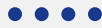


Industrial Storage & Warehouse Solutions





**" Storage Racking Solutions to
meet all your Needs "**



TSSC, a key member of the reputed Harwal Group and the largest composite panel's manufacturer in the Middle East is an acknowledged industry leader in the manufacturing sector. Since its commencement in 1962, the company has evolved as a manufacturer offering nearly 27 different product lines across 8 different business units.

Operating from its facilities located in Dubai, Sharjah, Abu Dhabi, Riyadh and Moscow TSSC produces a range of FM approved insulated panels for buildings & cold stores. Cold Rolled Steel Structures, Decking Profiles, Partition Walls, Structural Walls, Standing Seam Roofing and GRP Skylights complement the range of building solutions. Prefabricated Buildings, Specialized Shelters, Customized Container Units are also erected by TSSC. The company also provides solutions for the cold Chain industry with the production of Cold Stores and Refrigerated Vehicles, complemented by a range of Industrial Racking systems.

Racking System

TSSC is the leading manufacturer of racking systems offering a range of customized industrial storage & warehouse solutions to meet all storage needs. The racking systems can be broadly classified as

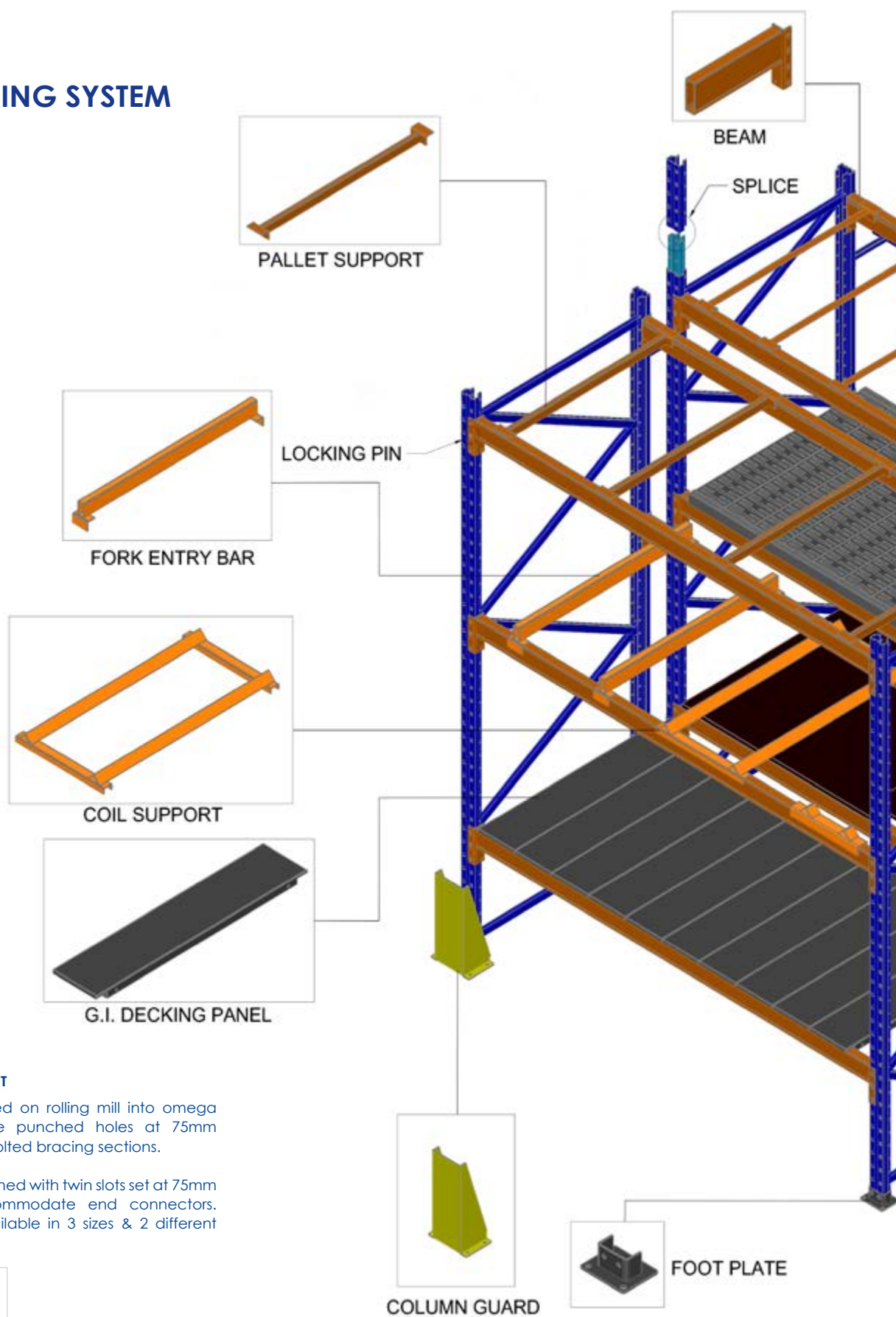
- Selective Pallet Racking
- Drive In Pallet Racking
- Very Narrow Aisle Pallet Racking
- Double Deep Pallet Racking
- Multi-tier Racking
- Boltless Shelving

With state of the art manufacturing and storage facilities spread across Sharjah and Dubai in UAE, TSSC can meet any volume requirement in tight timelines. The facilities are equipped with fully automated powder coating line and fabrication units.

TSSC's pallet racking storage systems are designed to allow maximum space utilization within any facility and conform to international standards. Our pallet racking systems are robust, safe, versatile and expandable.

TSSC follows ISO 9001:2008 quality management and delivers products with consistent quality standards. We differentiate our products from our competition with the use of high quality materials and accessories. In addition to the standard items we offer, our engineering department custom designs for our customers anything from a single rack component to an entire warehouse system.

TSSC RACKING SYSTEM

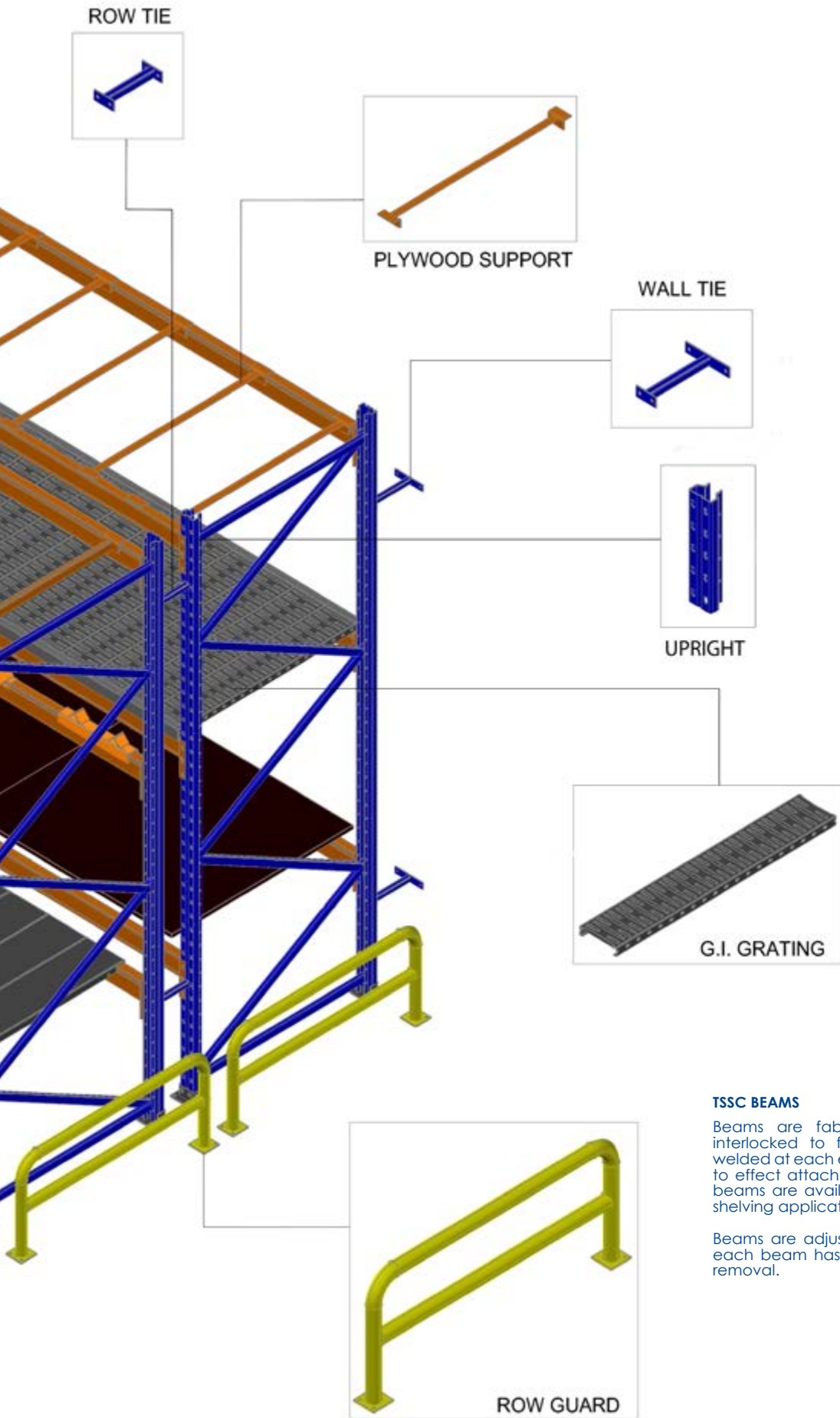


TSSC RACKING UPRIGHT

Upright is cold formed on rolling mill into omega profile, flanges have punched holes at 75mm spacing to accept bolted bracing sections.

The front face is punched with twin slots set at 75mm increments to accommodate end connectors. TSSC frames are available in 3 sizes & 2 different gauges

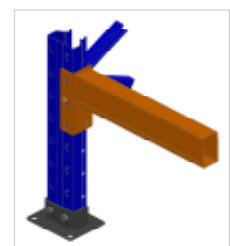




TSSC BEAMS

Beams are fabricated from twin 'G' section, interlocked to form rectangular box section & welded at each end to compatible steel connector to effect attachment to the frame. Open section beams are available for light duty pallet loads or shelving applications.

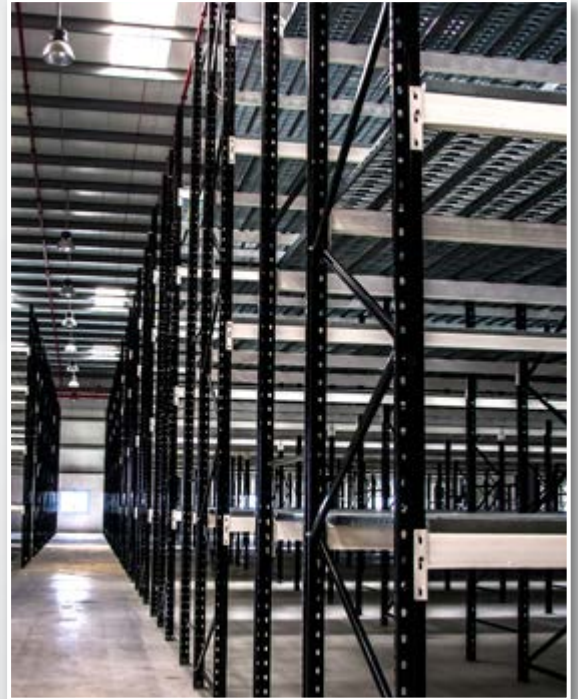
Beams are adjustable on vertical pitch of 75mm. each beam has steel lock to prevent accidental removal.



Selective Pallet Racking

TSSC selective racking is the most cost effective storage system requiring minimum capital investment. It provides 100 % accessibility & allows excellent stock rotation by providing direct access to all pallets. Pallets can be located, accessed & moved individually, allowing rapid handling of palletized goods.

With the system being adjustable & offering wide range of options & components, it is equipped to accommodate specialized load types.





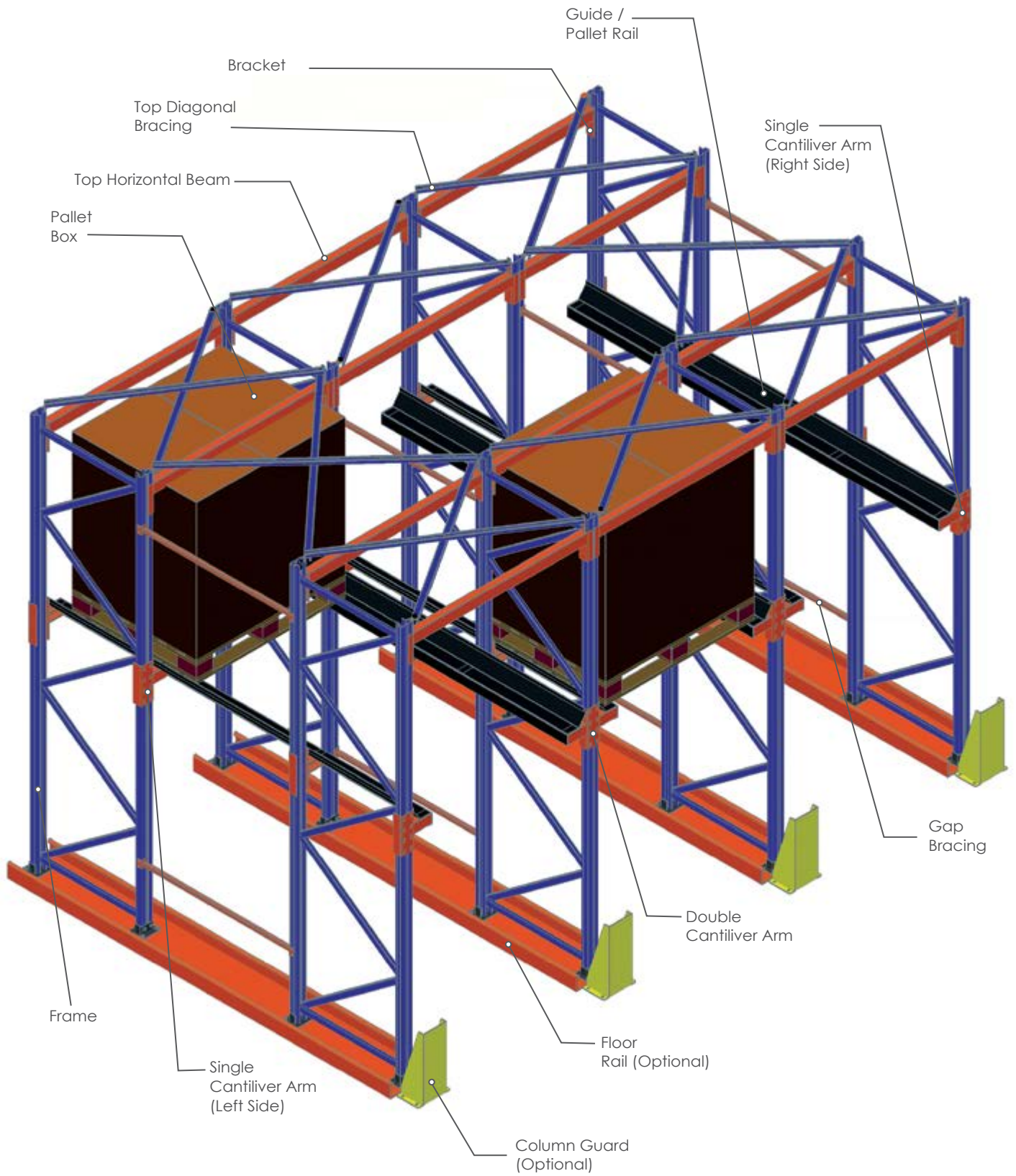
Drive-in Racking

Drive-in and Drive-through (sometimes spelled Drive-thru) are storage rack configurations that allow the forklift to drive directly into the lane of stacked rows (called a bay). Depending on whether the bay has entry at only one end or at both ends, the system nomenclature becomes drive-in or drive-thru pallet rack system. The difference between a drive-in and a drive-thru pallet rack system is simply whether the bays have an entry at only one end, or at both ends.

Drive-in rack systems use a common entry and exit. As the drive-in racking system has only one entrance, it uses the storage method called LIFO (last in, first out). The last pallet put into a row is the first one to be taken out.

A drive-thru storage system, with two different entry points, can also be used as a FIFO (first in, first out) storage method. The first pallet put into a row is the first one taken out from the other end. This system is most suitable for storing material with quick expiration date and wherever shelf life is a major concern.

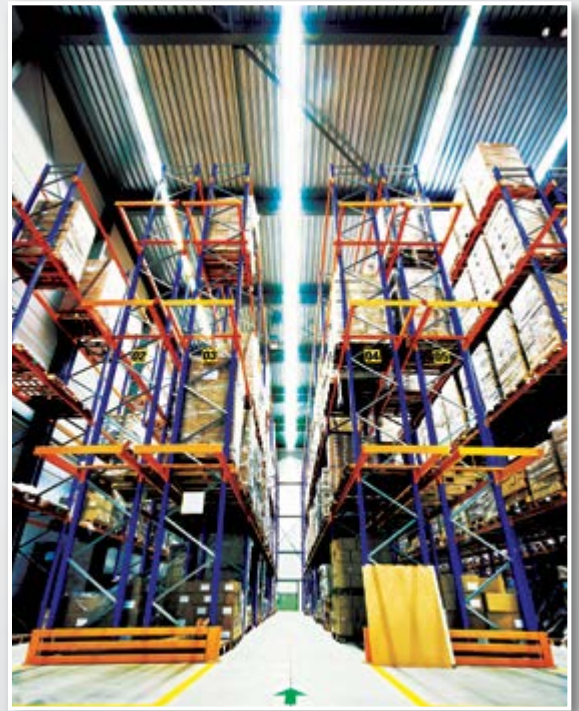




VNA Pallet Racking

VNA (Very Narrow Aisle) racking system makes optimum use of floor area & roof height while providing high density storage with %100 accessibility & good stock rotation at the same time.

The system is served using specialized high lift fork and rotating material handling devices operating in very narrow aisles. The benefit of this is saving up to 50 % in aisle width when compared to counter balance fork lift, by achieving up to double the stack height.





Double Deep Pallet Racking

In cold storage applications, where space costs a premium, double-deep racking system generates considerable cost savings. Double-deep racking is the most effective storage system in situations where stock requires to be moved quickly.

The use of double-deep stacking increases warehouse capacity by up to 30 % compared to single-deep warehouse system. The fact that the telescopic fork lifts reach twice as far as normal fork lifts from one side allows the racking at each side of the aisle to be doubled. In comparison to drive-in, which is a narrow aisle racking and also requires specialized warehouse trucks Double Deep Pallet racking offers better accessibility.





Multi-Tier Rack Supported Mezzanine

TSSC Multi-tier racking system is the fastest way to add extra floor space within the shade of an existing building. It allows businesses to double their floor space without changing premises. It also allows to create separate zones within one centralized facility so that separate areas can be created depending on requirement.





Boltless Shelving

TSSC boltless shelving is an innovative modular design that will save you time, hassle and money. It is quick to install, provides versatile storage applications and can be readily expanded to accommodate growing storage needs.

This type of shelf can accommodate three different loads; 100kg, 200kg and 300 kg and is available in widths of 1000mm , 1300mm and 2000mm. The total bay can support loads from 800kg up to 1600 kg with a risk factor of 1.6. In order to adapt to ever-changing needs, these shelves are height adjustable and can be altered in increments of 25 mm. The Beams and Uprights form a solid force-fit connection that provides excellent lateral stability.



Galvanized Gratings

Features:

- Standard Size- 3,000mm L x 200mm W x 40mm H (Length can be up to 6 meters)
- Load capacity ranging from 500kg to 1,000 kg UDL per square meters with an unsupported length of 1,000mm.
- Non-standard lengths available.
- High abrasion and corrosion resistance.
- Slotted design for better lighting.
- Ideal for mezzanine floors, walkways, staircases and beam level.



Powder Coating

TSSC Powder Coating stands out in the market for its highest standards of powder coating finish. This is achieved through an elaborate eco-friendly pre-treatment process followed by powder coating using our fully automated coating facility.

The surface preparation of the pretreatment plays a vital role which affects the long-term performance of the product in terms of durability and esthetic appearance. All TSSC components are subjected to an eight-step pre-treatment, which consists of Degreasing, Pickling, and Phosphating. This elaborate process removes all traces of oil and grease, mil scales and rust and provides a layer of Iron Phospahe which acts as an anti rust layer.

Due to our elaborate pre-treatment and powder coating process, all our components possess the following properties.

- High impact resistance
- No runs or drips
- Better scratch resistance
- High abrasion resistance
- Excellent color retention

Subsequent to the pre-treatment process the components are coated with epoxy polyester powder to a thickness of 50-60 micros and it is followed by baking them in the oven.

The standard color scheme is as follows:

Frame : RAL 5005 Blue

Beam : RAL 2000 Orange

Other colors are available upon request



Certificates

TÜV SÜD MIDDLE EAST L.L.C.

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Tel : +971 4 3003442 Fax : +971 4 3003072 P.O. 528152
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توف سود ميديال ايست ذ.م.م.

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هاتف : +971 4 3003442 فاكس : +971 4 3003072
رقم الرخصة : 528152

REGISTERED CERTIFICATE OF THIRD PARTY WITNESS
FOR
STATIC STEEL PALLET RACKING SYSTEM TESTS

THIS IS TO CERTIFY that the undersigned representative of this organization, did, at the request of
INTERMETAL LTD, P. O. Box: 22285, Sharjah, U.A.E., assessed on the **16/May/2009**, at their factory in
Sharjah Industrial Area 1, to carry out witnessing of Design Tests for Steel Pallet Racking System based
on FEM 10.3.02 (April 2002 Edition), and report as under:

1. Scope of witness:
Witness for design tests of static steel pallet racking system.
Relevant standard :
FEM 10.3.02 (Version 1.02) standard
"Code of Practice for the Design of Static Steel Pallet Racking"

2. Material description:
Uprights & beams, steel structure manufactured using ASTM A570 Grade 50 material.
Following is the range of products and components tested:

Uprights	U 90	U 100	U 120
Beams	OB 80 BB 110	BB 90 BB 120	BB 90 BB 140 BB 150
Beam End Connectors	3 Lip	4 Lip	Lock

3. References:

- ✓ Calibration certificates for the testing machines
- ✓ Mill test certificates of ASTM A570 Gr 50
- ✓ Material certificates of footplates, connectors and lock pins.
- ✓ Quality plan – QR IR-01.
- ✓ Design manual – DM IR-01.
- ✓ Design drawings for : Uprights & Beams & connectors.

All the above mentioned references has been reviewed & checked by
TUV SUD MIDDLE EAST
And found **satisfactory & valid**

The certificate is issued subject to the condition that it is understood and agreed that nothing in this report shall be deemed to release any designer, manufacturer, seller, supplier, installer or operator of any materials, equipment or system and TÜV Süd Middle East L.L.C. shall be limited in its liability in connection with its activities, agents and representatives, under no circumstances whatsoever and TÜV Süd Middle East L.L.C. shall be liable for any type of damage to any person, or occurring to result of negligent operation or any defect in materials, equipment, equipment, machinery or machinery, equipment or system, except as expressly stated in writing and any other terms registered by TÜV Süd Middle East L.L.C. certificate.
Tuv sud: 5003-080-0009 DOC NO: QP-OC-00

CERTIFICATE NO. IS 180-0230

4. Results:

The drawings reference no : **SPRS/CDRG/07/001 to SPRS/CDRG/07/019 satisfactory**
The calibration certificates for the testing machine and its parts **satisfactory**
The test result summary for the materials above and the report no : **RTR 001 satisfactory**
Test Reference Nos. :

TEST	REFERENCE NO.	SAMPLE TESTED
Stub Column Test	180509 - 001 to 180509 - 003	U90
	180509 - 004 to 180509 - 006	U100
	180509 - 007 to 180509 - 009	U120
Distortional Buckling Test	180509 - 010 to 180509 - 012	U90
	180509 - 013 to 180509 - 015	U100
	180509 - 016 to 180509 - 018	U120
Shear Stiffness of Upright Frames	200509 - 003 to 200509 - 013	U90
	020609 - 030 to 020609 - 032	OB80
	020609 - 033 to 020609 - 035	BB90
Beam Bending Test	020609 - 033 to 020609 - 035	BB90
	020609 - 016 to 020609 - 018	BB100
	020609 - 035 to 020609 - 037 & 0001	BB110
	020609 - 009 to 020609 - 014	BB120
	020609 - 005 to 020609 - 008	BB140
Upright Frame Bending	020609 - 001 to 020609 - 003	BB150
	180509 - 018 to 180509 - 020	U90
Shear Test - Beam End Connectors	190509 - 001 to 190509 - 005	3 Lip left & right Hand
	190509 - 007 to 190509 - 012	4 Lip left & right Hand
Shear Test - Connector Lock	190509 - 013 to 190509 - 018	Lock using 4 Lip Connector Left and Right Hand

All the required documents has been reviewed and check by TÜV SUD MIDDLE EAST
And found satisfactory, valid and hereby approved

This certificate is valid only for the above mentioned materials
This certificate is invalid in case of any alternation or modification on the design or the grade of the materials.

Inspected by:
FERAS ALKHALAF
Inspection Engineer

Date: 20 May 2009

Approved by:
HOUSSAM ZAMMAM
Division Manager

Tuv sud: 5003-080-0009 DOC NO: QP-OC-0004-02 (REV)

CERTIFICATE

EN ISO 9001 : 2008
Quality Management System

AIB-VINCOTTE International nv/sa

Jan Olieslagerslaan 35, 1800 Vilvoorde, Belgium

This is to certify that **Technical Supplies & Services Co. L.L.C.
(Racking Division)**

Located at **Industrial Area #1, Harwal Showroom
Building, 23rd Street Al Wahda Road P.O.
Box 1818 Sharjah, United Arab Emirates**

has established and maintains a quality system according to the requirements of EN ISO 9001 : 2008 "Quality Management System" for:

Design, Manufacturing, Sales and Installation of Industrial Storage Racking Systems.

This certificate is based on the result of a quality audit documented in the audit report UAE/713/QMS-AS1ext/0817.

Certificate number: 14 QMS 5481a
First Issued: 26 May 2014
Valid from 20 August 2017 to 14 September 2018

Further clarifications regarding the scope of this certificate and the applicability of EN ISO 9001 : 2008 requirements may be obtained by consulting the organization.

This certificate is granted during the Certification Commission of 20 August 2017 and is subject to the General Regulations of AIB-VINCOTTE International nv/sa.



Signed for the certification body:


Bert Janssens
Chairman Certification Committee



Quality Design Standards

All TSSC Pallet racking components comply with strict safety regulations. The design standards that we follow to achieve this comply to:

BS EN 15512:2009

Steel static storage systems- adjustable pallet racking systems – principles for structural design

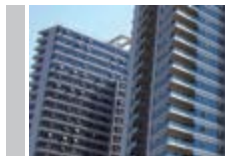


Since inception in 1961, TSSC, a primary member of Harwal Group has been setting manufacturing benchmarks in the region with its engineering excellence. The ISO 9001:2008 certified company manufactures a diverse range of products and offers a range of services from its facilities spread across Sharjah, Dubai and Abu Dhabi. TSSC is the largest manufacturer of insulated panels for roofing and cladding in the Middle East. The building materials manufactured by TSSC are fire rated and carry individual product certifications. With over 4 decades of experience, state of the art manufacturing facilities and the largest production capacity in the Middle East, TSSC manufactures products to international quality standards and cater to customer demands by ensuring timely delivery and providing exceptional service.

Range of Products Manufactured by TSSC

Building Materials

- Composite Panels
- Profiled Cladding Sheets
- Seamless Roofing System
- Glass & Aluminum Systems
- Doors & Windows



Metal Storage Solutions

- Racking Systems
- Metal Sheds



Cold Storage & Transportation

- Cold Rooms
- Freezer Rooms
- Refrigerated Vehicles



Refrigerators & Coolers

- Visi coolers & Freezers
- Water Coolers
- SS Refrigerators & Freezers



Housing Systems

- Affordable Houses
- Modular Houses
- Portacabins
- Prefab Houses
- Telecom Shelters
- Container Converted Units



Stainless Steel Equipments

- Laundry & Kitchen
- Hospital



Services

- Galvanizing





Group HARVAL
 MANUFACTURING TECHNOLOGIES
The leading manufacturing group in the region

Harwal Group is an international manufacturing conglomerate specialized in various manufacturing technologies with headquarters in UAE. With a diverse range of products that serve a spectrum of industries, we build valuable partnerships with our customers and provide them excellent service.

Our Group companies in the Gulf region include Cosmoplast, Interplast, Intermetal, TSSC, Technomec, Emirates Recycling, Union Beverages Factory and Harwal Containers Manufacturing. Collectively they cater to diverse market sectors with a customer base spanning across the Middle East, Europe, USA, Asia Pacific, Africa, CIS and beyond.

In the GCC, Harwal Group is the largest converter of plastic, wood and metals into finished products. Harwal Group productlines comprise of building materials, pipeline systems, electrical and plumbing systems, prefabricated solutions, packaging materials and consumer packaging products, cold rooms & refrigerators, beverages, household and commercial equipments, furniture and other relevant allied manufacturing services. The other operations include luxury yacht chartering & brokerage and manufacturing & supply of industrial machineries which are based outside the Middle East.

Our Group companies lay great emphasis on our core values such as quality, service and dependability in order to achieve our objective of manufacturing innovative and high quality products for our customers. All our companies are ISO 9001:2008 certified and follow stringent quality parameters in manufacturing goods that meet international product specifications and standards.





INDUSTRIAL STORAGE & WAREHOUSE SOLUTIONS

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