

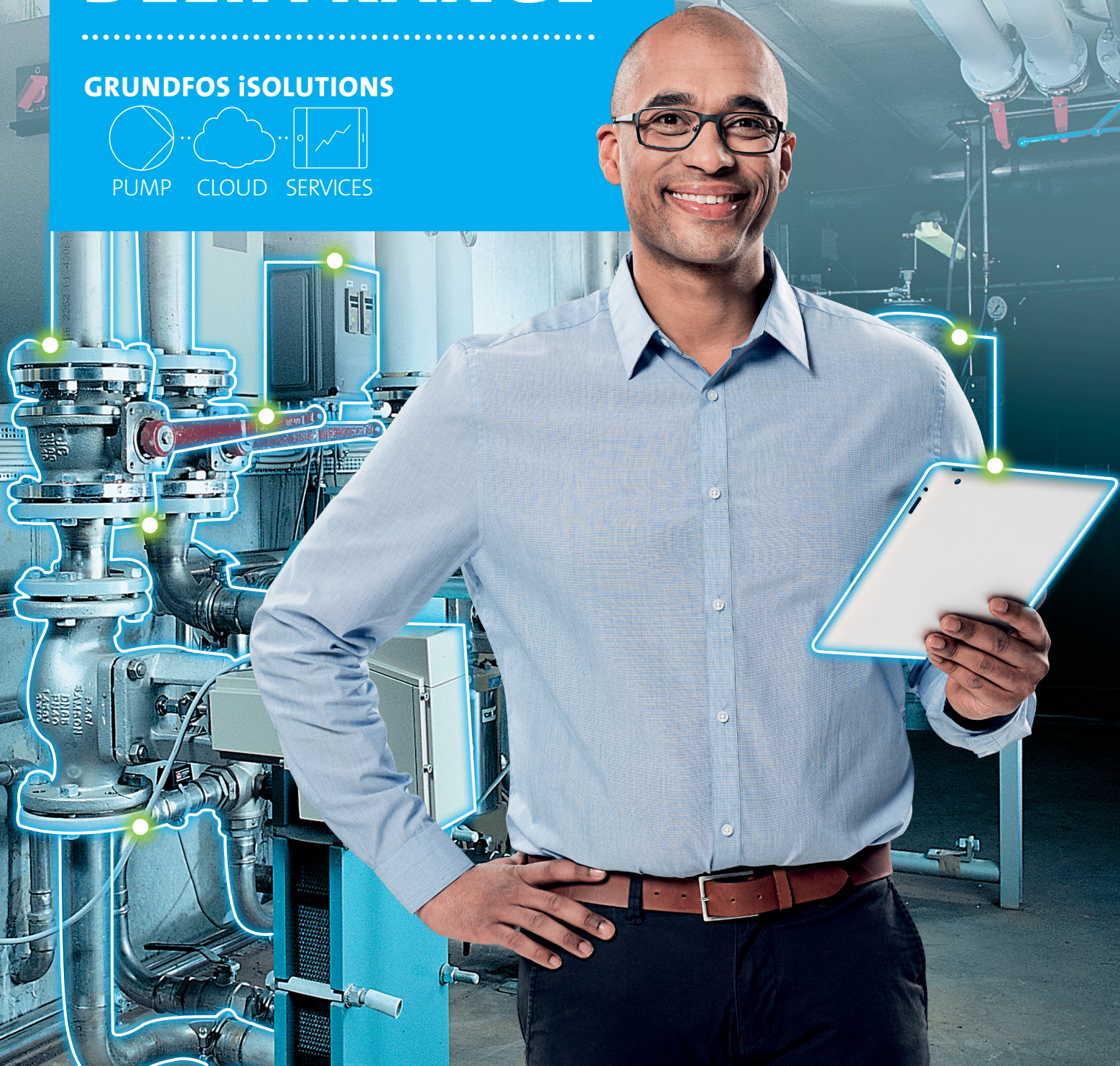
MODULAR SYSTEMS

GRUNDFOS DELTA RANGE

GRUNDFOS iSOLUTIONS



PUMP CLOUD SERVICES



be
think
innovate

GRUNDFOS 

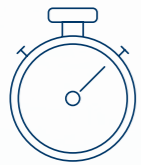
WHAT IS A DELTA MODULAR SYSTEM?

Also known as off-site builds or engineered to order, modular systems are designed, engineered and manufactured in a safe, controlled factory environment. As the construction sector is pressured towards increasing efficiency, there is a growing trend towards numerous applications being built off site.

The DELTA range has been developed specifically to offer various modularised standard solutions to the building services industry.

BENEFITS OF MODULAR SYSTEMS

While other industries have invested in innovation to increase efficiency and cost-effectiveness, the construction industry has failed to keep up. Many projects still suffer from slow installation, go past their completion deadline and overrun their budgets – all challenges that can be reduced with prefabricated systems.



60% of new constructions suffer a time overrun of more than 10%¹



76% of new projects run more than **25% over budget**²



75% of on-site labour can potentially be reduced through the use of prefabricated systems³

1. Sources: Time and Cost Performance of Construction Projects in Southern and Central Regions of Peninsular Malaysia 2012 IEEE Colloquium on Humanities, Science & Engineering Research (CHUSER 2012), December 3-4, 2012, Kota Kinabalu, Sabah, Malaysia
2. PWC report: Correcting the course of capital projects, April 2013. Page 2, figure 1: Projects under budget are the exception, not the rule. Pwc analysis, based on industry research.
3. World Economic Forum, Shaping the Future of Construction – A Breakthrough in Mindset and Technology, World Economic Forum (with Boston Consulting Group), 2016. http://www3.weforum.org/docs/WEF_Shaping_the_Future_of_Construction_full_report_.pdf

Modular systems remove unknown factors associated with on-site construction. Building select applications off site ensures quality in critical systems and increases on-site productivity while reducing the risk of injury, delays, waste, and rework. Off-site builds benefit from:

REPLICATION & CUSTOMISATION

Another of the many benefits afforded by modularity, is that up to 80% of the unit can be replicated without extra design. This means that up to 80% of the parts, controls and functional attributes can be reproduced – saving significant time on design and specification. At least 20% of the total design is customised to ensure an optimal fit to project requirements.

LESS RISK

Modular systems can significantly reduce commercial and safety risks for any project. Working in a controlled environment makes builds less prone to labour shortages and logistic movements and reduces project and cost overruns. It ensures easier and faster installation, and, with fewer site movements and less hot work on site, reduces health and safety risks – meaning less insurance costs. Lastly, environmental footprint is significantly improved through less frequent equipment deliveries and significant waste reduction.

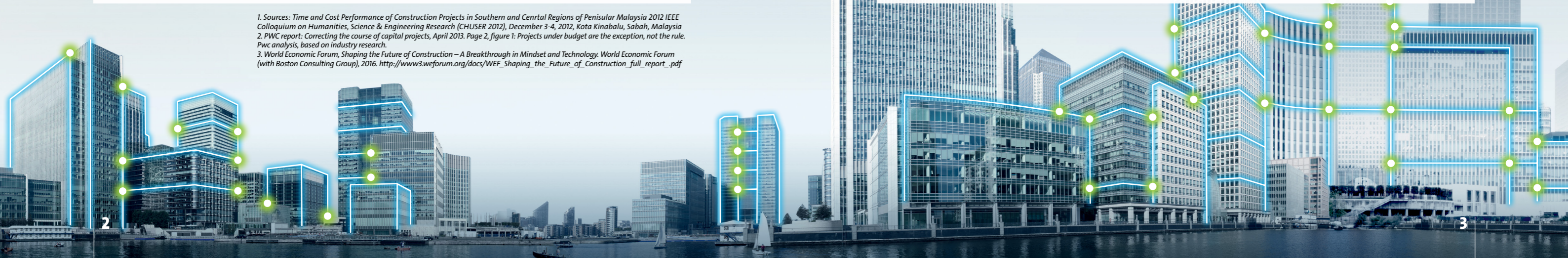
IMPROVED QUALITY

Not only is factory labour more productive than on-site work, but the controlled environment also ensures significant quality improvements. The labour force is equipped with the proper training for the task and ensures quality assurance testing is carried out before installation. The Factory Acceptance Test (FAT) is a process that evaluates the equipment during and after the assembly process, verifying that it is built and operated per design specifications – which significantly reduces energy loss after installation.

REDUCE
WASTE
TO ONLY
2-3%

INCREASE
SAFETY
BY UP TO
80%

REDUCE SITE
LABOUR COSTS
BY UP TO
55%



MEET THE DELTA RANGE

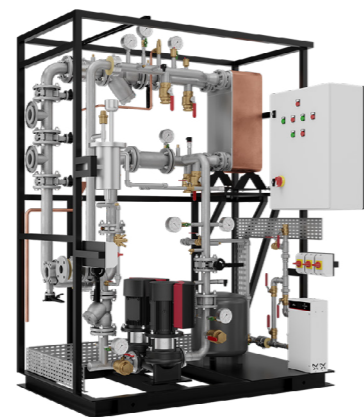
GRUNDFOS DELTA HCU MODULAR HEATING & COOLING UNITS (See page 6/7)



Used in heating and cooling systems, this modular solution is ideal for use in:

- LTHW
- CHW
- District Heating
- District Cooling
- Data Centres

GRUNDFOS DELTA TiU MODULAR THERMAL INTERFACE UNITS (See page 8/9)



Used in modular thermal interface systems, this modular solution is ideal for use in:

- New and refurb office builds
- District Heating
- District Cooling

GRUNDFOS DELTA RaC MODULAR RUN AROUND COIL UNITS (See page 10/11)



Used in modular run around coil systems, this modular solution is ideal for use in:

- Air handling systems

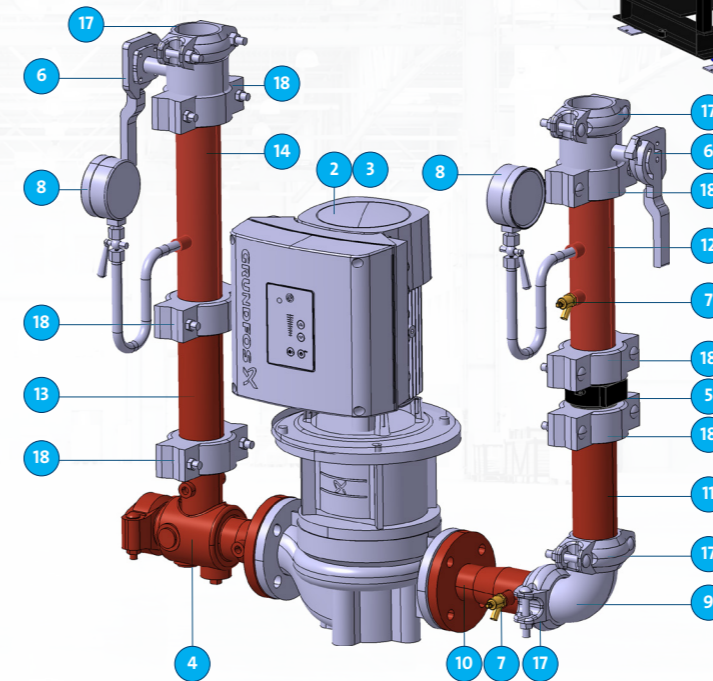
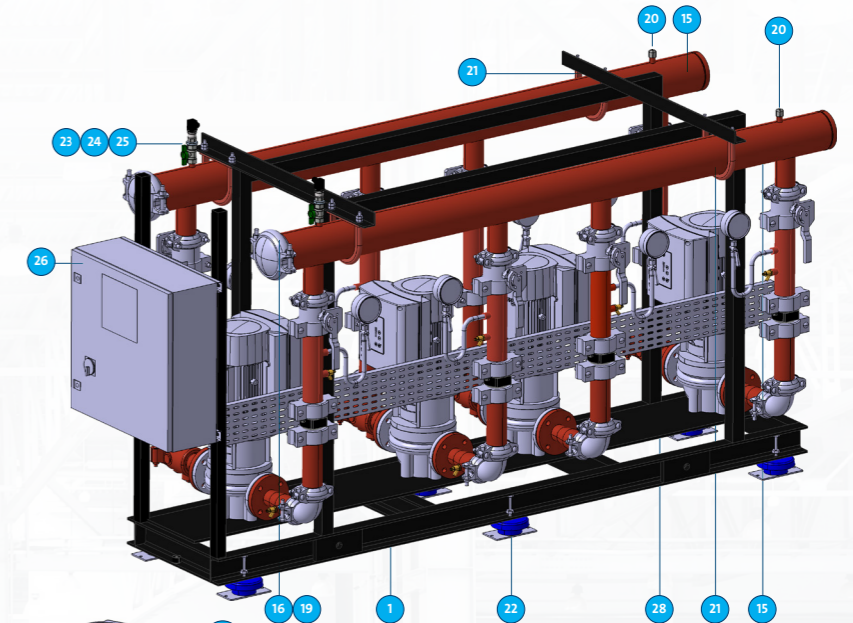
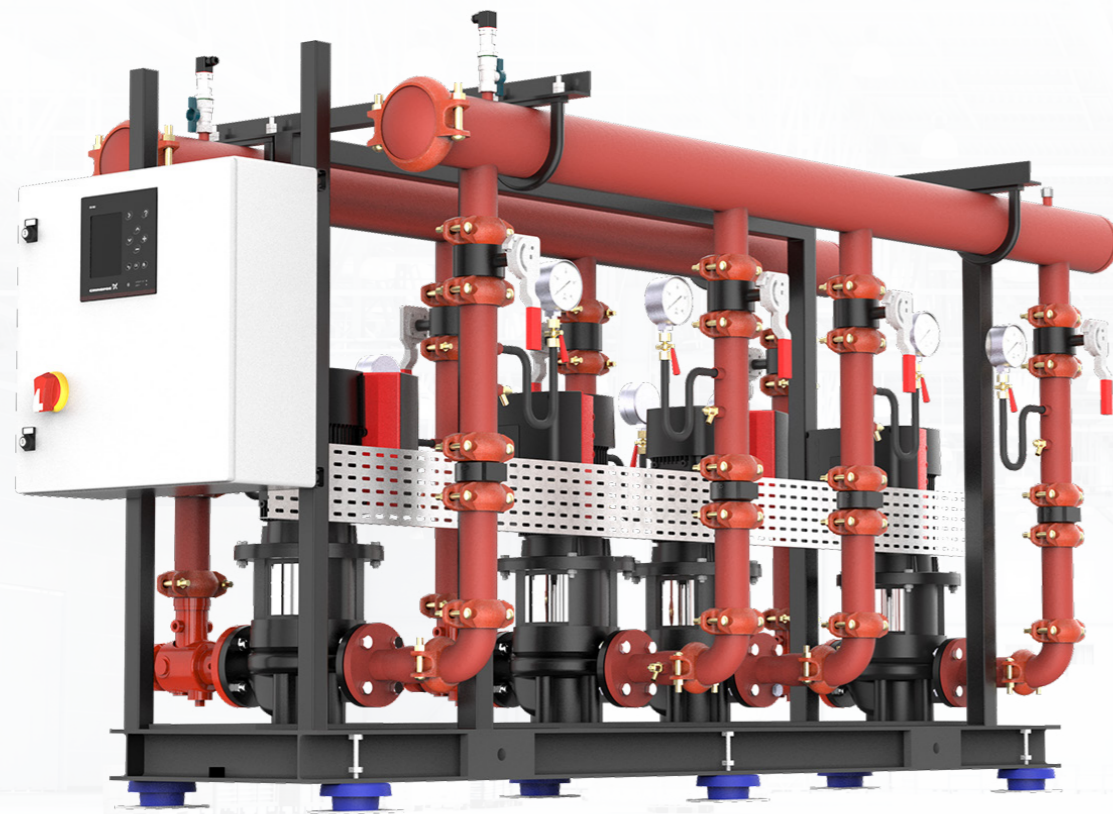
GRUNDFOS DELTA PU MODULAR PRESSURISATION & VESSEL UNITS (See page 12/13)



Used as a pressurisation and vessel system, these units are used in:

- LTHW
- CHW
- District Heating
- District Cooling

GRUNDFOS DELTA HCU MODULAR HEATING & COOLING UNITS



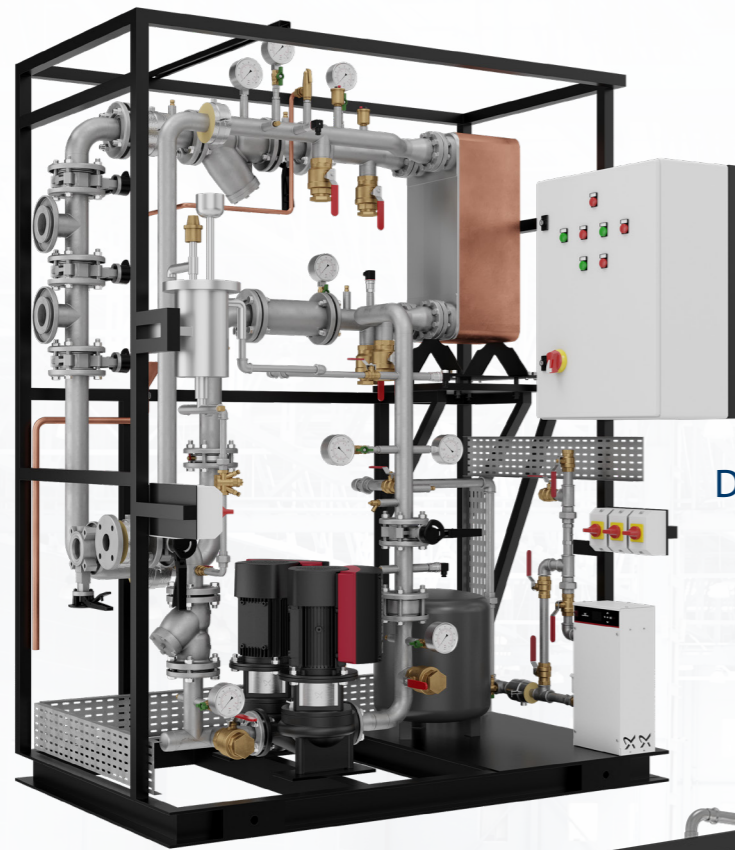
BILL OF MATERIALS

ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	Base	8	Pressure Gauge Assembly (see detail)
2	Pump - TPE50-430	9	DN65 90 Elbow No.10 - Victaulic
3	Pump - TPE50-430 - Motor 180	10	DN50-65 Concentric Reducer
4	DN50 PN16 - DN65 Vic Suction Diffuser 731-D	11	DN65 Spool piece
5	DN65 NRV Series 716 - Victaulic	12	DN65 spool piece c/w 1 x 3/8" Tapping, 1 x 1/2" Tapping
6	DN65 Butterfly Valve Series 761 vic-300 - Victaulic	13	DN65 Spool Piece
7	1/2" Drain Cock	14	DN65 spool piece c/w 1 x 3/8" Tapping

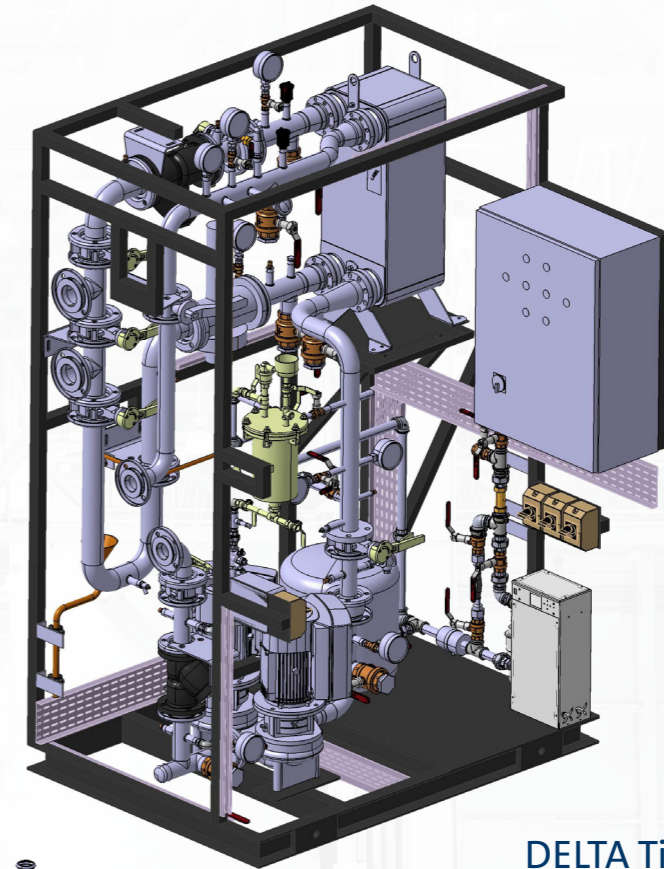
BILL OF MATERIALS

ITEM	DESCRIPTION	ITEM	DESCRIPTION
15	DN125 Manifold	22	Vibration Dampers
16	DN125 End Cap No.60 - Victaulic	23	3/4" Ball Valve
17	DN65 Rigid Coupling Style 107N - Victaulic	24	3/4" to 1/4" Fitting Connector
18	DN65 Flex Coupling Style 177N - Victaulic	25	Pressure Transducer MBS3000 0-10 Bar
19	DN125 Rigid Coupling Style 107N - Victaulic	26	MPC CU352 Panel c/w IO351B
20	3/4" Cap	27	CBS-PS-Delta-Flow and Temp Sensor kit (supplied loose)
21	DN125 Pipe Clamps	28	Galv Cable Tray

GRUNDFOS DELTA TiU MODULAR THERMAL INTERFACE UNITS



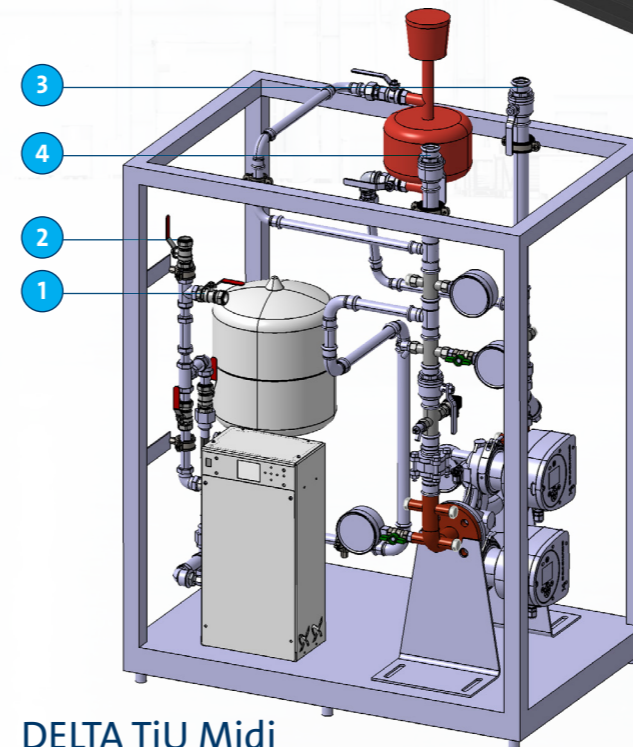
DELTA TiU



DELTA TiU



DELTA TiU Midi

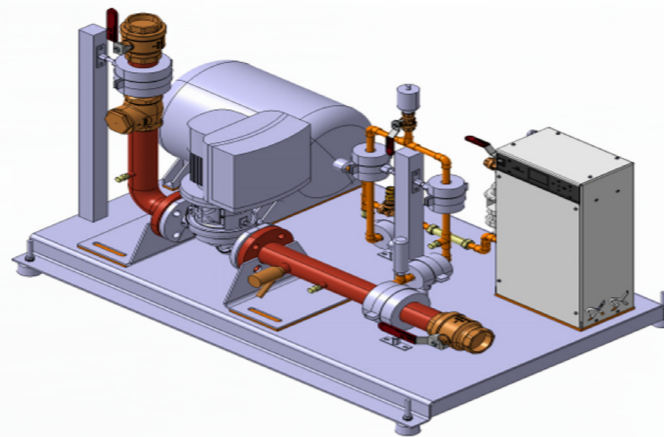


DELTA TiU Midi

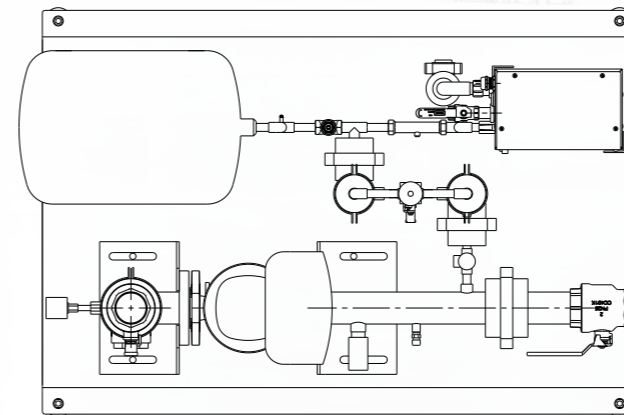
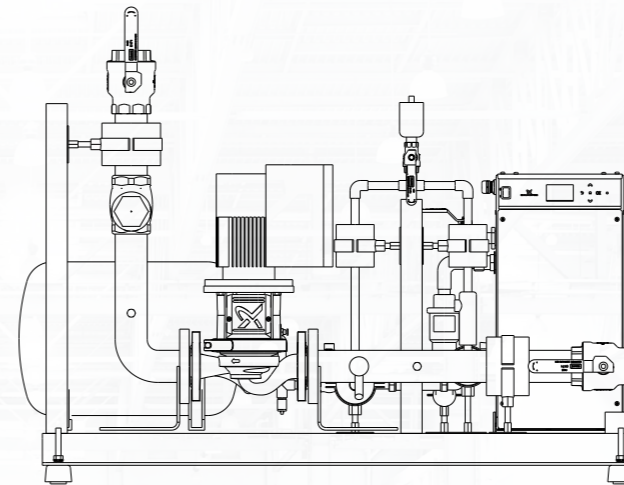
CONNECTIONS

NO.	DESCRIPTION	CONNECTION SIZE
1	Mains water drain	22mm Female
2	Mains water connection	22mm Female
3	LTHW Return	32mm Female
4	LTHW Supply	32mm Female

GRUNDFOS DELTA RaC MODULAR RUN AROUND COIL UNITS

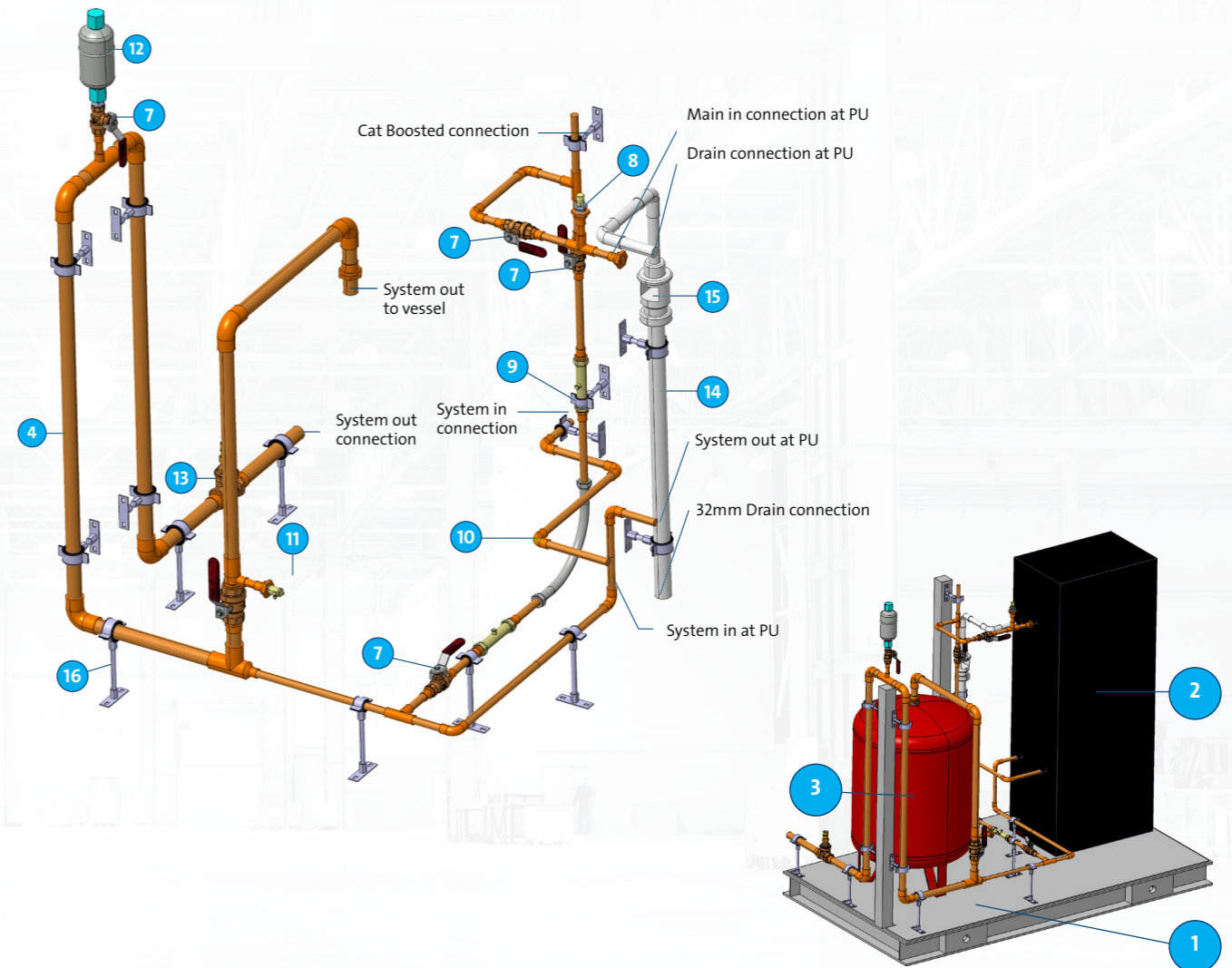


DELTA RaC 32



UNIT NAME	DELTA RaC-32	DELTA RaC-40
PUMP INFORMATION		
Type	TPE3 32-200N	TPE3 40-240N
Integral VSD & Pressure Sensors	Yes	Yes
Power supply (V/Hz/Ph)	230/50/1	230/50/1
Motor size (kW)	0.75	1.5
FLC (A)	4	7.6
RPM	5200	5500
PRESSURISATION UNIT		
Pressurisation type	PHT-A-N230	PHT-A-N230
Power supply	230/50/1	230/50/1
Power consumption (W)	28	28
FLC (A)	0.12	0.12
Max pressure (Bar)	3	3
Max flowrate (litres/hour)	80	80
Water inlet connection	1/2"	1/2"
Overflow connection	1"	1"
Make up tank capacity (litres)	2	2
Pressure gauge	0.7 to 6.0	0.7 to 6.0
Pressure switch range (bar)	0.7 to 6.0	0.7 to 6.0
EXPANSION VESSEL		
Type	Diaphragm	Diaphragm
Capacity (litres)	25	25
GENERAL INFORMATION		
Fluid	Up to 30% glycol	Up to 30% glycol
Connection sizes	2"	2"
Sound pressure level (dB(A) @1m)	<70	<70
Approximate weight (kg)	115	120
Buil-in differential-pressure & temp	Yes	Yes
AUTOADAPT & FLOWADAPT capabilities	Yes	Yes

GRUNDFOS DELTA PU MODULAR PRESSURISATION & VESSEL UNITS



BILL OF MATERIALS

ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	PU Base	9	Double Check Valve
2	FOC - PHD C160 Press Unit	10	Flex Connection
3	FOC - FCST 110 6B Vessel	11	Drain Cock
4	28mm Copper Pipe	12	Auto Air Vent
5	15mm Copper Pipe	13	1" Lock Shield Valve
6	1" Threaded Ball Valve	14	PVC Pipe
7	1/2" Threaded Ball Valve	15	32mm Tundish
8	Test Point BLUE	16	Pipe Clamp Assembly

GRUNDFOS MANUFACTURES EXCELLENCE

The Grundfos manufacturing plant is a recognised centre of manufacturing excellence based in Sunderland, England. It offers customers a streamlined and cost-effective option that incorporates design, build, assembly, test, and distribution.



THE BENEFITS OF WORKING WITH GRUNDFOS

- Unrivalled quality
- Collaborative design
- Innovative, intelligent pump solutions
- 50+ years of production experience
- Extensive build space
- Up to 40 bar test capacity
- Full factory testing of complete packaged plant

PLUG & PLAY

All prefabricated systems are customised and tested to individual or collective requirements. Units arrive at the customer's facility ready to be connected externally, mechanically and electrically – and able to start immediately. Grundfos also ensures that all prefabricated solutions come fitted with components from trusted suppliers, and all quality checks are carried out to prevent incorrect or faulty equipment from reaching the site.

FACTORY FACTS

Our factory covers 25,000m² with a production and testing area of 15,200m² and is constructed and laid out as a flexible workspace to cater to ever-shifting requirements. The plant operates a Lean Manufacture model, underpinned by Kaizen – meaning constant improvement in operations and training our workforce with transferable skills. The factory can handle numerous tasks, including:

- Booster pumps (CR range) production and testing – 400m²
- Control panel assembly and testing – 352m²
- Off-site build / Engineered-to-Order (ETO) assembly and test area – 1,230m³
- 2x2 tonne (SWL) overhead cranes on one self-contained, 60x80m, gantry
- Four CNC machines for turning and milling
- Oxy-Acetylene and MIG/TIG welding
- Roll grooving capabilities
- Tools for the assembly of mechanical and electrical packages

ALSO AVAILABLE FROM GRUNDFOS

The DELTA range is just one offering from our wide portfolio of pumps and pump solutions. We can also deliver an extensive packaged plant rooms and fire pump house solutions.



Please contact us for more information on these, or anything else from our extensive pump product or solutions portfolio.

