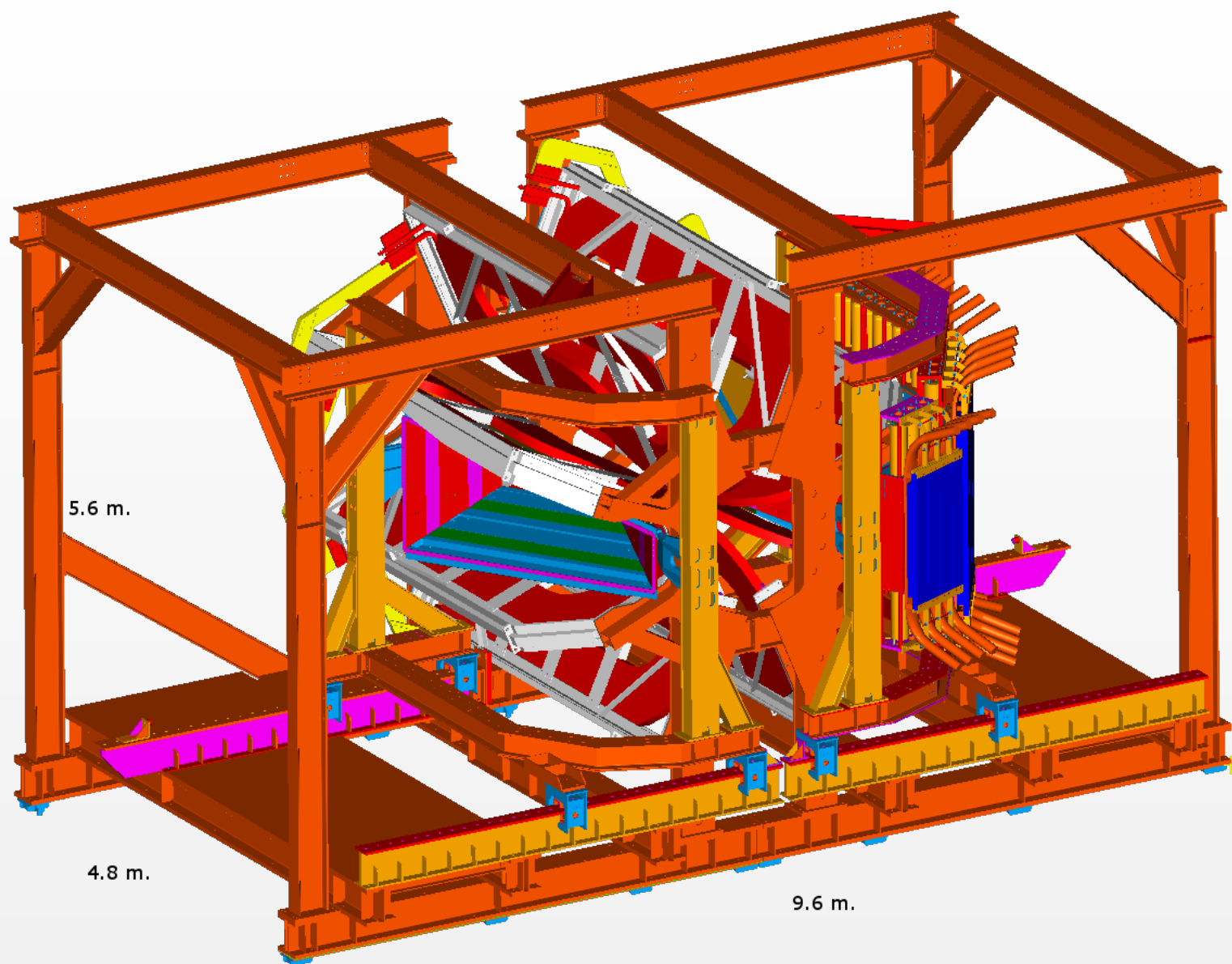


# OLYMPUS Shipping Overview



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# What is being transported?

- Main Support Structure
- Coils and Frames
- Detector Support Structure
- TOF Scintillators
- Drift Chambers
- Internal Gas Target System



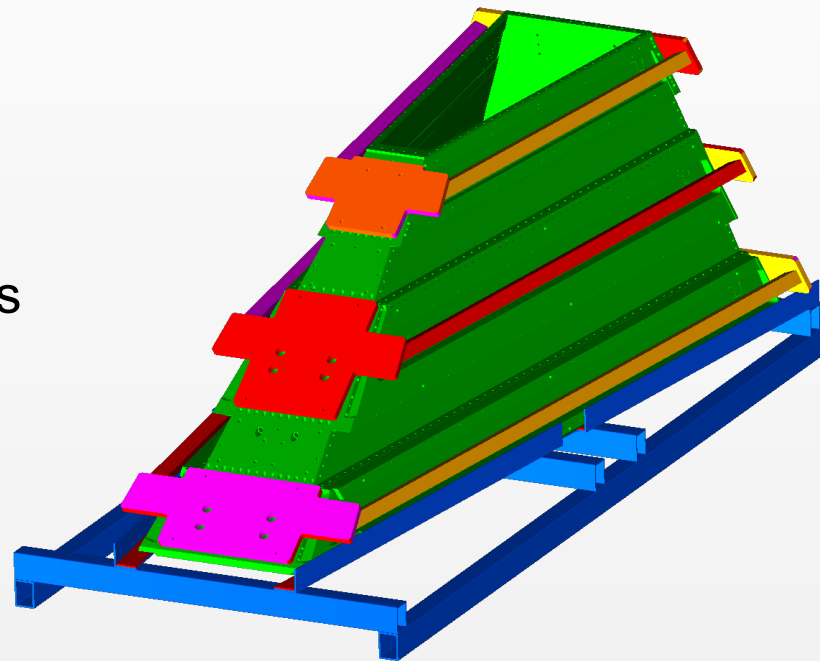
# Shipping Overview

- Ocean Freight
  - Support Structures
    - ~10,000 kg total
  - Coils and Frames
    - 9 total (8 + 1 spare)
    - ~3,500 kg each
  - TOF Scintillators and PMTs
    - <2,000 kg total
  - Internal Gas Target System
    - <1,000 kg total
- Air Freight
  - Drift Chambers
    - <1,500 kg each



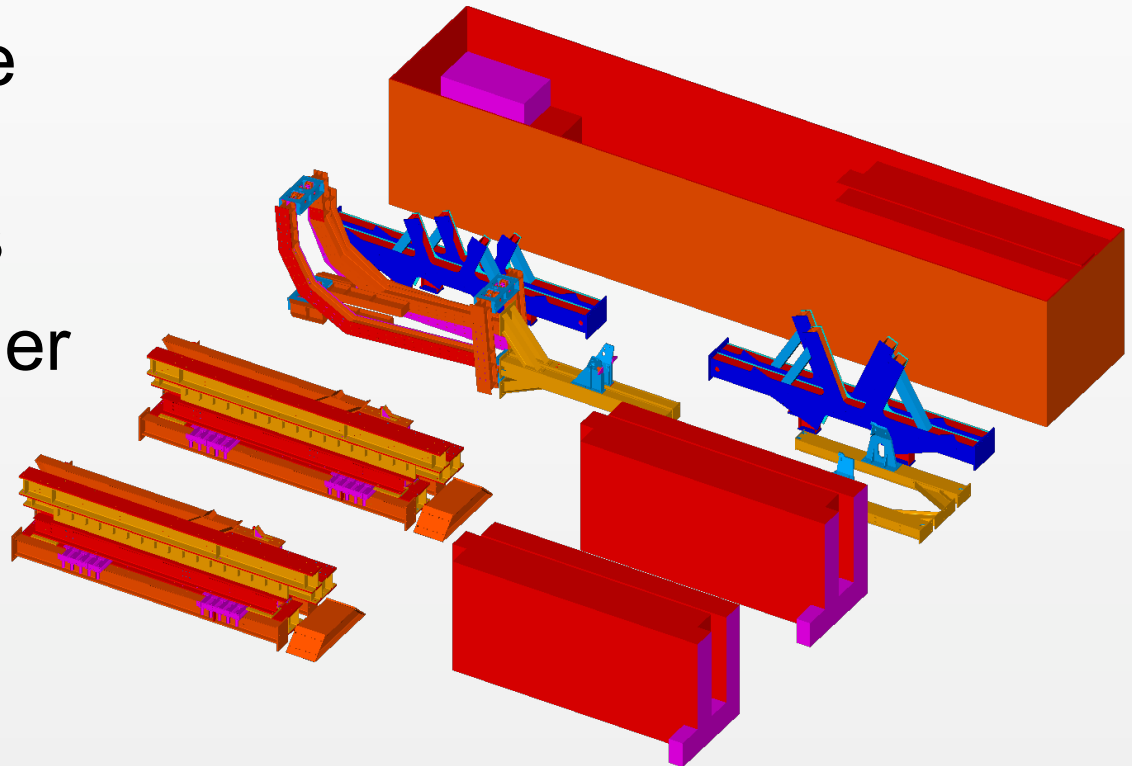
# Drift Chamber Packing

- Problems
  - Wires breaking
  - Pressure changes
- Solutions
  - Outside packing and crating company to protect chambers during shipment
  - Supporting shipping frame to relieve wire tension
  - Additional air filters



# Ocean Freight

- Shipped in Six Containers (max)
- Four will hold the structure, coils, TOF Scintillators
- One will hold other equipment
- One for overrun



# Weight Considerations for Ocean Freight

- Prevailing over-the-road weight limitations restrict weight of containers.
  - 18,000 kg limit
- Containers containing coils are loaded with ~13,000 kg
- Other containers are much less and are limited by volume



# Cost

Item	Base Cost	QTY	Contingency	Extended Cost	Euro
<b>Ocean Freight</b>					
40 Container (ea.)	3,985.00 \$	6	1.2	28,692.00 \$	18,312.48 €
Drop and Pick Fee (ea.)	750.00 \$	6	1.2	5,400.00 \$	3,446.52 €
<b>Ocean Freight Total</b>				<b>34,092.00 \$</b>	<b>21,759.00 €</b>
<b>Air Freight</b>					
Shipping Cost (per kg.)	1.20 \$	10000	1.2	14,400.00 \$	9,190.71 €
Fuel Surcharge (per kg.)	1.05 \$	10000	3	31,500.00 \$	20,104.67 €
Security (per kg.)	0.15 \$	10000	1.2	1,800.00 \$	1,148.84 €
<b>Air Freight Total</b>				<b>47,700.00 \$</b>	<b>30,444.22 €</b>
<b>Services</b>					
Engineer / Supervisor (per man yr.)	235,000.00 \$	0.3	1	70,500.00 \$	44,996.17 €
Technician (per man yr.)	135,000.00 \$	1.5	1	202,500.00 \$	129,244.32 €
Physicist (per man yr.)	215,000.00 \$	0.3	1	64,500.00 \$	41,166.71 €
Wetmore Company Packing	46,000.00 \$	1	1.1	50,600.00 \$	32,295.12 €
<b>Services Total</b>				<b>388,100.00 \$</b>	<b>247,702.32 €</b>
<b>GRAND TOTAL</b>				<b>469,892.00 \$</b>	<b>299,905.54 €</b>

