

THE MANUFACTURING



C O M P A N Y  
WHERE PRECISION MEETS PERFECTION

# HOT AND COLD WATER PRESSURE VESSELS

WHERE  
PRECISION  
MEETS  
PERFECTION



## SPECIFICATION SHEET

# SHORT INTRODUCTION

At TMCO we are more than just a storage vessel manufacturing company; we are the architects of reliability, innovation, and durability and we are the pinnacle of where precision meets perfection.

With a legacy spanning of more than a decade, we have established ourselves as a leading force in the industry and is today one of South Africa's top storage vessel manufacturers. We are dedicated to delivering top-tier storage solutions to a diverse range of businesses across the globe and offer both pressurised or non pressurised vessels.

Our customers success is our success and which is why our dedicated team of professionals is here to support you. We take immense pride in the expertise and dedication of our design and manufacturing teams. Our team of talented professionals is at the heart of our ability to deliver high-quality, innovative, and customized storage solutions to meet the diverse needs of our clients.

Our commitment to quality is the cornerstone of everything we do. Every product that leaves our facility is a testament to our unwavering commitment to quality. Our stringent quality control processes ensure that each vessel not only meets but often exceeds industry standards, providing you with the peace of mind you deserve.

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# MANUFACTURING

**We take immense pride in our commitment to quality, precision, and flexibility in vessel manufacturing. Our vessels are built to meet diverse needs and requirements, providing solutions for a wide range of industries.**

## HERE'S WHAT SETS US APART:

### STANDARD AND CUSTOMIZED SOLUTIONS

We offer a comprehensive range of standard vessels, varying in size from 500 liters to 10,000 liters. Moreover, we specialize in fabricating vessels to your precise specifications.

Your vision, our expertise.

### STRINGENT STANDARDS

Quality and safety are non-negotiable for us. Our vessels are designed and manufactured according to Standard Engineering Practice and in line with SANS 347:2012 specifications. Should you require certification by an independent authorised inspection authority, we're fully capable of accommodating your request.

### PREMIUM MATERIALS

We understand that the heart of a reliable vessel lies in the materials used. That's why we only employ the highest grade of metal in our manufacturing process. Our standard vessels feature shell thickness ranging from 4mm to 10mm, all crafted from S355JR (300 WA) mild steel.

### EXPERT CRAFTSMANSHIP

Our vessel dish ends, ranging from 4mm to 10mm thickness, are designed to seamlessly complement the shell. These consist of torispherical dishes meticulously manufactured from S355JR (300 WA) mild steel.

### CONNECTIONS FOR EFFICIENCY

For optimal performance, we've engineered connection points on our standard vessels using ASTM106 seamless pipe. They are configured with sockets or male threaded fittings, seamlessly welded to the vessel shell.

The connection points can be customized to accommodate a wide range of sizes, from 15mm to 200mm.

### CONFIGURABLE TO YOUR NEEDS

While our standard vessels are equipped with sockets, flanges are optional and available on all ranges. Our sockets are available in sizes ranging from 15NB to 200NB. We offer BS10T/D flanges from 15NB to 400NB as a standard, but SANS1123 flanges or higher-pressure table flanges can be provided upon request to cater to your specific needs.

# MANUFACTURING

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# TREATING METHOD

## SAND BLASTING

Before any anti-corrosion treatment begins, we initiate the process with sandblasting. This step is crucial to ensure the optimal adhesion of coatings to the vessel's steel surface.

Our sandblasting process is certified to adhere to the requirements of clause 4.3 of SABS 064/ISO8501/1, achieving a grade of SA2.5. This ensures that the vessel's steelwork attains an angular blast profile in line with industry standards, providing the ideal surface for coating adhesion.

### VESSEL EXTERNAL TREATMENT

**Carboguard 880 @ 50 Microns (Primer)**

**Carbothane 134 @ 40 Microns (Final Coat)**

For the exterior of our vessels, we use a two-coat protective system. The first layer is Carboguard 880, a high-solids, low-VOC epoxy coating applied at a dry film thickness of 50 microns. This fast-curing, corrosion-resistant coating provides durable protection and serves as either a primer or an intermediate coat over approved priming systems.

As a final coat, we apply Carbothane 134 at 40 microns, a durable aliphatic polyurethane finish that enhances weather resistance and provides a smooth, UV-stable appearance.

#### Typical use:

Designed for corrosion protection in harsh industrial and marine environments. It can be used as a primer or intermediate coat on steel structures, vessels, and equipment, offering excellent adhesion and fast curing for quick turnaround projects. Suitable for use in both atmospheric and immersion conditions, it complies with VOC regulations and integrates well into multi-coat systems.

### VESSEL INTERIOR TREATMENT

**Phenoline Tank Shield**

**Carboguard 545 @ 400 Microns**

For the interior of our vessels, we apply a two-coat system consisting of Phenoline Tank Shield and Carboguard 545, with a total dry film thickness of 400 microns.

This combination provides excellent chemical resistance, durability, and long-term protection in immersion and storage environments.

For enhanced performance where higher abrasion or chemical resistance is required, we offer an optional glass flake-reinforced system using Phenoline 1205, also applied at 400 microns, available upon request.

Our treating method ensures the utmost durability, corrosion resistance, and performance of our vessels.

## PRESSURE RATING

At TMCO we produce two standard vessel ranges, ECONO and OPTIMA in different configurations and orientations.

ECONO vessels are designed for system operating pressures up to 400kPa while OPTIMA vessels are capable of handling system pressures of up to 600kPa. Vessels are pressure tested to 1.5 times the operating pressure respectively.

We are however able to manufacture custom vessels capable of exceeding these standard rating upon request up to an operating pressure of 1000kPa.

# MANUFACTURING

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A close-up photograph of a metal pipe with a weld. A magnifying glass is positioned over the weld, showing a detailed view of the weld's texture and structure. The background is a dark, textured metal surface.

**"QUALITY CONTROL ON OUR STORAGE  
VESSELS AT TMCO IS PARAMOUNT TO  
ENSURE THAT EACH UNIT MEETS OUR  
RIGOROUS STANDARDS BEFORE BEING  
DELIVERED TO OUR CUSTOMERS."**

**QUALITY CONTROL**



# QUALITY CONTROL

**Here's an overview of the quality control process specific to our storage vessels:**

## **MATERIAL INSPECTION:**

Thorough examination of all materials used in the construction of the storage vessel to ensure they meet required specifications for strength, durability, and corrosion resistance.

## **WELDING QUALITY ASSURANCE:**

Close inspection of all welded joints to ensure they are properly executed, free from defects, and meet welding standards for structural integrity.

## **DIMENSIONAL ACCURACY:**

Precise measurement of critical dimensions of the storage vessel to confirm it conforms to design specifications and requirements.

## **PRESSURE TESTING:**

Conducting pressure tests on the storage vessel to verify its ability to safely contain and withstand designated pressures without leakage or failure.

## **SURFACE FINISH INSPECTION:**

Assessment of the surface finish of the storage vessel to ensure it meets aesthetic standards and is free from imperfections that could compromise performance or durability.

## **COATING EVALUATION:**

Examination of any coatings or linings applied to the interior or exterior of the storage vessel to ensure they are properly applied, adhered, and provide adequate protection against corrosion or contamination.

## **FUNCTIONAL TESTING:**

Testing the operational functionality of any components or features of the storage vessel to ensure they perform as intended and meet customer requirements.

## **DATA PACK:**

TMCO provides a full Data Pack with all listed Quality checks, drawings, Data Plates, Paint Specification on completion of each of our storage vessels.

## **FINAL INSPECTION:**

Comprehensive review of the entire storage vessel to confirm that it meets all quality standards and is ready for shipment to the customer.

By implementing these stringent quality control measures, we ensure that each storage vessel manufactured by TMCO meets the highest standards of quality, reliability, and performance, providing our customers with confidence in their investment and peace of mind in their operations.

# STANDARD SPECIFICATION

## ECONO RANGE VERTICAL

Hot water storage cylinder, manufactured according to Standard Engineering Practice and in accordance to SANS 347:2012 Standards, 4mm shell thickness, Dish Ends and Shell to be constructed with S355JR Steel, 400NB Manhole for easy maintenance, testing pressure of 600kPa and operating pressure of 400kPa.

Our vessels are manufactured as either standard vessels or can be custom made to customer requirements.

VOLUME	500L	1000L	1500L	2000L	2500L	3000L	3500L	4000L	4500L	5000L
Operating Pressure	400kPa	400kPa	400kPa	400kPa	400kPa	400kPa	400kPa	400kPa	400kPa	400kPa
Test Pressure	600kPa	600kPa	600kPa	600kPa	600kPa	600kPa	600kPa	600kPa	600kPa	600kPa
Diameter	750mm	920mm	1070mm	1070mm	1220mm	1220mm	1370mm	1370mm	1450mm	1450mm
HOS	900mm	1400mm	1400mm	1900mm	1800mm	2200mm	2000mm	2200mm	2350mm	2370mm
Overall Height	1310mm	1857mm	1904mm	2393mm	2310mm	2710mm	2511mm	2711mm	2960mm	3030mm
Stand	Skirt	Skirt	Skirt	Skirt	Skirt	Skirt	Skirt	Skirt	Skirt	Skirt
DE Thickness	4mm	4mm	4mm	4mm	4mm	4mm	4mm	4mm	4mm	4mm
Shell Thickness	4mm	4mm	4mm	4mm	4mm	4mm	4mm	4mm	4mm	4mm
Material Type	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel
Material Grade	S355JR	S355JR	S355JR	S355JR	S355JR	S355JR	S355JR	S355JR	S355JR	S355JR
Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld
Water Ports	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded
Instrumentation Ports	Socketed	Socketed	Socketed	Socketed	Socketed	Socketed	Socketed	Socketed	Socketed	Socketed
Manhole	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM
	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange
No. Element Ports	1	1	1	2	2	3	3	4	4	5
Surface Prep	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2
Intarenal Coating	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545
External Coating	Jotun	Jotun	Jotun	Jotun	Jotun	Jotun	Jotun	Jotun	Jotun	Jotun
	Hardtop Flexi	Hardtop Flexi	Hardtop Flexi	Hardtop Flexi	Hardtop Flexi	Hardtop Flexi	Hardtop Flexi	Hardtop Flexi	Hardtop Flexi	Hardtop Flexi
Sacrificial Anode	1	1	1	1	1	1	1	1	1	1
Catagory	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347

## ECONO VERTICAL

## STANDARD SPECIFICATION



# STANDARD SPECIFICATION

## ECONO RANGE HORIZONTAL

Hot water storage cylinder, manufactured according to Standard Engineering Practice and in accordance to SANS 347:2012 Standards, 4mm shell thickness, Dish Ends and Shell to be constructed with S355JR Steel, 400NB Manhole for easy maintenance, testing pressure of 600kPa and operating pressure of 400kPa.

Our vessels are manufactured as either standard vessels or can be custom made to customer requirements.

VOLUME	500L	1000L	1500L	2000L	2500L	3000L	3500L	4000L	4500L	5000L
Operating Pressure	400kPa	400kPa	400kPa	400kPa	400kPa	400kPa	400kPa	400kPa	400kPa	400kPa
Test Pressure	600kPa	600kPa	600kPa	600kPa	600kPa	600kPa	600kPa	600kPa	600kPa	600kPa
Diameter	750mm	920mm	1070mm	1070mm	1220mm	1220mm	1370mm	1370mm	1450mm	1600mm
HOS	900mm	1400mm	1400mm	1900mm	1800mm	2200mm (Split)	2000mm (Split)	2200mm (Split)	2350mm (Split)	2370mm (Split)
Overall Height	1126mm	1288mm	1438mm	1438mm	1438mm	1588mm	1738mm	1738mm	1818mm	1968mm
Overall Length	1665mm	2140mm	2260mm	2760mm	2763mm	3070mm	2851mm	3051mm	3313mm	3105mm
Stand	2 x Cradle	2 x Cradle	2 x Cradle	2 x Cradle	2 x Cradle	2 x Cradle	2 x Cradle	2 x Cradle	2 x Cradle	2 x Cradle
DE Thickness	4mm	4mm	4mm	4mm	4mm	4mm	4mm	4mm	4mm	4mm
Shell Thickness	4mm	4mm	4mm	4mm	4mm	4mm	4mm	4mm	4mm	4mm
Material Type	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel
Material Grade	S355JR	S355JR	S355JR	S355JR	S355JR	S355JR	S355JR	S355JR	S355JR	S355JR
Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld
Water Ports	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded
Instrumentation Ports	Socketed	Socketed	Socketed	Socketed	Socketed	Socketed	Socketed	Socketed	Socketed	Socketed
Manhole	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM
	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange
No. Element Ports	1	1	1	2	2	3	3	4	4	5
Surface Prep	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2
Intarenal Coating	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545
External Coating	Jotun	Jotun	Jotun	Jotun	Jotun	Jotun	Jotun	Jotun	Jotun	Jotun
	Hardtop Flexi	Hardtop Flexi	Hardtop Flexi	Hardtop Flexi	Hardtop Flexi	Hardtop Flexi	Hardtop Flexi	Hardtop Flexi	Hardtop Flexi	Hardtop Flexi
Sacrificial Anode	1	1	1	1	1	1	1	1	1	1
Catagory	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347

## ECONO HORIZONTAL STANDARD SPECIFICATION

# STANDARD SPECIFICATION OPTIMA RANGE VERTICAL

Hot water storage cylinder, manufactured according to Standard Engineering Practice and in accordance to SANS 347:2012 Standards, 6mm shell thickness, Dish Ends and Shell to be constructed with S355JR Steel, 400NB Manhole for easy maintenance, testing pressure of 900kPa and operating pressure of 600kPa.

Our vessels are manufactured as either standard vessels or can be custom made to customer requirements.

VOLUME	500L	1000L	1500L	2000L	2500L	3000L	3500L	4000L	4500L	5000L	6000L	7000L	8000L	9000L	10 000L
Operating Pressure	600kPa	600kPa	600kPa	600kPa	600kPa	600kPa	600kPa	600kPa	600kPa	600kPa	600kPa	600kPa	600kPa	600kPa	600kPa
Test Pressure	900kPa	900kPa	900kPa	900kPa	900kPa	900kPa	900kPa	900kPa	900kPa	900kPa	900kPa	900kPa	900kPa	900kPa	900kPa
Diameter	750mm	920mm	1070mm	1070mm	1220mm	1220mm	1370mm	1370mm	1450mm	1450mm	1800mm	1800mm	1900mm	2050mm	2100mm
HOS	900mm	1400mm	1400mm	1900mm	1800mm	2200mm	2000mm	2200mm	2300mm	2370mm	1900mm	2300mm	2300mm	2200mm	2400mm
Overall Height	1574mm	2097mm	2178mm	2650mm	2560mm	2960mm	2760mm	2960mm	3135mm	3205mm	2826mm	3226mm	3226mm	3126mm	3326mm
Stand	4 X Legs	4 X Legs	4 X Legs	4 X Legs	4 X Legs	4 X Legs	4 X Legs	4 X Legs	4 X Legs	4 X Legs	4 X Legs	4 X Legs	4 X Legs	4 X Legs	4 X Legs
DE Thickness	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm
Shell Thickness	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm
Material Type	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel
Material Grade	S355JR	S355JR	S355JR	S355JR	S355JR	S355JR	S355JR	S355JR	S355JR	S355JR	S355JR	S355JR	S355JR	S355JR	S355JR
Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld
Water Ports	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded
Instrumentation Ports	Socketed	Socketed	Socketed	Socketed	Socketed	Socketed	Socketed	Socketed	Socketed	Socketed	Socketed	Socketed	Socketed	Socketed	Socketed
Manhole	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM
	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange
No. Element Ports	1	1	1	2	2	3	3	4	4	5	5	6	7	7	8
Surface Prep	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2
Intareal Coating	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545
External Coating	Jotun	Jotun	Jotun	Jotun	Jotun	Jotun	Jotun	Jotun	Jotun	Jotun	Jotun	Jotun	Jotun	Jotun	Jotun
	Hardtop Flexi	Hardtop Flexi	Hartop Flexi	Hartop Flexi	Hartop Flexi	Hartop Flexi	Hartop Flexi	Hartop Flexi	Hartop Flexi	Hartop Flexi	Hartop Flexi	Hartop Flexi	Hartop Flexi	Hartop Flexi	Hartop Flexi
Sacrificial Anode	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Catagory	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347

## OPTIMA VERTICAL STANDARD SPECIFICATION



# STANDARD SPECIFICATION

## OPTIMA RANGE HORIZONTAL

Hot water storage cylinder, manufactured according to Standard Engineering Practice and in accordance to SANS 347:2012 Standards, 6mm shell thickness, Dish Ends and Shell to be constructed with S355JR Steel, 400NB Manhole for easy maintenance, testing pressure of 900kPa and operating pressure of 600kPa.

Our vessels are manufactured as either standard vessels or can be custom made to customer requirements.

VOLUME	500L	1000L	1500L	2000L	2500L	3000L	3500L	4000L	4500L	5000L	6000L	7000L	8000L	9000L	10 000L
Operating Pressure	600kPa	600kPa	600kPa	600kPa	600kPa	600kPa	600kPa	600kPa	600kPa	600kPa	600kPa	600kPa	600kPa	600kPa	600kPa
Test Pressure	900kPa	900kPa	900kPa	900kPa	900kPa	900kPa	900kPa	900kPa	900kPa	900kPa	900kPa	900kPa	900kPa	900kPa	900kPa
Diameter	750MM	920MM	1070MM	1070mm	1220mm	1220mm	1370mm	1370mm	1450mm	1600mm	1800mm	1800mm	1900mm	2050mm	2100mm
HOS	900MM	1400MM	1400MM	1900mm	1800mm	2200mm	2000mm	2200mm	2300mm	2100mm	1900mm	2300mm	2300mm	2200mm	2400mm
Overall Height	1126mm	1288mm	1438MM	1438mm	1588mm	1588mm	1738mm	1738mm	1818mm	1968mm	2168mm	2168mm	2268mm	2418mm	2468mm
Overall Length	1665mm	2140mm	2260MM	2760mm	2673mm	3037mm	2851mm	3051mm	3313mm	3105mm	2909mm	3309mm	3302mm	3199mm	3408mm
Stand	2 x Cradle	2 x Cradle	2 x Cradle	2 x Cradle	2 x Cradle	2 x Cradle	2 x Cradle	2 x Cradle	2 x Cradle	2 x Cradle	2 x Cradle	2 x Cradle	2 x Cradle	2 x Cradle	2 x Cradle
DE Thickness	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm
Shell Thickness	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm
Material Type	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel
Material Grade	S355JR	S355JR	S355JR	S355JR	S355JR	S355JR	S355JR	S355JR	S355JR	S355JR	S355JR	S355JR	S355JR	S355JR	S355JR
Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld	Butt-Weld
Water Ports	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded	Male Threaded
Instrumentation Ports	Socketed	Socketed	Socketed	Socketed	Socketed	Socketed	Socketed	Socketed	Socketed	Socketed	Socketed	Socketed	Socketed	Socketed	Socketed
Manhole	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM	Ø400MM
	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange	TD-Flange
No. Element Ports	1	1	1	2	2	3	3	4	4	5	5	6	7	7	8
Surface Prep	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2	SA 2 1/2
Intarnal Coating	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545	Carboguard 545
External Coating	Jotun	Jotun	Jotun	Jotun	Jotun	Jotun	Jotun	Jotun	Jotun	Jotun	Jotun	Jotun	Jotun	Jotun	Jotun
	Hartop Flexi	Hartop Flexi	Hartop Flexi	Hartop Flexi	Hartop Flexi	Hartop Flexi	Hartop Flexi	Hartop Flexi	Hartop Flexi	Hartop Flexi	Hartop Flexi	Hartop Flexi	Hartop Flexi	Hartop Flexi	Hartop Flexi
Sacrificial Anode	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Catagory	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347	SANS 347

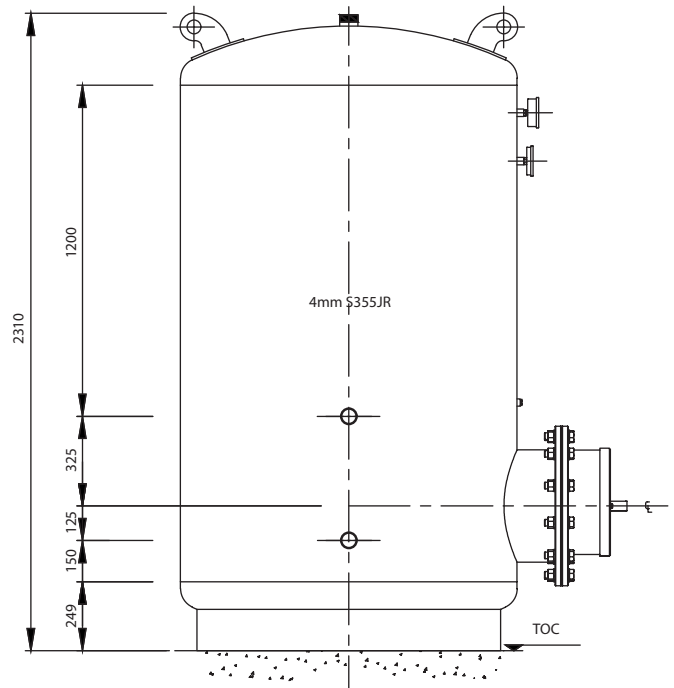
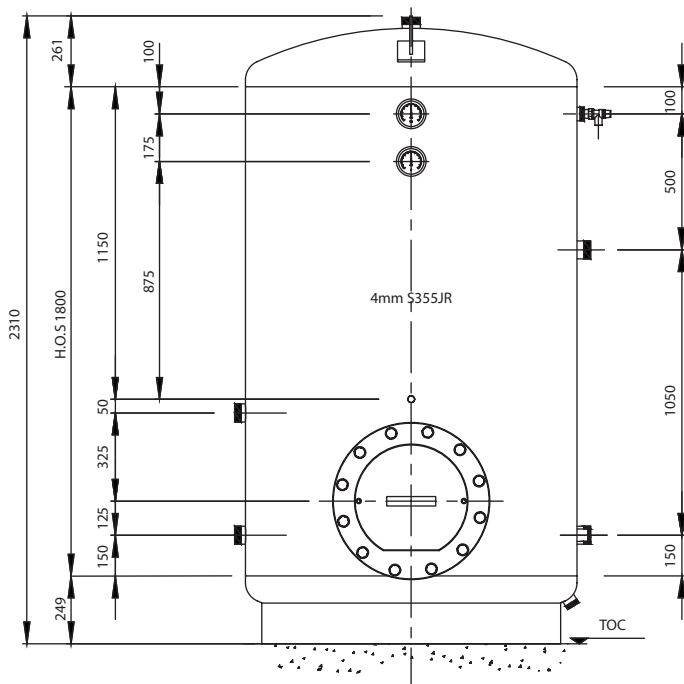
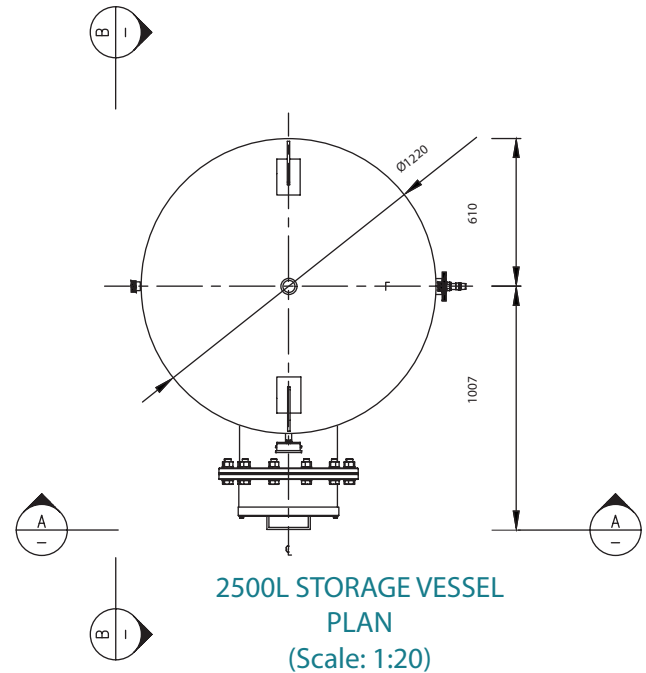
## OPTIMA HORIZONTAL STANDARD SPECIFICATION

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# VESSEL DESIGN ECONO RANGE - VERTICAL

## TYPICAL 2500L STORAGE VESSEL ECONO RANGE VERTICAL DESIGN

2500L VERTICAL WATER STORAGE VESSEL	
<b>VESSEL SPECIFICATION</b>	
SHELL MATERIAL	4mm S355JR MILD STEEL
DRY MASS THEORETICAL	435kg
WET MASS THEORETICAL	2807kg
<b>WELDING SPECIFICATION</b>	
ROOT	TIG
FILLER	MIG
CAP	MIG
NDT	PRESSURE TESTING
<b>CORROSION PROTECTION</b>	
SAND BLASTING	ISO 8501-1 SA3
INTERNAL TOP COAT	CARBOGUARD 545 @ 400 Microns
EXTERNAL TOP COAT	CARBOTHANE 134 @ 40 Microns
<b>INSULATION</b>	
INSULATION FILLER	ISOVER GLASS WOOL 40kg/m <sup>3</sup> - 50mm
CLADDING	0.8mm PLATE TO SPEC GMS
<b>HEATING CAPACITY</b>	
24kW (2 x 12kW)	380V/3Ø/50Hz
<b>FITTINGS &amp; INSTRUMENTATION</b>	
TP / SAFETY VALVE	3/4" KWIKOT 400kPa
PRESSURE GAUGE	Ø100mm 0 - 1000kPa
THERMOMETER	Ø100 0 - 120°C
SACRIFICIAL ANODE	KWIKOT MAGNESIUM ROD
HP SENSOR	GREENBRO RGB TYPE SENSOR



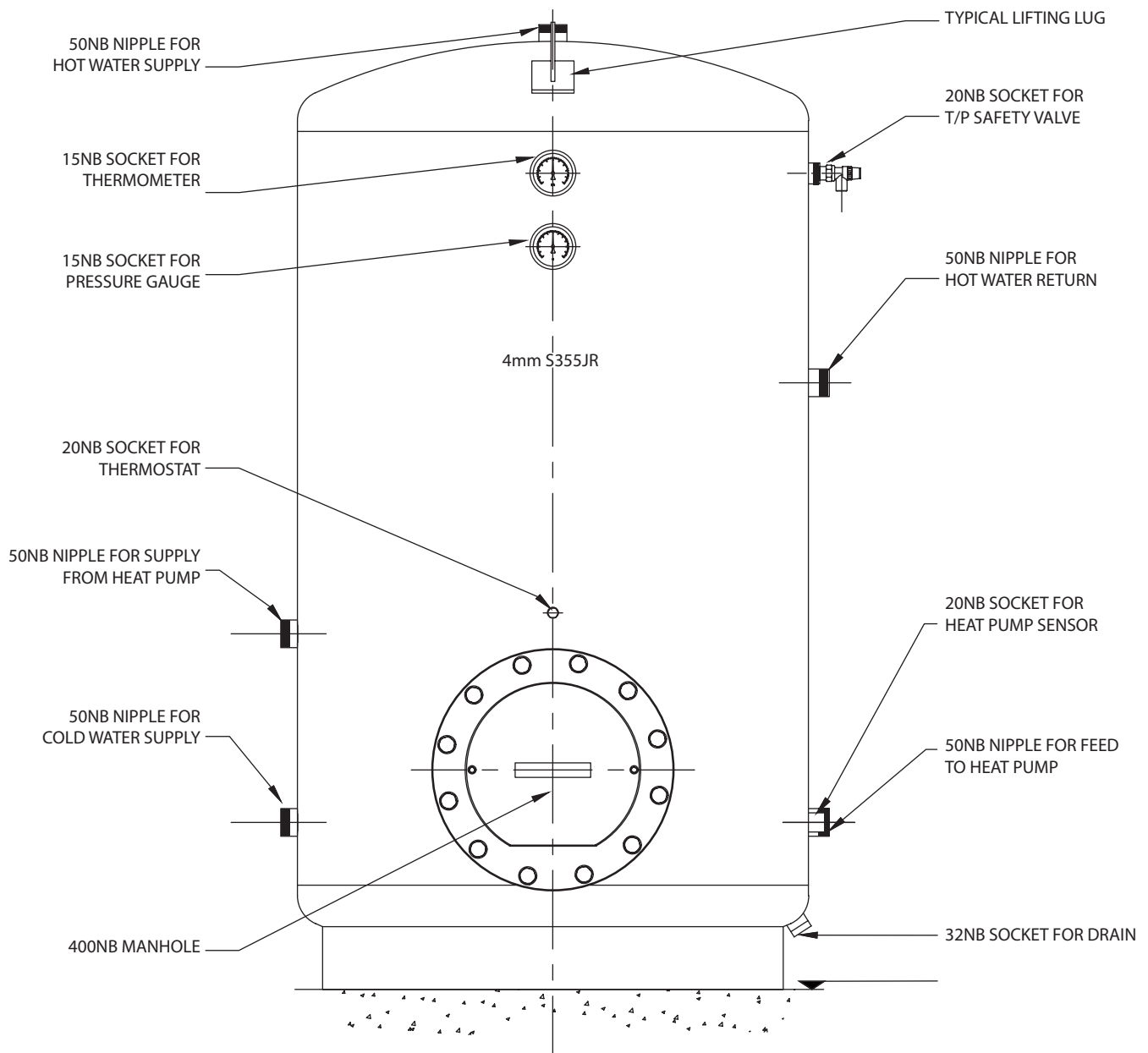
VESSEL DESIGN  
ECONO - VERTICAL



# CALL OUT DETAIL

## ECONO RANGE - VERTICAL

### TYPICAL 2500L STORAGE VESSEL ECONO RANGE VERTICAL ELEVATION DRAWING

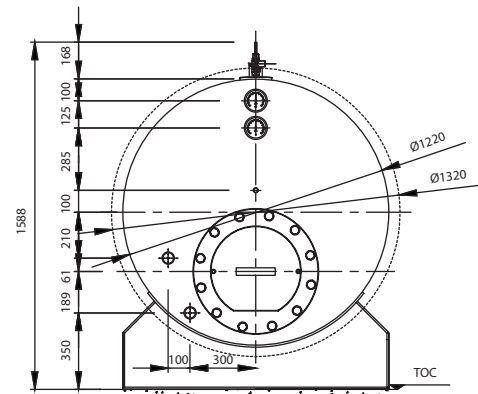


# VESSEL DESIGN

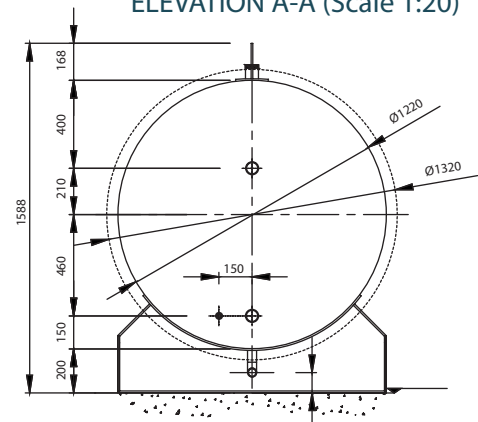
## ECONO RANGE - HORIZONTAL

### TYPICAL 2500L STORAGE VESSEL ECONO RANGE VERTICAL DESIGN

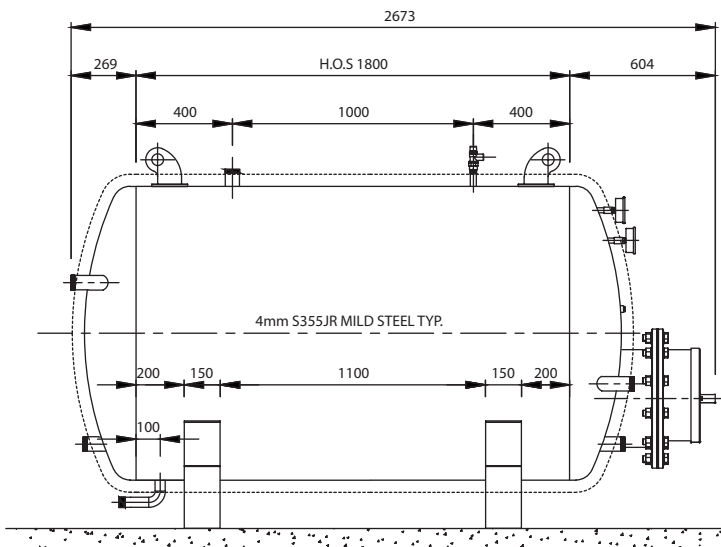
2500L VERTICAL WATER STORAGE VESSEL	
<b>VESSEL SPECIFICATION</b>	
SHELL MATERIAL	4mm S355JR MILD STEEL
DRY MASS THEORETICAL	-
WET MASS THEORETICAL	-
<b>WELDING SPECIFICATION</b>	
ROOT	TIG
FILLER	MIG
CAP	MIG
NDT	PRESSURE TESTING
<b>CORROSION PROTECTION</b>	
SAND BLASTING	ISO 8501-1 SA3
INTERNAL TOP COAT	CARBOGUARD 545 @ 400 Microns
EXTERNAL TOP COAT	CARBOTHANE 134 @ 40 Microns
<b>INSULATION</b>	
INSULATION FILLER	ISOVER GLASS WOOL 40kg/m <sup>3</sup> - 50mm
CLADDING	0.8mm PLATE TO SPEC GMS
<b>HEATING CAPACITY</b>	
24kW (2 x 12kW)	380V/3Ø/50Hz
<b>FITTINGS &amp; INSTRUMENTATION</b>	
TP / SAFETY VALVE	3/4" KWIOT 400kPa
PRESSURE GAUGE	Ø100mm 0 - 1000kPa
THERMOMETER	Ø100 0 - 120°C
SACRIFICIAL ANODE	KWIOT MAGNESIUM ROD
HP SENSOR	GREENBRO RGB TYPE SENSOR



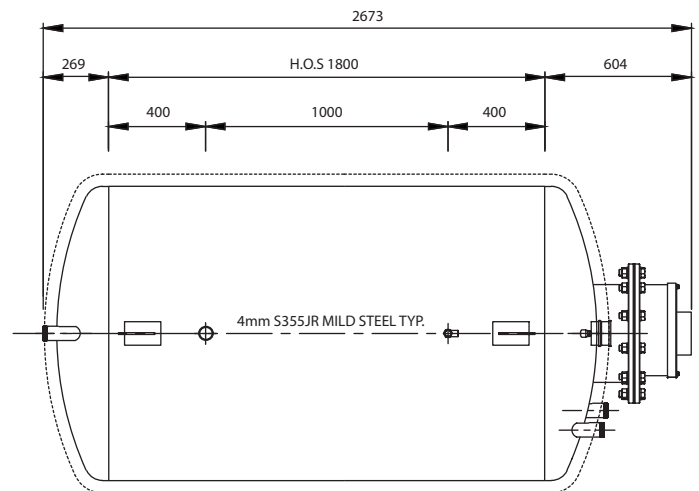
2500L STORAGE VESSEL  
ELEVATION A-A (Scale 1:20)



2500L STORAGE VESSEL  
ELEVATION B-B (Scale 1:20)



2500L STORAGE VESSEL  
SIDE ELEVATION (Scale 1:20)



2500L STORAGE VESSEL  
TOP ELEVATION (Scale 1:20)

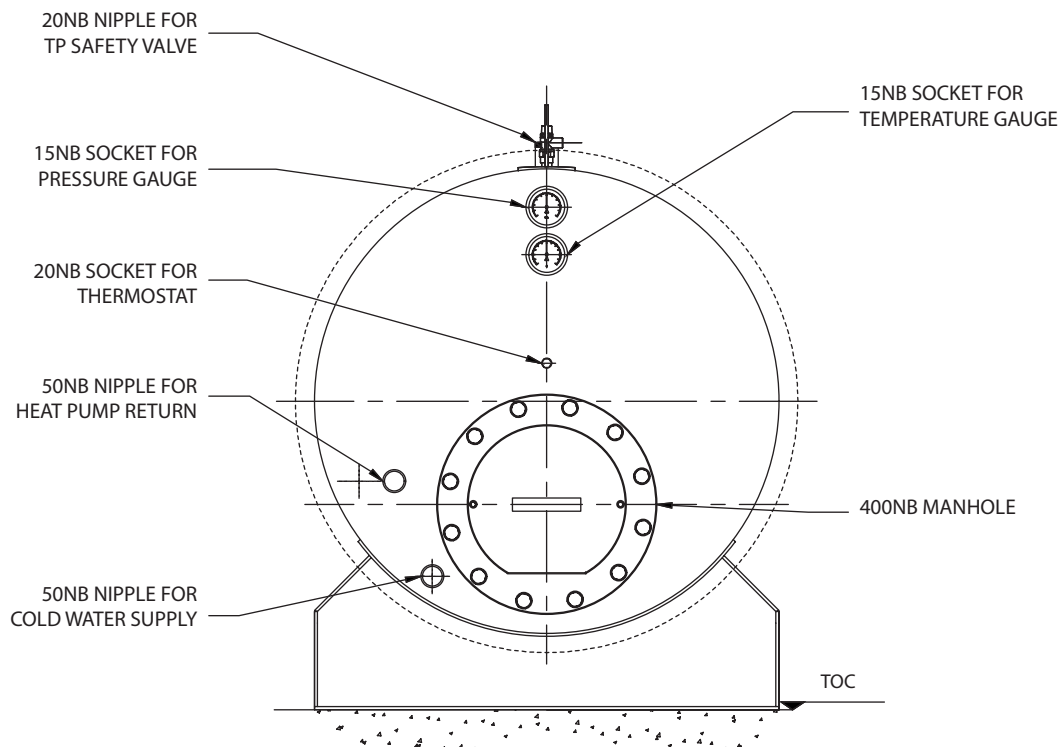
VESSEL DESIGN  
ECONO - HORIZONTAL

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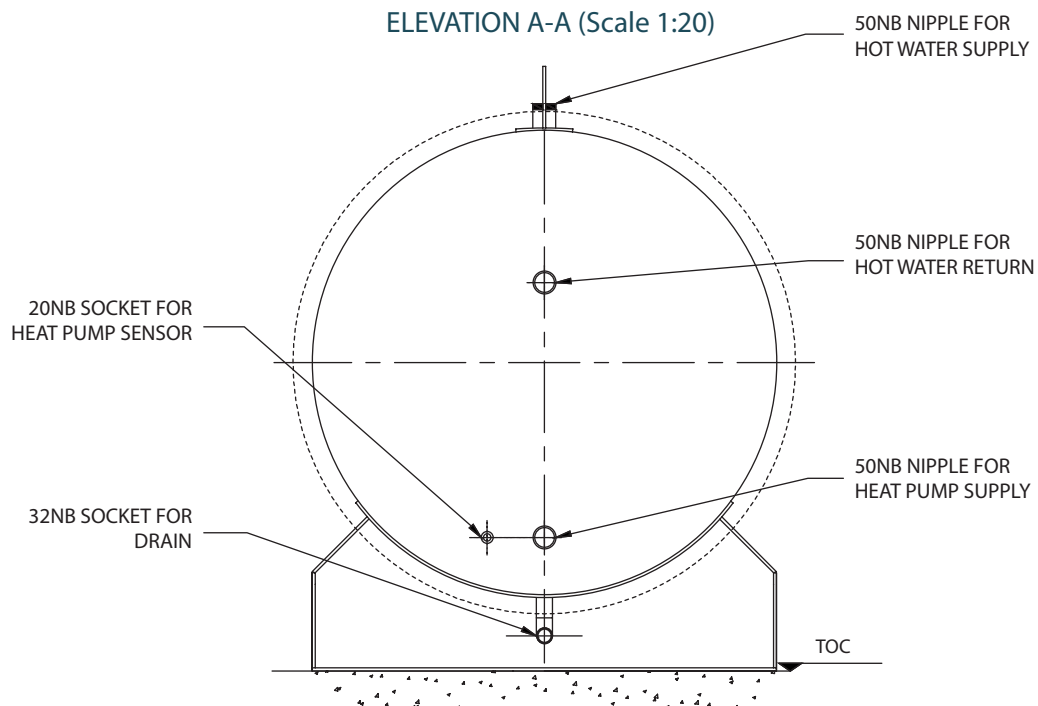


# CALL OUT DETAIL

## ECONO RANGE - HORIZONTAL



2500L STORAGE VESSEL  
ELEVATION A-A (Scale 1:20)

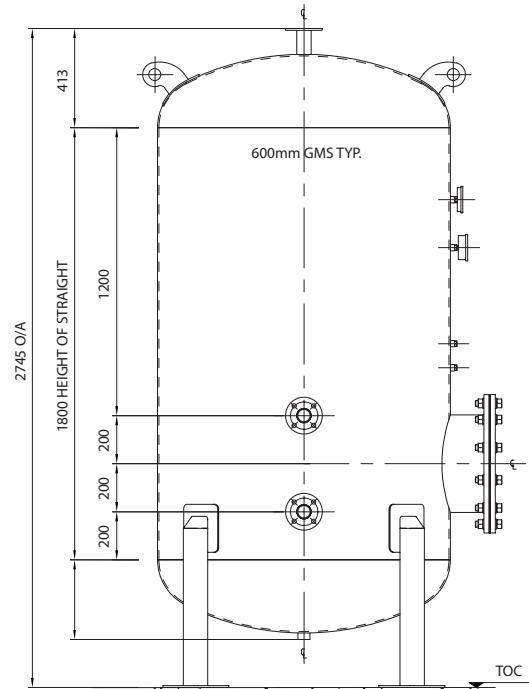
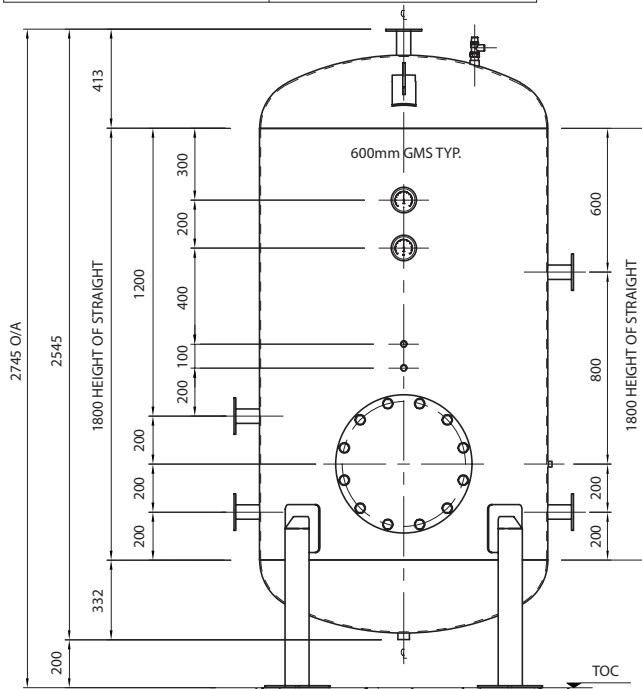
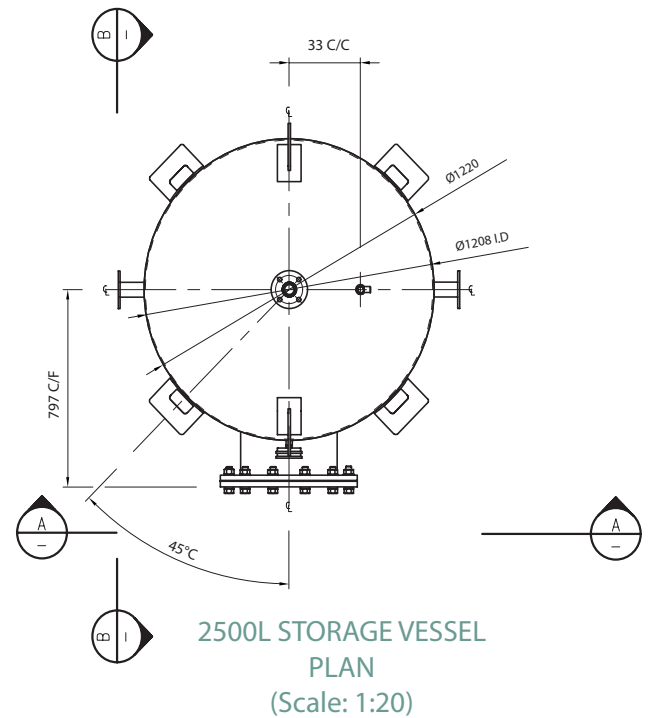


2500L STORAGE VESSEL  
ELEVATION B-B (Scale 1:20)

# VESSEL DESIGN OPTIMA RANGE - VERTICAL

## TYPICAL 2500L STORAGE VESSEL OPTIMA RANGE DESIGN

2500L VERTICAL WATER STORAGE VESSEL	
<b>VESSEL SPECIFICATION</b>	
SHELL MATERIAL	6mm S355JR MILD STEEL
DRY MASS THEORETICAL	622kg
WET MASS THEORETICAL	3122kg
<b>WELDING SPECIFICATION</b>	
ROOT	TIG
FILLER	MIG
CAP	MIG
NDT	DYE PENETRATION 2 PART SPRAY
	PRESSURE TESTING
<b>CORROSION PROTECTION</b>	
SAND BLASTING	ISO 8501-1 SA3
HOT DIP GALVANIZING	SANS 1461
INTERNAL TOP COAT	CARBOGUARD 545 @ 400 Microns
EXTERNAL TOP COAT	CARBOTHANE 134 @ 40 Microns
<b>INSULATION</b>	
INSULATION FILLER	ISOVER GLASS WOOL 40kg/m <sup>3</sup> - 50mm
CLADDING	0.8mm PLATE TO SPEC GMS
<b>HEATING CAPACITY</b>	
24kW (2 x 12kW)	380V/3Ø/50Hz
<b>FITTINGS &amp; INSTRUMENTATION</b>	
TP / SAFETY VALVE	3/4" KWIKOT 400kPa
PRESSURE GAUGE	Ø100mm 0 - 1000kPa
THERMOMETER	Ø100 0 - 120°C
SACRIFICIAL ANODE	KWIKOT MAGNESIUM ROD
HP SENSOR	GREENBRO RGB TYPE SENSOR



VESSEL DESIGN  
OPTIMA - VERTICAL

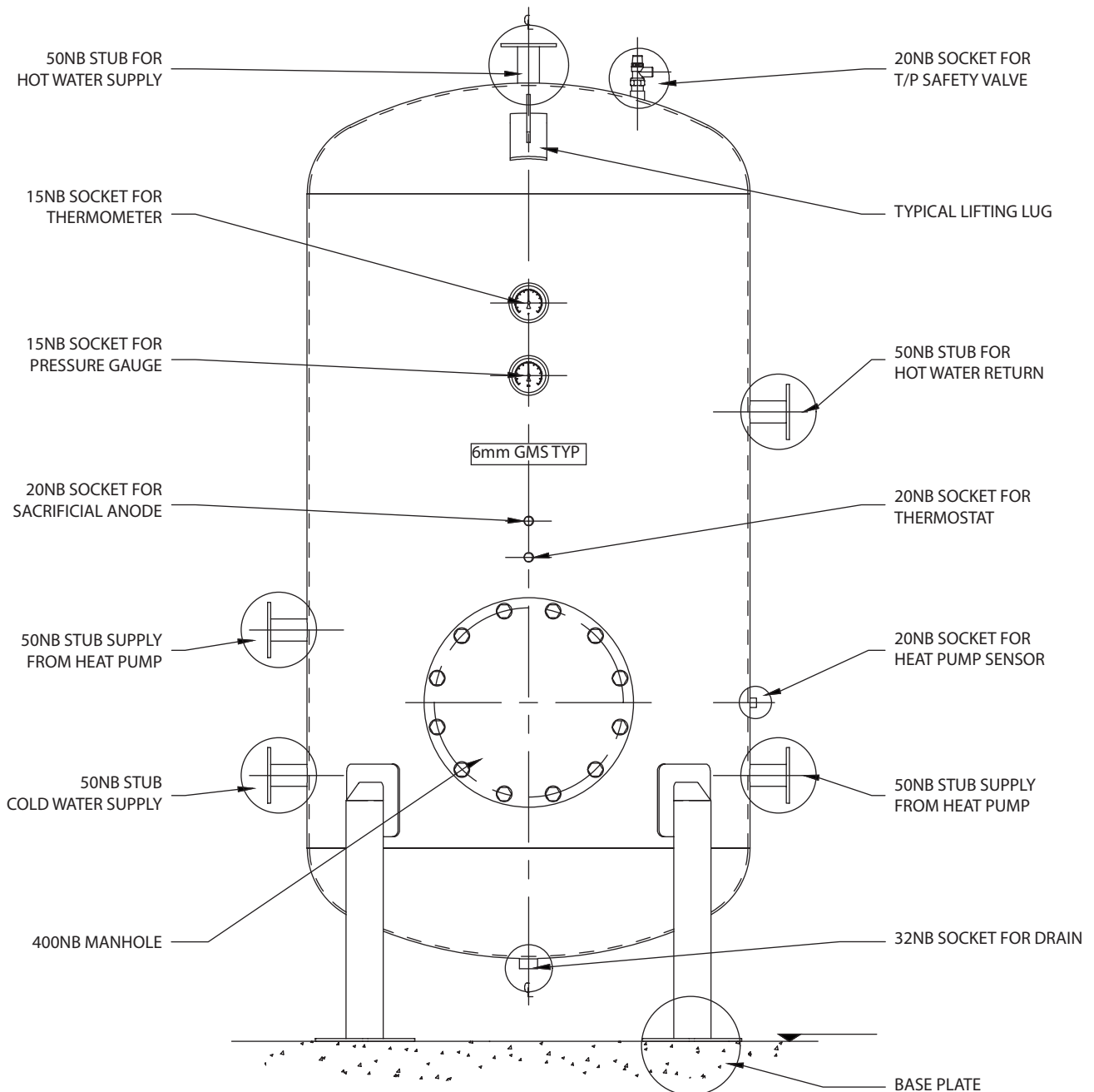
15



# CALL OUT DETAIL

## OPTIMA RANGE - VERTICAL

TYPICAL 2500L STORAGE VESSEL  
OPTIMA ELEVATION DRAWING



CALL OUT DETAIL  
OPTIMA - VERTICAL

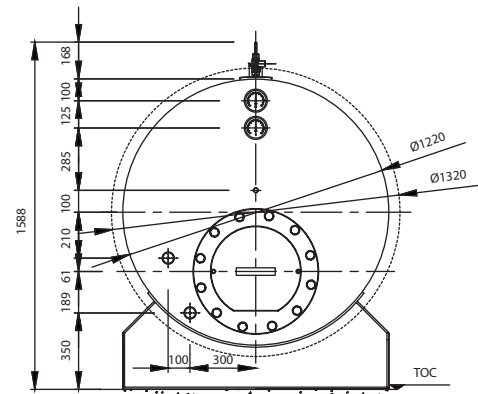
16

# VESSEL DESIGN

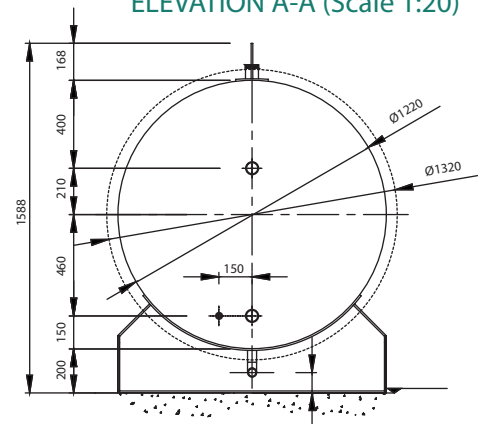
## OPTIMA RANGE - HORIZONTAL

### TYPICAL 2500L STORAGE VESSEL OPTIMA RANGE VERTICAL DESIGN

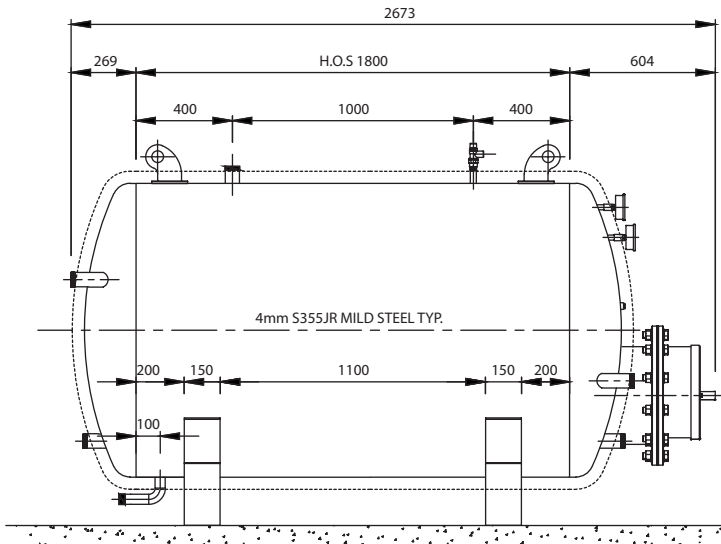
2500L VERTICAL WATER STORAGE VESSEL	
<b>VESSEL SPECIFICATION</b>	
SHELL MATERIAL	6mm S355JR MILD STEEL
DRY MASS THEORETICAL	-
WET MASS THEORETICAL	-
<b>WELDING SPECIFICATION</b>	
ROOT	TIG
FILLER	MIG
CAP	MIG
NDT	PRESSURE TESTING
<b>CORROSION PROTECTION</b>	
SAND BLASTING	ISO 8501-1 SA3
INTERNAL TOP COAT	CARBOGUARD 545 @ 400 Microns
EXTERNAL TOP COAT	CARBOTHANE 134 @ 40 Microns
<b>INSULATION</b>	
INSULATION FILLER	ISOVER GLASS WOOL 40kg/m <sup>3</sup> - 50mm
CLADDING	0.8mm PLATE TO SPEC GMS
<b>HEATING CAPACITY</b>	
24kW (2 x 12kW)	380V/3Ø/50Hz
<b>FITTINGS &amp; INSTRUMENTATION</b>	
TP / SAFETY VALVE	3/4" KWIOT 400kPa
PRESSURE GAUGE	Ø100mm 0 - 1000kPa
THERMOMETER	Ø100 0 - 120°C
SACRIFICIAL ANODE	KWIOT MAGNESIUM ROD
HP SENSOR	GREENBRO RGB TYPE SENSOR



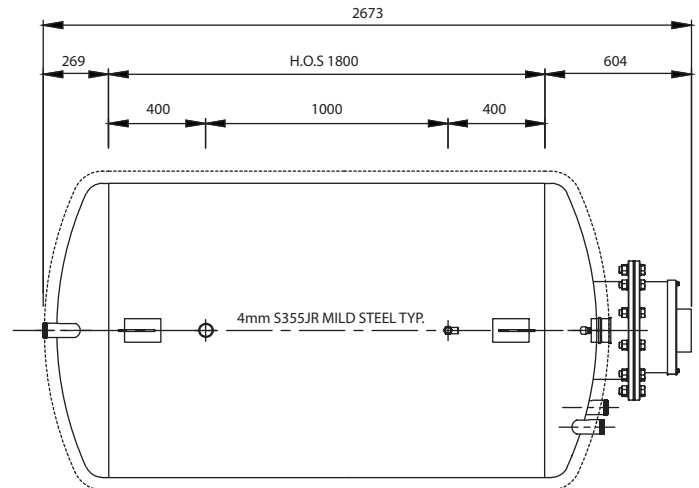
2500L STORAGE VESSEL  
ELEVATION A-A (Scale 1:20)



2500L STORAGE VESSEL  
ELEVATION B-B (Scale 1:20)



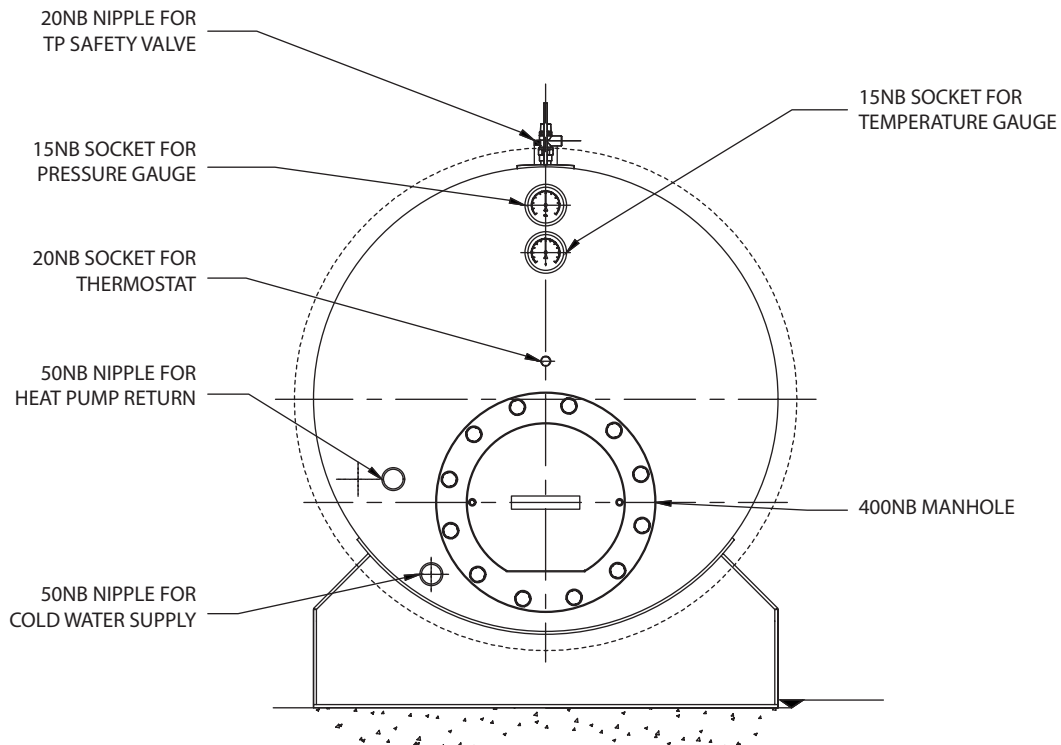
2500L STORAGE VESSEL  
SIDE ELEVATION (Scale 1:20)



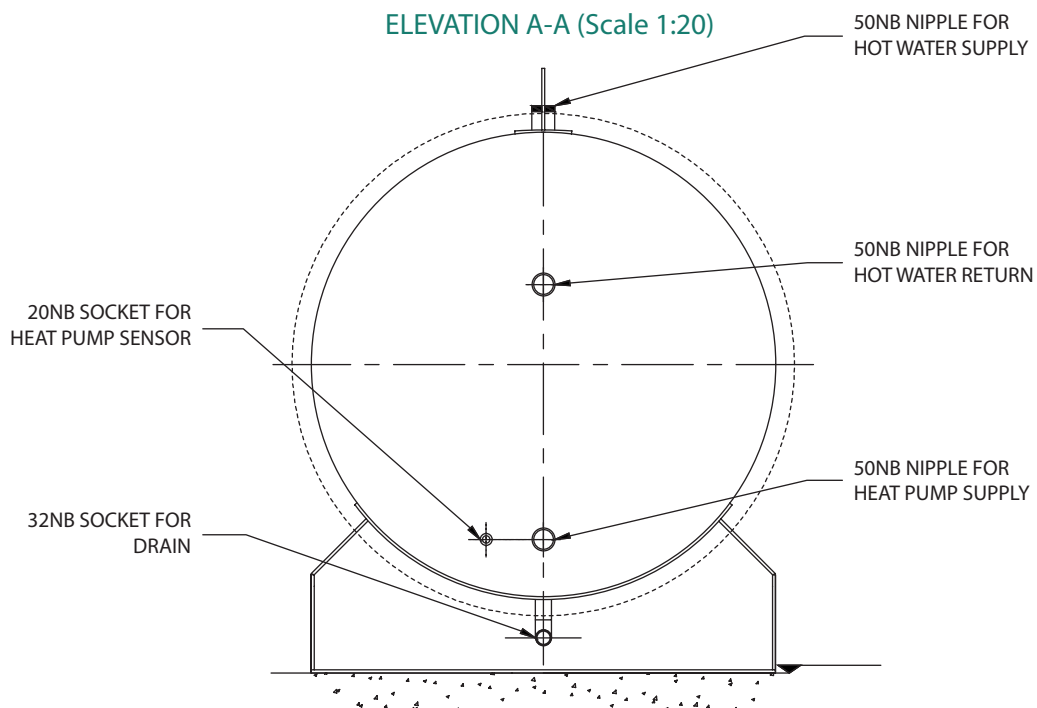
2500L STORAGE VESSEL  
TOP ELEVATION (Scale 1:20)

# CALL OUT DETAIL

## OPTIMA RANGE - HORIZONTAL



2500L STORAGE VESSEL  
ELEVATION A-A (Scale 1:20)



2500L STORAGE VESSEL  
ELEVATION B-B (Scale 1:20)



# HEATING METHOD

There are several means of heating water, suitable for fitting to a hot water storage vessel, each with its own advantages and disadvantages, dependant on our customer requirement and the application.

## HEAT PUMPS

At the core of modern heat pumps lies a refrigeration system, a remarkable technology that provides both cooling and heating. The operation of this system is straightforward. Heat is released when the refrigerant is condensed into a liquid. This heat is then transferred through a heat exchanger, warming either the surrounding or water.

The temperature achieved during this process typically ranges from 43°C to 60°C, depending on the system's design.

## ELECTRICAL ELEMENTS

To ensure efficient heating, the vessel's heater box or the vessel itself, depending on the heating method, is equipped with a 3-phase bank of electrical elements.

Each element is connected phase to neutral to avoid phase-to-phase connections. They are designed to operate reliably at 230V/1Φ/50Hz or 380V/3Φ/50Hz, with a tolerance of  $\pm 10\%$  without any reduction in their expected lifespan.

Elements are directly fitted to the tank via element ports.

They are wired in groups for remote control, avoiding power spikes when all clusters are switched on. A control distribution board (DB) can be provided on request, suitable for both indoor and outdoor applications.

## INLINE WATER HEATERS

Our inline water heaters are constructed from mild steel and coated with Carboguard 545. These units come insulated with 50mm fiber wool and 0.6mm galvanized cladding, with the option for aluminum or stainless steel cladding.

The element loading is tailored to your specifications, with a capacity of up to 480 kW. Each unit is supplied with electrical control, a thermostat, and a safety valve upon request.

The product can also be customized to meet unique requirements, including high working pressures, special materials, non-standard dimensions, and alternative electrical controls.

These inline heaters can be used in conjunction with large storage tanks or without a storage tank, making them suitable for a variety of applications, including heating liquids other than water.

## FEATURES & BENIFITS

**Life-long Energy Savings:** Proper insulation with Glasswool or K-Flex significantly reduces heat loss, leading to long-term energy savings.

**Lightweight and Easy to Handle:** Our insulation materials are lightweight, making installation and handling a hassle-free process.

**Maintenance-Free:** Once installed, our insulation and cladding require minimal maintenance, ensuring long-lasting performance.

**Long Product Life:** Our insulation materials are designed to withstand the test of time, aging slowly and providing reliable insulation.

**Suitable for High Humidity Applications:** Our insulation materials are highly suitable for applications in high-humidity environments.

**Zero Ozone Depleting Potential (ODP):** We take environmental responsibility seriously, and our materials have a zero ODP, contributing to sustainability.

# LAGGING & CLADDING FOR EFFECTIVE INSULATION

Lagging and cladding play a crucial role in insulating vessels and reticulation systems, significantly reducing heat loss and enhancing energy efficiency. At TMCO, we offer a flexible approach to lagging and cladding, allowing us to cater to your specific requirements. Here's an overview of our options and their benefits:

## INSULATION OPTIONS

### MINERAL WOOL

QTech Wired Matt – Mineral Wool is a high-temperature thermal insulation product made from non-combustible mineral wool. The fibers are stitched onto a galvanized or stainless steel wire mesh to form a flexible yet durable mat. This wired configuration improves handling and allows for secure installation on uneven or curved surfaces such as vessels, tanks, ducts, and large-diameter piping.

It boasts a zero Ozone Depleting Potential (ODP) and is manufactured without the production of CFCs, HCFCs or HFCs.

### THERMAL CONDUCTIVITY (According to EN 12 667)

	T (°C)	50	100	200	300
QTech Wired Matt	(m <sup>2</sup> K/W)	0.0362	0.0441	0.0638	0.0901
	MTS*				
QTech Wired Matt	300°C				

### K-FLEX

K-Flex is an elastomeric foam insulation designed for high-temperature applications. It is free of harmful substances like CFCs, HFCs, HCFCs, PBDEs, formaldehyde, and fibers.

Its low smoke emission and zero ozone depletion potential further support its use in sustainable and safety-critical environments.

K-Flex is a suitable alternative to Mineral Wool, particularly for applications requiring high-temp insulation.

## CLADDING OPTIONS

### GALVANIZED SHEET CLADDING (0.5mm - 0.7mm)

A layer of galvanized sheet with a thickness of 0.8mm is applied over the insulation layer.

This protective layer enhances the durability of the vessel and reticulation system, providing an effective barrier against environmental factors.

### ALUMINUM SHEET CLADDING (0.7mm)

Aluminum cladding offers lightweight yet durable protection for our vessels. It provides excellent resistance to corrosion and is ideal for applications where weight reduction and ease of handling are priorities. Aluminum cladding also offers aesthetic appeal, making it suitable for various environments.

### MIRROR STAINLESS STEEL SHEET (0.7mm)

For a premium finish, we offer the option of 0.7mm mirror stainless steel sheeting.

Stainless steel provides not only protection but also an aesthetically pleasing appearance to the vessel and reticulation system.

## LAGGING & CLADDING

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**THANK YOU FOR YOUR TIME.**

**TMCQ YOUR PREFERRED  
MANUFACTURER.**

THE MANUFACTURING



C O M P A N Y  
WHERE PRECISION MEETS PERFECTION