

What is CVT?

Developed by Toyota Steel Center, CVT technology enables loading and unloading of dry containers with steel products, heavy machinery, and other heavy loads simply and easily.

As the globalization of the economy advances, more and more goods are handled in international maritime transport.

Voyaging back and forth on many of the major liner routes, container ships play a central role in global logistics.

Heavy loads such as steels and large machinery, however, conventionally required bulk carriers or special containers. Technology did not exist for carrying such large, heavy goods in and out of dry containers.

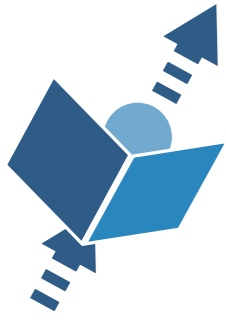
Toyota Steel Center has developed a ground-breaking logistics system that realizes easy and speedy loading and unloading of heavy loads with dry containers.

THAT is Container Vanning Technology—CVT.

History

December	2000	Start of Container Vanning Technology (CVT) operations Transport of steel sheet begun
September	2001	Transport of steel sheet in coils begun
January	2002	Transport of sheet wire rod begun
October	2002	Awarded Japan Logistics Grand Prize
June	2003	Transport of stainless steel wire rod begun
January	2004	Initial shipments of metal molds to North America
January	2005	Total of 5,000 container loads shipped
March	2010	10,000 tons transported monthly
February	2012	20,000 tons transported monthly
November	2012	Second CVT vanning facility set up
February	2013	Cumulative shipments of 1 million tons reached
March	2013	Total of 50,000 container loads shipped
July	2014	30,000 tons transported monthly
March	2015	300,000 tons transported annually
July	2016	40,000 tons transported monthly
March	2017	400,000 tons transported annually





Case Study

Steel Materials

Steel materials are ordinarily transported in bulk vessels. Although containers are used in urgent situations, this results in unsafe operations and increased time for loading and lashing. CVT regularly employs use of dry containers for safe, high-quality transport of steel materials.

Steel Sheet in Coils

Product transported using CVT



Steel sheet in coils

Equipment



Leveling Device



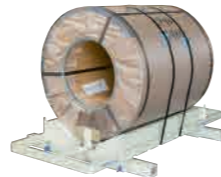
Power Roller

Module pallet

● Pallets can be designed to match the size and shape of the desired cargo



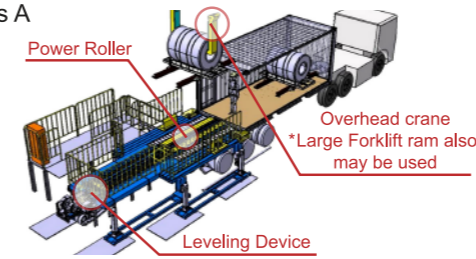
For steel sheet in coils



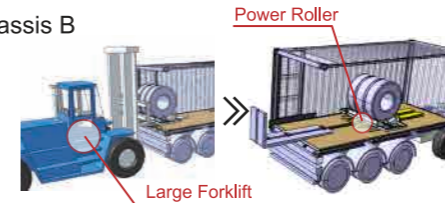
Loading patterns

- Leveling device enables highly efficient on-chassis loading
- Operations may also utilize combination of power roller (simple apparatus)+ large forklift
- CVT systems matched to customer equipment available

On-chassis A

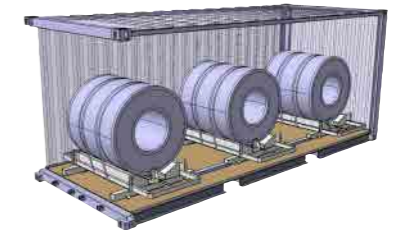
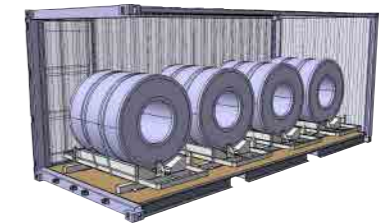


On-chassis B



Container load arrangements

- Row of four module pallets approximately matches 20-foot container inner dimensions
- No lashing whatsoever is required after loading of module pallets
- Spacers (long/short) used with two- or three-pallet loads



Steel Sheet and Wire Rod

Product transported using CVT



Wire rod

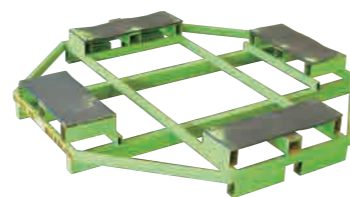


Steel sheet

Module pallets



Stackable pallets for wire rod



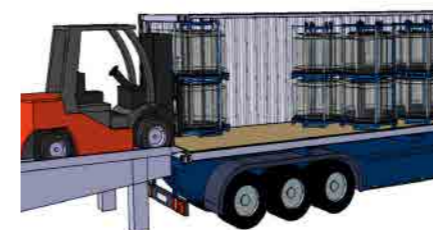
Single-layer pallets for wire rod



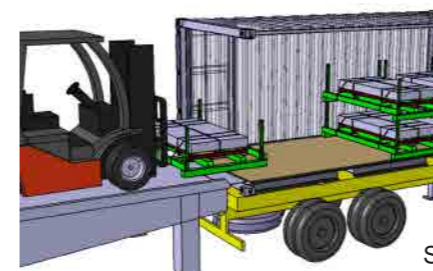
Stackable pallets for steel sheet

Loading patterns

- Specialized pallets loaded with forklift



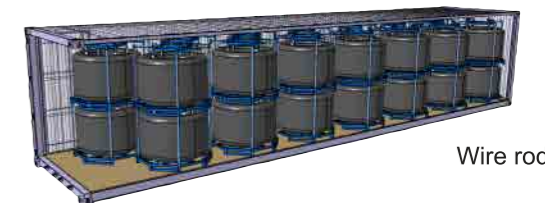
Wire rod



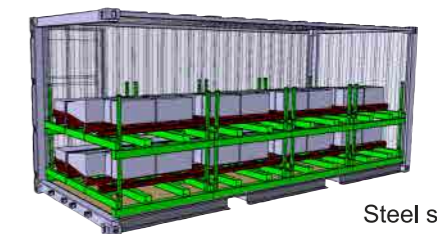
Steel sheet

Container load arrangements

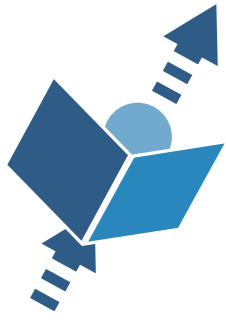
- Wire rods are staggered (partially double-stacked), steel sheets are loaded in rows of four doubled stacks



Wire rod



Steel sheet



Case Study

Molds, Machinery, etc

Metal molds, heavy machinery, and other such loads that do not fit well in dry containers require open top, flat rack, or other special containers.

CVT uses dry containers for more efficient loading and reduced overseas freight charges.

Product transported using CVT

Molds



Long items

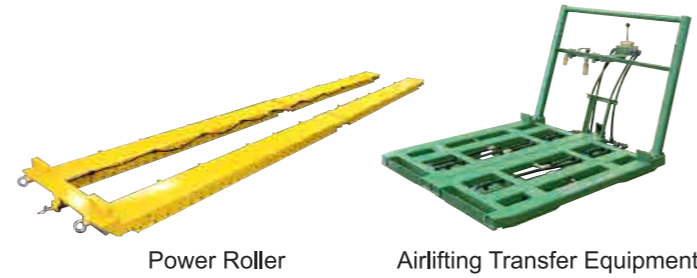


Other large cargo



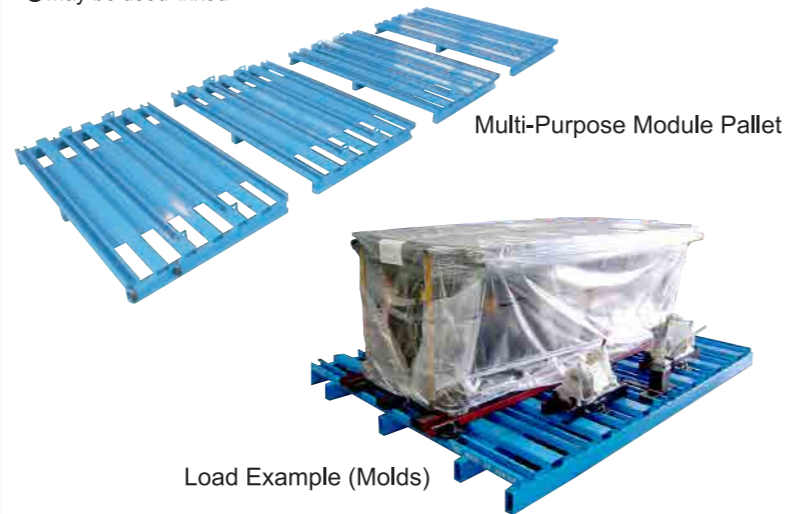
Equipment

- Different length power rollers used to match the cargo being loaded
Ex.) 3 m, 6 m, 12 m
- Loading and unloading may also be performed with hand-operated pallet trucks



Module pallet

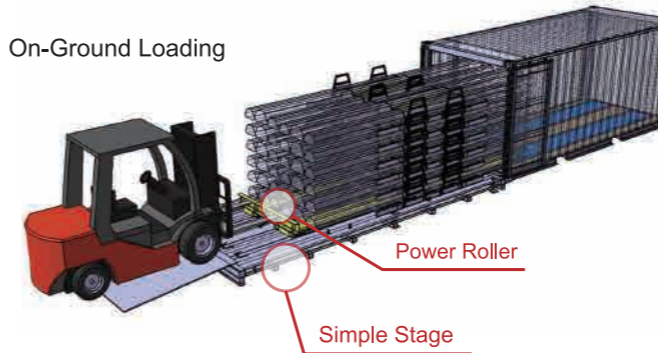
- May be used linked



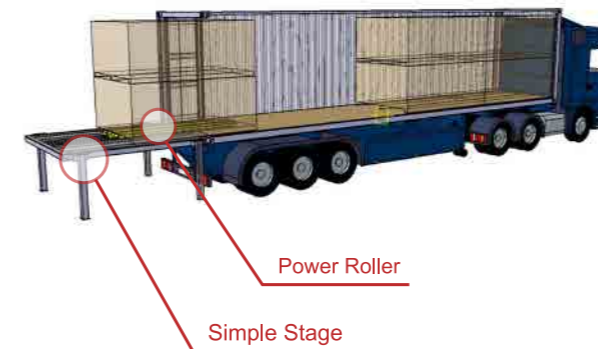
Loading patterns

- Compatible with either on-chassis or on-ground loading
- CVT systems matched to customer equipment available

On-Ground Loading



On-Chassis Loading

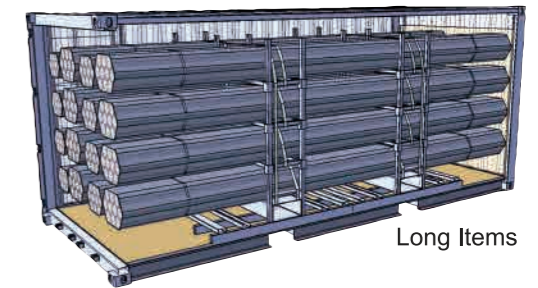


Container load arrangements

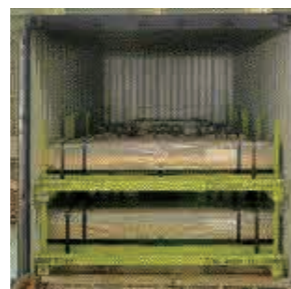
- Compatible with loads fitting in dry containers
- Minimum required height allows cargos to be raised, enabling fullest use of height within the container

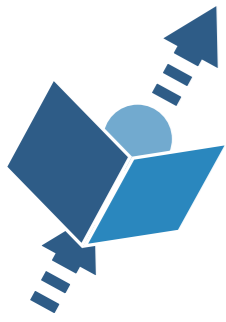


Molds



Long Items






Typical Benefits of CVT


CVT utilizes module pallets and equipment developed by Toyota Steel Center and matched to the particular environment to reduce inventory, improve quality, and resolve other problems that the customer encounters.

Reduced Inventory

The system enables small-lot container shipments, which allows customers to vastly reduce inventory. This also helps reduce both storage space requirements and inventory interest burdens.



Before CVT



After CVT

Improved Quality

CVT utilizes module pallets that are compatible with airtight dry containers and matched to the cargo being shipped, thereby reducing rust, tampering and damage, and deformation and improving quality.



Before CVT



After CVT

Simplified Packaging

The system ensures quality, even with paper or plastic packaging, thus reducing packing and unpacking steps and lowering packaging material costs.




Before CVT




After CVT

Environmental Contribution

Use of module pallets eliminates the need for lashing wood, and the pallets are returnable for reduced resource consumption.




Before CVT




After CVT

Fuller Container Loads

The system maximizes utilization of the container height and width, resulting in more complete use of container space.




Before CVT



After CVT

Reduced Marine Shipping Costs

Utilizing dry containers instead of special containers and reducing the number containers used makes it possible to reduce marine shipping costs.



Before CVT



After CVT

Adapts to Operational Environment

The system can be adapted to the customer's operational environment, including on-chassis or on-ground container loading, indoors or out.



Power Roller + Crane



Leveling Device + Crane



Power Roller + Large Forklift

Easy Equipment Relocation

Installation and relocation of the equipment is simple and easy.



Power Roller











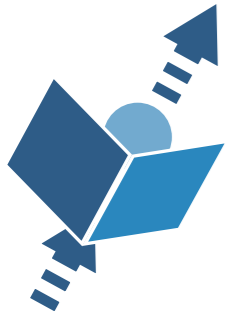
Power Roller (for Long Cargo)



Leveling Device

System Benefits

		Conversion from bulk vessel to CVT	Conversion from container ships to CVT
Reduced inventory		★★★★	—
Improved quality		★★★★	★★★★
Simplified packaging		★★★★	★★★★
Environmental contribution		★★★★	★★★★
Fuller container loads		—	★★★★
Reduced marine shipping costs		★	★★★★
Adapts to operational environment		★★	★★
Easy equipment relocation		★★	★★

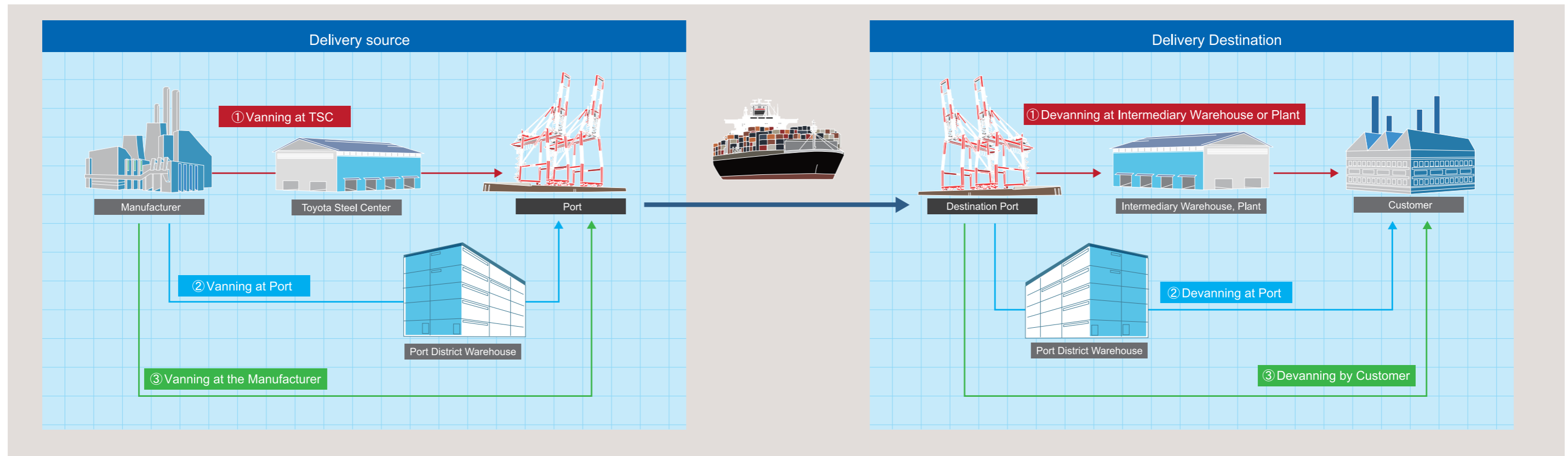


CVT Connects the World

CVT is the secure, high-quality way to deliver products to customers worldwide. It contributes to improved transport not only from Japan, but also among between other countries overseas.

Illustration of CVT Logistics

Enables logistics plans optimized for the customer's location and facilities



From Major Japanese Ports to Points Overseas

Enables shipment from the Nagoya Container Yard and ports throughout Japan



Overseas to Overseas

CVT can also be utilized in transport between overseas bases and within foreign countries



Proven Performance with CVT

CVT is successfully being employed in shipping steel sheet, wire rods, molds, and many other automotive materials and components to customers in countries around the world. Results: 98,000 containers as of 2016 fiscal year end



List of Countries Served





Head Office 33-4 Shinpo-machi, Tokai-shi, Aichi 476-8533, Japan
&
Main Plant TEL:81-52-603-5561 FAX:81-52-601-8374

Tahara Plant 4-1-2 Midorigahama, Tahara-shi, Aichi 441-3401, Japan
TEL:81-531-23-0109 FAX:81-531-23-0520

Patents

Toyota Steel Center's CVT (Container Vanning Technology) transport technology is covered by numerous patents both in Japan and abroad, and we are continuously striving to further improve these technologies.



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CVT®

Container
Vanning
Technology

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