INTEGRATED
VESSEL
SOLUTIONS
(PTY) LTD

HEAT ACCUMULATOR
SPECIFICATION SHEET

"Whether it's designing state-of-the-art hot water systems, implementing cutting-edge technologies, or providing top-notch maintenance and support, IVS is your trusted partner every step of the way."

INTEGRATED
VESSEL
SOLUTIONS
(PTY) LTD

Introduction

Welcome to Integrated Vessel Solutions (IVS), where innovation meets expertise in revolutionizing the hot water industry. With a combined experience of over 30 years, IVS was founded on the premise of identifying the critical need for transformation within the industry and addressing the shortcomings in service provision.

At IVS, we understand the pivotal role that hot water plays in various sectors, from hospitality to healthcare, manufacturing to residential properties. However, we also recognize the challenges and inefficiencies that have persisted within the industry, hindering optimal performance and service delivery.

Driven by a passion for innovation and a commitment to excellence, IVS is dedicated to providing comprehensive and customized solutions that not only meet but exceed the expectations of our clients. Our team of experts brings together years of collective experience and a deep understanding of the complexities of hot water systems, enabling us to offer tailored solutions that are reliable, efficient, and sustainable.

Whether it's designing state-of-the-art hot water systems, implementing cutting-edge technologies, or providing top-notch maintenance and support, IVS is your trusted partner every step of the way. We pride ourselves on delivering exceptional results that enhance operational efficiency, minimize downtime, and ultimately, maximize customer satisfaction.

At IVS, we don't just aim to meet industry standards – we strive to set new benchmarks for excellence. Join us in redefining the future of the hot water industry with Integrated Vessel Solutions.

INTEGRATED VESSEL SOLUTIONS (PTY) LTD

Index

"Where innovation meets expertise in revolutionizing the hot water industry."

Product Overview

Integrated Vessel Solutions offers high-quality Heat Accumulators designed to efficiently store and distribute thermal energy. Our Heat Accumulators are ideal for various applications, providing a reliable and cost-effective solution for managing heat energy.

What is a Heat Accumulator?

A heat accumulator, also known as a thermal energy storage tank or thermal battery, is a device used to store thermal enegy for later use. It essentially acts as a reservoir for excess heat generated by a heating system, such as a heatpumps, solar thermal collectors or boilers, during periods of low demand. This stored heat can then be released when there is a need for heating, such as during peak demand periods o when the primary heat source is not actively generating heat.

Heat accumulators typically consist of a well-insulated tank or container fille with a heat transfer fluid, such as water or a specialized phase-change material. When excess heat is available, it is transferred to the heat transfer fluid, causing its temperature to rise and the thermal energy to be stored within the accumulator. When heat is required, the stored energy can be released from the accumulator by circulating the heat transfer fluid through a heat echanger to provide heating to the desired space or process.

Benefits of an Integrated Vessel

Improved Energy Efficiency:
Heat accumulators are designed to store thermal energy efficiently, minimizing heat loss over time due to their well-insulated construction. This efficiency helps to reduce energy consumption and operating costs compared to conventional steel vessels, which may experience greater heat loss.

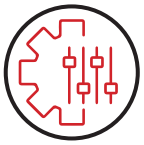
Enhanced Thermal Performance:
Heat accumulators have the benefit utilize advanced heat transfer fluids or phase-change materials that can store thermal energy more effectively than water alone. This allows for greater thermal storage capacity and more precise temperature control, improving overall system performance.

Load Shifting:
Heat accumulators allow for the shifting of heating demand from periods of high demand to periods of low demand, helping to balance energy consumption and reduce peak load on heating systems.

Increased Flexibility:
Heat accumulators provide flexibility in the operation of heating systems, allowing for better integration of renewable energy sources, such as solar or biomass, which may produce variable or intermittent heat output.

Reduced Maintenance Requirements:
Heat accumulators typically require less maintenance compared to conventional steel vessels, as they are less prone to corrosion and scaling due to their specialized construction and materials. This can result in lower maintenance costs and longer service life for the equipment.

Environmental Benefits:
By improving energy efficiency and promoting the use of renewable energy sources, heat accumulators contribute to reducing green-house gas emissions and environmental impact associated with heating systems. This aligns with sustainability goals and regulations aimed at mitigating climate change



Customizable Options:
We offer a range of customizable options to meet specific customer requirements, including size, capacity, and operating parameters.

Easy Maintenance:
Our Heat Accumulators are designed for easy maintenance, minimizing downtime and ensuring continuous operation.

INTEGRATED
VESSEL
SOLUTIONS
(PTY) LTD

Applications for Integrated Vessels

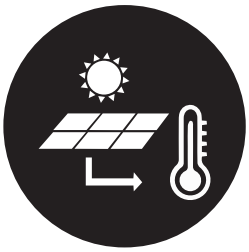
Heat accumulators find applications across various industries and sectors where thermal energy storage is beneficial. Some common applications include:

Residential and Commercial Buildings:

Heat accumulators can be used in conjunction or independently with central heating systems in residential and commercial buildings to store heat generated by boilers or heat pumps.

Industrial Processes:

In industries that require process heating, heat accumulators can be used to store excess heat generated by boilers or other heating systems for later use. This allows for more efficient utilization of energy and can help to smooth out variations in heating demand.



Solar Thermal Systems:

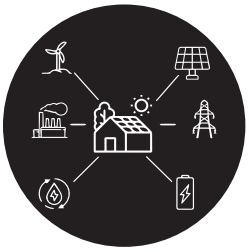
Heat accumulators are commonly used in solar thermal systems to store excess heat generated by solar collectors during sunny periods for use during cloudy days or at night. This helps to ensure a consistent supply of hot water or space heating even when solar energy production is intermittent.

Agricultural and Horticultural Applications:

Heat accumulators can be utilized in agricultural and horticultural settings to store excess heat generated by biomass boilers or other heating systems for use in greenhouse heating or crop drying operations. This can help to optimize growing conditions and improve crop yields.

District Heating Systems:

Heat accumulators can be integrated into district heating systems to store excess heat generated by combined heat and power (CHP) plants or waste heat from industrial processes. This stored heat can then be distributed to residential or commercial buildings as needed, improving system efficiency and reliability.



Microgrid and Off-grid Systems:

In off-grid or microgrid systems, where access to grid electricity is limited or unreliable, heat accumulators can be used to store excess energy generated by renewable sources such as solar or wind power for later use in heating applications. This helps to maximize the utilization of renewable energy resources and improve energy independence.

Construction

IVS (Integrated Vessel Solutions) takes pride in the construction and design of our integrated vessel shells, engineered to withstand the rigors of high-temperature environments with unparalleled durability and efficiency.

Our vessel shells are meticulously crafted from fiber-glass reinforced with vinyl ester resin, combining the strength of fiber-glass with the exceptional thermal resistance of vinyl ester resin. This construction ensures superior performance even under extreme heat conditions, making our vessels suitable for a wide range of hot water applications.

Within our vessels, we utilize internal heat exchanges crafted from premium-grade stainless steel corrugated tubes. These tubes are engineered with a material wall thickness of 0.3mm, striking the perfect balance between durability and thermal conductivity. With this construction, our heat exchanges are capable of efficiently transferring heat while maintaining structural integrity, while reducing the chance of scale build-up due to the corrugated design. Furthermore, our heat exchanges are designed to withstand operational pressures of up to 10 bar, providing peace of mind in even the most demanding industrial settings.

At IVS, we are committed to engineering excellence and innovation, delivering integrated vessel solutions that meet and exceed the expectations of our clients. With our high-quality construction materials and meticulous attention to detail, we ensure that our vessels offer unmatched performance, reliability, and longevity in every application.

INTEGRATED
VESSEL
SOLUTIONS
(PTY) LTD

Aesthetics

Offering accumulators in a variety of colours is a thoughtful touch. It allows your equipment to seamlessly blend with the architectural design, enhancing the overall aesthetic appeal of the building. Matching the equipment to the building's design creates a cohesive and visually pleasing environment, which can be particularly important in spaces where appearance matters. This attention to detail demonstrates a commitment to both functionality and design, catering to the diverse preferences and requirements of our customers.

Vessel Outer Coating Colour Selection

P4108 Post Office Red (10)	P862 Bright Orange (15)	P641 Traffic Yellow (15)	P6042 Canary Yillow (15)	P6179 Brilliant Yellow (15)
P518 Lime Yellow (10)	P525 Lime Green (10)	P5041 Loerie Green (10)	P5155 Andrag Green (10)	P541 Brilliant Green (10)
P200 Black (5)	P915 Dark Admiralty (10)	P911 Mid Grey (10)	P939 Ascot Grey (10)	P913 Mineiral Grey (10)
P919 Cloud Grey (10)	P9317 Cape Grey (10)	P918 Mist Grey (10)	P932 Powder Grey (10)	P1075 White (15)
P584 Moss Green (10)	P527 Olive Green (10)	P5061 Dark Olive (10)	P3038 Pool Blue (10)	P336 Knysna Blue (10)
P3334 Alpine Blue (10)	P3335 Capri Blue (10)	P340 Strong Blue (10)	P349 Flag Blue (10)	P455 Cocmos Pirk (10)

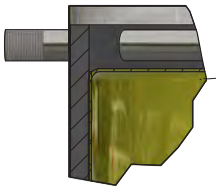
Accumulator Vessel Specification

SPECIFICATION SHEET

Description	500L	1000L	1500L	2000L	2500L	3000L	3500L	4000L	4500L	5000L	5500L
Capacity (l)	500L	1000L	1500L	2000L	2500L	3000L	3500L	4000L	4500L	5000L	5500L
Flow rate (l/s)	0,53 - 1,06	0,53 - 1,06	1,06 - 1,60	1,06 - 1,60	1,06 - 2,11	1,60 -2,11	1,60 -2,92	1,60 -2,92	2,92 - 4,86	2,92 - 4,86	2,92 - 4,86
Diameter (mm)	1050	1050	1250	1250	1450	1450	1650	1650	1850	1850	2050
Overall Height (mm)	1000	1800	1800	2310	2100	2500	2200	2500	2200	2410	2150
Water Inlet / Outlet Port Sizes	25mm	25mm	25mm-32mm	25mm-32mm	25mm-40mm	25mm-40mm	32mm-50mm	32mm-50mm	50mm-80mm	50mm-80mm	50mm-80mm
Water Inlet / Outlet Port Type	Copper	Copper	Copper	Copper	Copper	Copper	Copper	Copper	Copper	Copper	Copper
Heatpump Inlet / Outlet Port	316L S/S	316L S/S	316L S/S	316L S/S	316L S/S	316L S/S	316L S/S	316L S/S	316L S/S	316L S/S	316L S/S
Operating pressure	10 Bar	10 Bar	10 Bar	10 Bar	10 Bar	10 Bar	10 Bar	10 Bar	10 Bar	10 Bar	10 Bar
Gross Weight	81kg	102kg	123kg	151kg	193kg	224kg	248kg	271kg	293kg	328kg	355kg
Access Hatch	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Max Operating Temperature	90°C	90°C	90°C	90°C	90°C	90°C	90°C	90°C	90°C	90°C	90°C

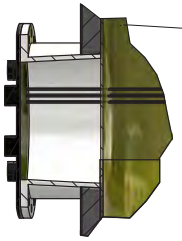
Description	6000L	6500L	7500L	8000L	8500L	9000L	9500L	10 000L	11 000L	12 000L	15 000L
Capacity (l)	6000L	6500L	7500L	8000L	8500L	9000L	9500L	10 000L	11 000L	12 000L	15 000L
Flow rate (l/s)	2,92 - 5,83	2,92 - 5,83	2,92 - 5,83	2,92 - 5,83	2,92 - 5,83	2,92 - 5,83	2,92 - 5,83	2,92 - 6,80	2,92 - 6,80	3,99 - 7,78	3,99 - 7,78
Diameter (mm)	2050	2050	2250	2250	2450	2450	2450	2650	2650	2850	2950
Overall Height (mm)	2320	2500	2370	2520	2250	2380	2500	2250	2450	2390	2650
Water Inlet / Outlet Port Sizes	50mm-80mm	50mm-80mm	50mm-80mm	50mm-80mm	50mm-80mm	50mm-80mm	50mm-80mm	50mm-80mm	50mm-80mm	50mm-80mm	50mm-80mm
Water Inlet / Outlet Port Type	Copper	Copper	Copper	Copper	Copper	Copper	Copper	Copper	Copper	Copper	Copper
Heatpump Inlet / Outlet Port	316L S/S	316L S/S	316L S/S	316L S/S	316L S/S	316L S/S	316L S/S	316L S/S	316L S/S	316L S/S	316L S/S
Operating pressure	10 Bar	10 Bar	10 Bar	10 Bar	10 Bar	10 Bar	10 Bar	10 Bar	10 Bar	10 Bar	10 Bar
Gross Weight	389kg	430kg	486kg	511kg	532kg	562kg	587kg	621kg	689kg	733kg	845kg
Access Hatch	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Max Operating Temperature	90°C	90°C	90°C	90°C	90°C	90°C	90°C	90°C	90°C	90°C	90°C

Accumulator Vessel Typical Drawing & Call Out Detail



Hot and Cold water manifolds
These are manufactured from Copper and to the required design of each vessel and flow

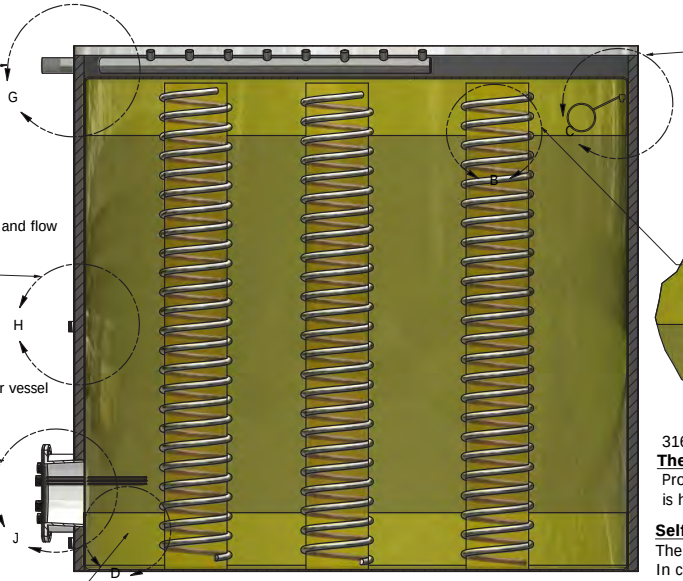
European spec PVC-U Ports
These ports are used for Heat pump and drain connections from the inner Vinyl Ester vessel

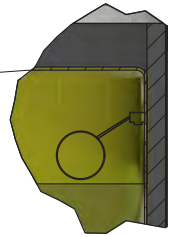


NB400 Manhol can be added on Request
for Elements and access into the Vessel

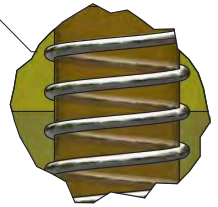
Vinyl Ester Inner Vessel
Bisphenoil-A epoxy modified vinyl ester resin that is unpromoted and non-thixotropic.
It has excellent chemical and corrosion resistance,especially to acids, alkalis
and oxidizing agents
Outstanding adhesive properties ,as well as good toughness and fatigue.

Ultragel Gelcoats
These gelcoats are designed for the automotive sector for good durability
colour stability and UV resistance, combined with flexibility





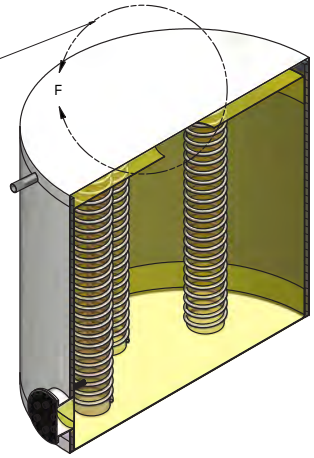
1/2" Brass filling Valve
This ensures Vessel stay on optimal level for best performance



316 Stainless steel Coils

The domestic hot water
Produced by on-demand principle through heat exchange
is hygienic hot water ,preventing Legionella and bacteria proliferation °

Self-cleaning ,less maintenance
The materials used is mirror surface 316 stainless steel.
In combination and swirling, the polished surface does not support deposit and limescale.
It ensures a constant high performance and minimum maintenance throughout the entire service life.



DRAWN	2024/03/28	INTEGRATED VESSEL SOLUTIONS (PTY) LTD
CHECKED		
QA		
MFG		
APPROVED		
SIZE D	DWG NO IVS SPEC Sheet	REV
SCALE 1 / 19	SHEET 1 OF 1	

INTEGRATED
VESSEL
SOLUTIONS
(PTY) LTD

Installation & Logistics Simplified

The transportability and ease of installation of heat accumulators make them ideal for applications where access is challenging or space is limited.

The lightweight construction of heat accumulators, significantly reduces their weight compared to conventional steel storage vessels. This makes them easier to transport to remote or hard-to-reach locations, as well as simpler to manoeuvre into position during installation.

Additionally, the on-site construction flexibility offered by heat accumulators allows for customization to fit specific spatial constraints or site requirements. Unlike large, bulky steel vessels that may require heavy machinery for rigging and installation, heat accumulators can often be assembled on-site using modular components or prefabricated sections. This streamlined installation process not only saves time and labour but also minimizes disruption to existing infrastructure and operations.

Moreover, the compact footprint of heat accumulators makes them suitable for installation in areas where space is at a premium, such as rooftops, basements, or confined mechanical rooms. Their versatility in placement ensures that thermal energy storage can be integrated seamlessly into a wide range of environments and applications, maximizing the efficiency and effectiveness of heating systems.

Overall, the ease of transport and installation offered by heat accumulators, coupled with their lightweight construction and flexibility in placement, make them an ideal solution for challenging installation scenarios. Whether in remote locations, confined spaces, or areas with limited access, heat accumulators provide a practical and efficient means of storing thermal energy for heating applications.

We thank you for your time!

For more information on our Heat Accumulators and to discuss your specific requirements, please contact Integrated Vessel Solutions at **Email: info@ivsa.co.za OR visit our website www.ivsa.co.za**

Disclaimer: Product specifications and features are subject to change without prior notice. Please contact us at the above provided details for the most up-to-date information.