sandwich panels are not an Agrément-certified line (certificate 2020/609 covers the LiteCore Building System only).

4 · Application details

4.1 Typical cold room cross-section

Typical cold room — cross-section

Wall and ceiling panel assembly · structure-hung cooling · hygienic junctions



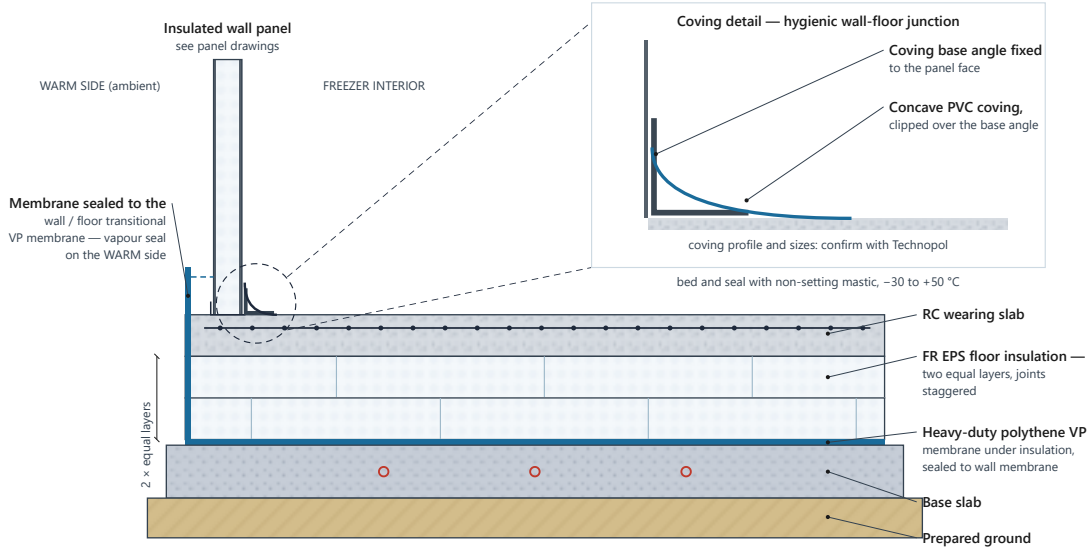
Coolers / evaporators and walkways are carried by the main structure or an independent frame — never by the panels (AAAMSA/TPMA).
Corner and ceiling junctions trimmed with 40 × 40 mm Chromadek angles; vapour seal on the warm side of panel work; non-setting mastic −30 to +50 °C.
Design basis: AAAMSA/TPMA cold-store envelope specification + IPCA 004.3 — SF 1.50 live / 1.35 dead; deflection limit L/240; min support width 50 mm.

Ceiling bearing on perimeter walls (50 mm min), evaporator and stainless/HDG hangers carried by the structure, hygienic PVC coving; +4 °C chiller / −20 °C freezer zoning — AAAMSA/TPMA design basis.

4.2 Freezer floor & wall-floor junction

Freezer floor and wall-floor junction

AAAMSA/TPMA + IPCA 004.3 basis · two-layer FR EPS floor · hygienic PVC coving

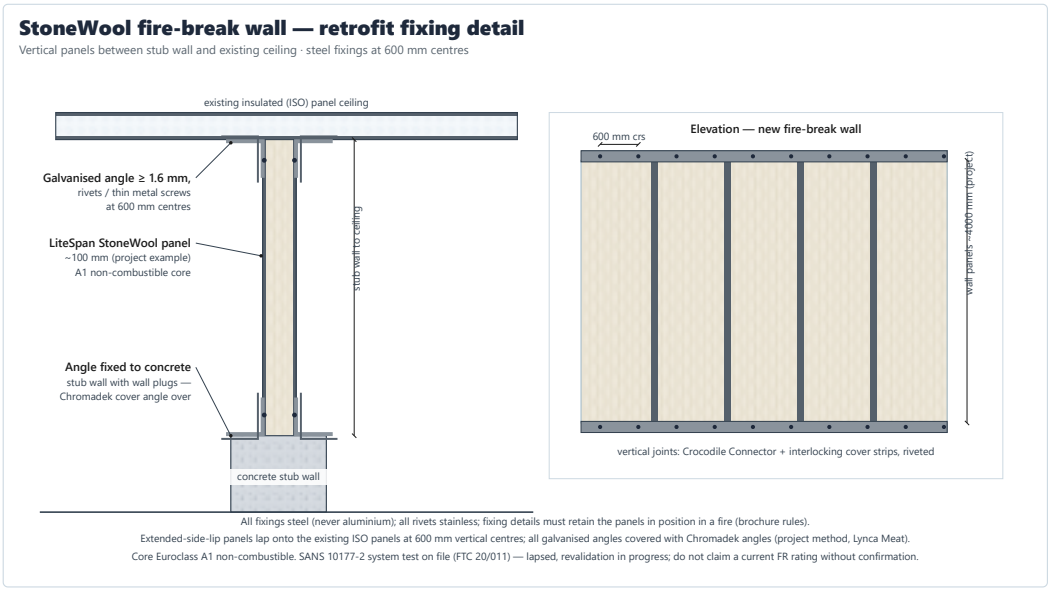


Generic arrangement to the AAAMSA/TPMA specification and IPCA 004.3:2017 — not a standard Technopol detail; confirm the project floor build-up with Technopol.
IPCA prints the membrane thickness as "0.250um" (unit as printed — 250-micron class likely). Freezers also require double-acting pressure-relief ports with heater cables.
Frost-heave prevention (low-voltage or voltage-regulated heater cables, shown in the base slab) is a code requirement for freezer floors — project-specific design.

Two equal FR EPS layers, 0.250 µm polythene vapour membrane sealed to the warm-side wall membrane, heater cables in the base slab and a hygienic PVC coving inset (profile — confirm with Technopol).

4 · Application details (cont.)

4.3 Fire-break wall — StoneWool retrofit fixing



Galvanized angles and Chromadek cover angles at 600 mm centres between a concrete stub wall and the existing insulated ceiling, with riveted Crocodile Connector joints (Lynca Meat method). The FTC 20/011 SANS 10177-2 certificate has lapsed — revalidation pending; do not publish a minutes rating.

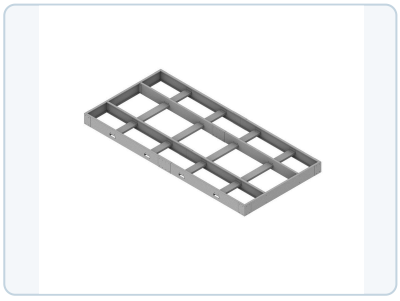
4.4 Insulated panel doors & transportable modules

The **Personal Panel Door** completes the envelope — a made-to-measure laminated panel leaf (24 kg/m³ EPS core, coated-steel skins) hung in a **75 mm lipped-C steel jamb** with a 46 × 3 mm U-channel, stainless lever handle and mortice/cylinder lock, left- or right-handed. It is ordered on a 7-parameter schedule and installed either clipped over the EPS panel wall or inside a brick reveal.

Delivered door size (W×H×core, mm)	Typical use
720 × 2000 × 45	Light personnel door
880 × 2000 × 100	Chiller / freezer personnel door
1200 × 2000 × 100	Wide personnel / trolley access
1500 × 2000 × 100	Double-leaf / trolley access

Transportable modules: length = n × 1145 + 20 mm, a 25 mm thermal cut at the roof/wall junction and a galvanized perimeter base frame with forklift channels (see photos).

Insulated panel door in an EPS panel wall — aluminium frame, stainless furniture.



Galvanized floor base frame with forklift channels.

5 · Construction, QA & delivered projects

Fixing & installation

- Set out on the perimeter base channel; pull each **tongue-and-groove** joint tight
- Close joints with interlocking **Crocodile Connector** cover strips, **stainless pop-rivets**
- All fixings **steel**; angles/channels **≥ 1.6 mm**; trim corners/junctions with 40 × 40 mm Chromadek angles
- Bed ceiling panels on the wall panels (min 50 mm) — coolers and services off the structure
- Form the **25 mm thermal cut** at roof/wall on modules; add a 20 mm roof wedge for fall
- Add a **15 mm Firestop board** where local fire protection is needed

Quality & protection

- Design to the **AAAMSA/TPMA** cold-store envelope spec; support steel to the SANS codes in §3
- Vapour seal **inspectable** at every external joint; seal all penetrations
- Ventilate the ceiling/roof void; keep gutters external with weir overflows
- Non-setting mastic rated −30 to +50 °C at panel work
- Store panels flat; protect from weather and direct sunlight before fixing
- Confirm delivered core density / thickness against the specification

Delivered & specified projects

Evidence is layout drawings, BOQs, quotes and CAD renders on file — not site photographs; installation completion is to be confirmed with Technopol.

Project	Scope
Powernex — Exquisite Spices, Mauritius (2026)	Processing & cold-room envelope in 1145 mm panels; walls 2500 mm, 75/100/125 mm; +4 °C processing / −20 °C smoking rooms; 4 insulated doors
Powernex — Mozambique modular cold rooms (2024)	Two ~2.5 × 6 m transportable units; PA + chiller doors; 15 mm Firestop over EPS panel; insulated floor cassette on galvanized forklift-channel base
Powernex — Inzovu supermarket, Africa	Back-of-house positive/negative cold rooms, insulated ceilings, insulated pivot/sliding & swing doors, strip curtains, drainage
Johan Rieckert — meat processing plant	Receiving/dispatch cold rooms, dispatch freezer, cooling tunnel/shower, processing & packaging — walls in 75 mm panels
Greenhouse Projects (2026)	5800 single-sided LiteSpan ceiling panels 1145 × 63 mm (0.3 mm FW skin, 24DV EPS core)
NuClad StoneWool overclad	Cold-room lining hung on an external steel frame — mineral-wool fire upgrade (render + model on file)

6 · Cold-room panels in the field

Technopol LiteSpan panels and insulated panel doors on South African work — coated-steel sandwich panels closed on a 1145 mm module into hygienic, insulated walls, ceilings and doors for chiller, freezer and food-processing rooms.

Panel building — crisp corner and module lines on LiteSpan T&G wall panels.

Elevation — panel walls with roof-panel overhang and flashing.

Interior — long white insulated wall-to-ceiling lining.

Panel module — two LiteSpan panels joined; fluted and smooth skins.

Door furniture — stainless lever and lock plate on a panel-door skin.

Door hinge — stainless butt hinge on the aluminium jamb.

Bring your cold room or freezer to Technopol — core & thickness selection, panel & door schedules and site support · info@technopol.co.za · +27 11 363 2780 · technopol.co.za