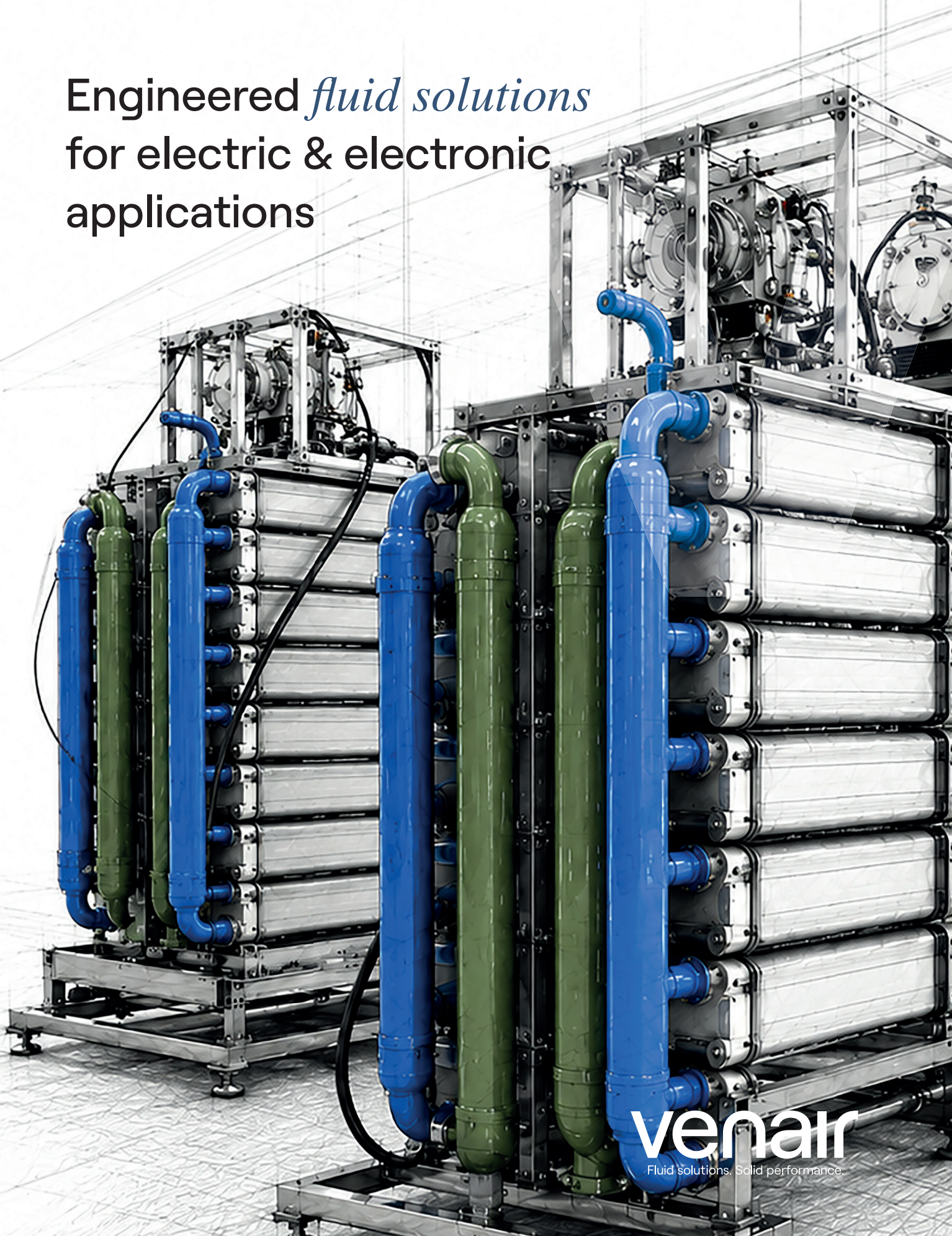


ELECTRIC & ELECTRONIC SYSTEMS

Engineered *fluid solutions* for electric & electronic applications



venar
Fluid solutions. Solid performance.



ABOUT US

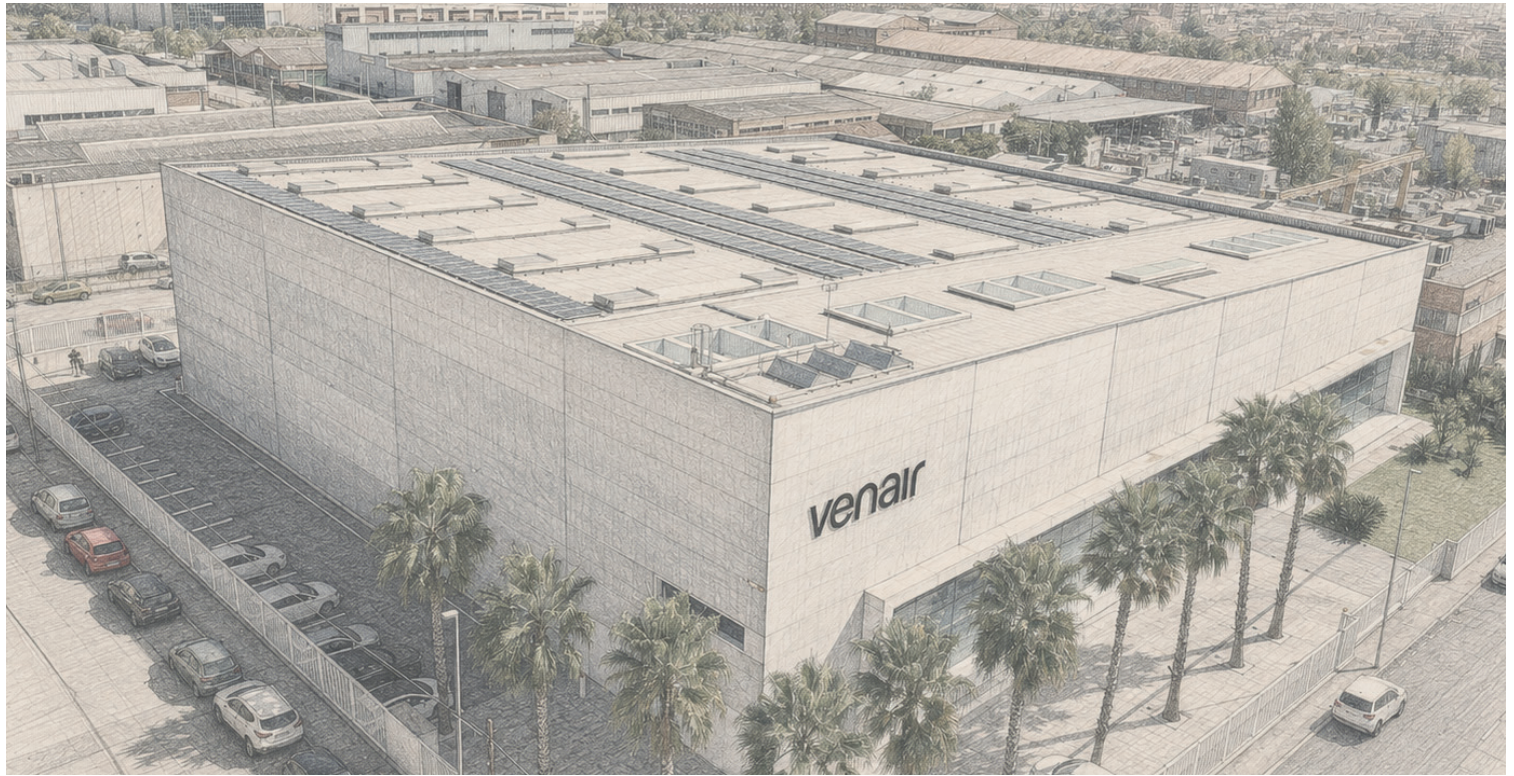
At Venair, we design and manufacture fluid transfer solutions for critical applications across the world's most demanding industries.

With more than 40 years of experience and a presence in 104 countries, we support customers in Biopharma, Food & Beverage, Clean Energy and High Performance sectors through engineered products designed for reliability, safety and performance.

Our commitment to quality is backed by internationally recognized certifications, including ISO 9001, ISO 14001, ISO 13485 and IATF 16949. As a pioneer in hydrogen technologies, Venair became the first company in the world to obtain DNV certification for flexible tubes used in marine fuel cell applications.

Together, we help ensure the continuous operation of critical processes worldwide.

- ISO 9001
- ISO 14001
- ISO 13485
- IATF 16949
- DNV



WHY INDUSTRY LEADERS CHOOSE VENAIR



Innovation & Materials

- Advanced material development
- Hydrogen and clean energy technologies
- Continuous product innovation



Engineering Expertise

- Customized fluid transfer solutions
- Application-specific design
- Technical consulting and support



Quality & Validation

- Product testing and validation
- Industry-specific certifications
- Global quality standards



Manufacturing Excellence

- Custom and series production
- Advanced manufacturing processes
- Reliable global supply



ELECTRIC & ELECTRONIC SYSTEMS

The rapid growth of electrification, digital infrastructure and clean energy technologies is driving increasing demands for reliable fluid transfer and thermal management solutions. Venair supports critical applications such as fuel cells, data centers, cooling systems, battery technologies, transformers and power electronics with engineered products designed to ensure safety, efficiency and long-term performance.

Our solutions help optimize heat dissipation, improve energy efficiency and enhance the reliability of mission-critical equipment operating under demanding thermal and environmental conditions. From hydrogen technologies and energy storage systems to high-density data centers and industrial cooling circuits, Venair provides products engineered to meet the evolving requirements of the Electric & Electronics industry.



CONTENT INDEX:

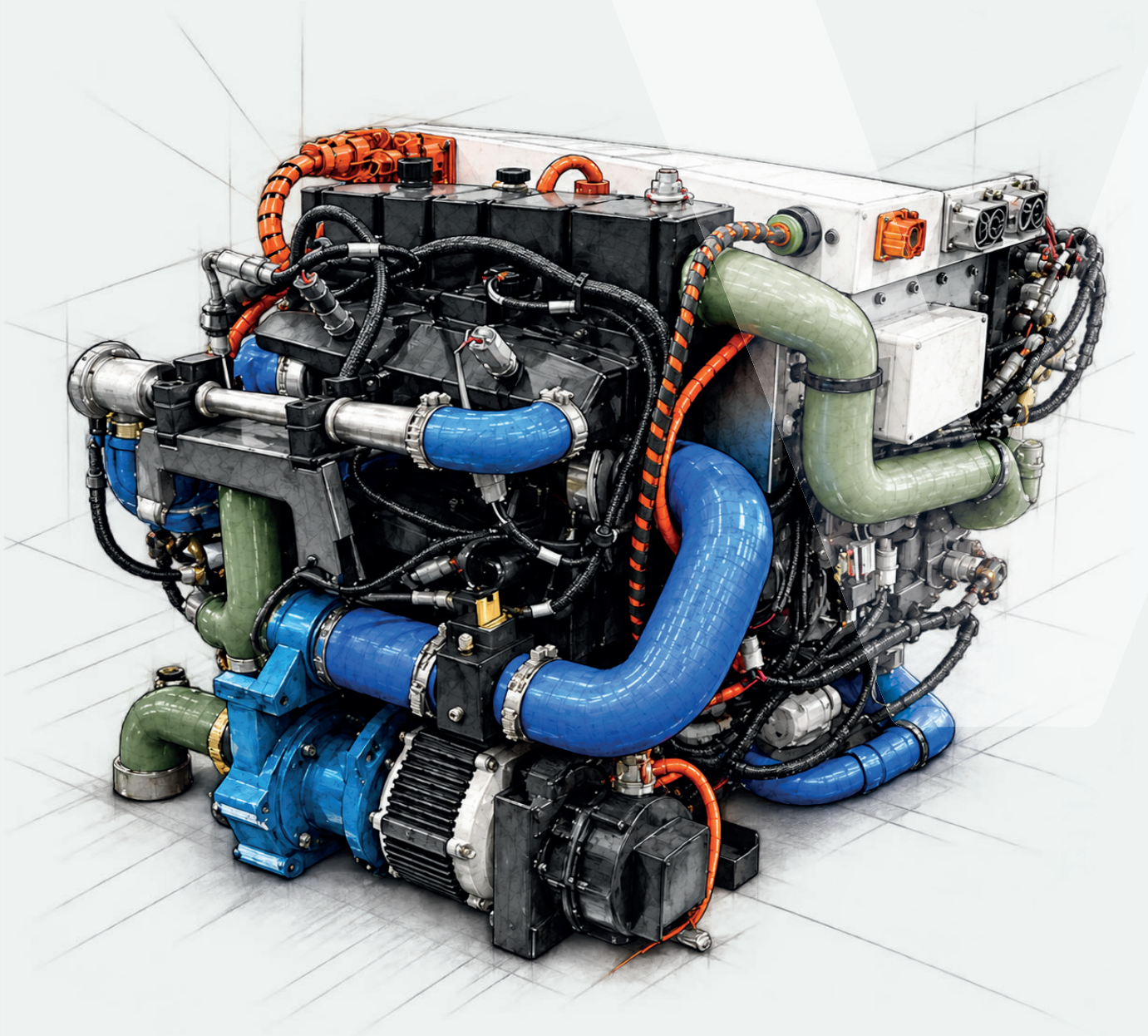
1. PRODUCTS	5
1.1 PEM FUEL CELLS & ELECTROLYZER SYSTEMS	6
1.2 DATA CENTER THERMAL MANAGEMENT	13
1.3 COOLING & HEATING SYSTEMS	19
1.4 RAILWAY FIRE-SAFE SOLUTIONS	23
1.5 STANDARD SHAPES	26
2. CONNECTIONS	27
3. SPECIFICATION CHARTS	29

1. PRODUCT INDEX

1.1 PEM FUEL CELL & ELECTROLYZER SYSTEMS	6
1.1.1 VENA® PEM CELL FLAME	7
1.1.2 VENA® PEM CELL HP40	8
1.1.3 VENA® PEM FUEL	9
1.1.4 VENA® PEM PURE	10
1.1.5 VENA® PEM COOL	11
1.2 DATA CENTER THERMAL MANAGEMENT	13
1.2.1 VENA® THERMIC FLEX	14
1.2.2 VENA® THERMIC CORE	15
1.2.3 VENA® THERMIC FLOW	16
1.2.4 METAL MANIFOLDS	17
1.2.5 CONNECTIONS	18
1.3 COOLING & HEATING SYSTEMS	19
1.3.1 VENA® SIL	20
1.3.2 VENA® HEATER	21
1.3.2 VENA® SIL LL-RT	22
1.4 RAILWAY FIRE-SAFE SOLUTIONS	23
1.4.1 VENA® RAIL	24
1.4.2 VENA® RAIL PURE	25
2. CONNECTIONS	27
2.1 SIDE OUTLETS & EMBEDDED PORTS	28



1.1 PEM FUEL CELL & ELECTROLYZER SYSTEMS



Proton Exchange Membrane (PEM) fuel cells are a key technology for clean energy, providing efficient hydrogen-based power for mobility, stationary systems and marine applications.

Their performance depends on reliable auxiliary circuits such as cathode air distribution, cooling and thermal management, requiring fluid transfer solutions with low permeability, controlled electrical conductivity, high purity and long-term durability.

Leveraging years of experience with fuel cell manufacturers and system integrators, Venair has developed a dedicated range of hose solutions for PEM technology, supporting cooling circuits, cathode air management and auxiliary systems to maximize efficiency, reliability and operational safety across hydrogen applications.

1.1.1 VENA® PEM CELL FLAME

Low permeability hybrid elastomer hose



MATERIAL

Flame-retardant EPDM derived composite elastomer with 3 polyester reinforcement.

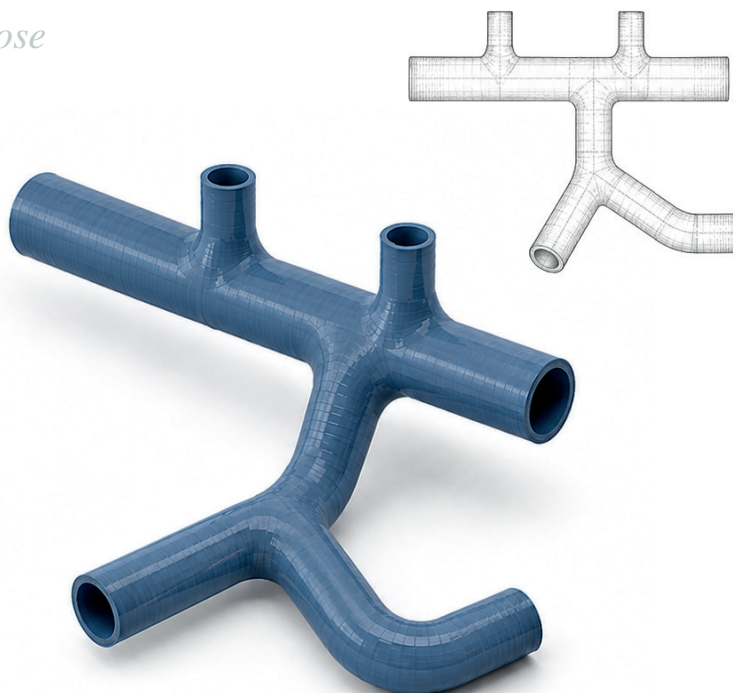


TEMPERATURE

-50 °C to +130 °C

(-58 °F to +266 °F)

Short peaks up to +150 °C (+302 °F).



CERTIFICATIONS

- UL-94 V0
- RoHS compliant
- PFA-Free



STANDARD MANUFACTURING LENGTH

Available in 4 m (13.12 ft) standard length. Custom lengths available.



APPLICATIONS

- | | | |
|--|--|---|
| <ul style="list-style-type: none"> • PEM fuel cell hydrogen circuits • PEM fuel cell oxygen circuits • Electrolyzer systems | <ul style="list-style-type: none"> • Deionized (DI) water circuits • Cooling circuits • Low permeability applications | <ul style="list-style-type: none"> • Clean energy fluid transfer systems • Applications requiring UL-94 V0 flame retardancy |
|--|--|---|

PRODUCT VARIANTS

Need higher pressure?

VENA® PEM CELL FLAME PLUS



▷ 4 PLYS OF POLYESTER FABRIC

Need vacuum or tight bending radius?

VENA® PEM CELL FLAME FLEX



▷ 3 PLYS OF FABRIC + SPIRAL STEEL WIRE

1.1.2 VENA® PEM CELL HP40

Low-permeability hose for high-pressure FC or electrolyzer systems



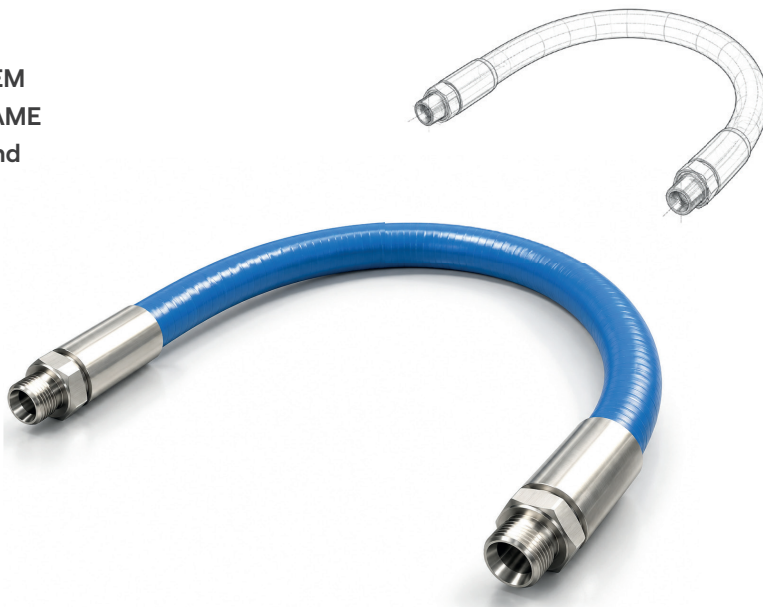
MATERIAL

EPDM-derived composite with a Vena® PEM CELL inner layer and Vena® PEM CELL FLAME outer layers. Para-aramid reinforcement and encapsulated stainless steel wire.



TEMPERATURE

–50 °C to +130 °C (–58 °F to +266 °F).
Short peaks up to +150 °C (+302 °F).



CERTIFICATIONS

- UL-94 V0 classification: flame retardant and self-extinguishing.
- RoHS compliant, including Directives 2011/65/EU and 2015/863.



STANDARD MANUFACTURING LENGTH

Available in 4 m (13.12 ft) standard length. Custom lengths available.



STANDARD INNER DIAMETER

Available in the following diameters: 6,10,13,19,25,32,38,51. Other sizes available under demand.



APPLICATIONS

- PEM fuel cell hydrogen circuits.
- PEM fuel cell oxygen circuits.
- High-pressure electrolyzer systems.
- Deionized (DI) water circuits.
- Cooling circuits.
- Industrial applications requiring low permeability and flame retardancy.

1.1.3 VENA® PEM FUEL

Low permeability FKM silicone hose



MATERIAL

Inner FKM fluorocarbon and peroxide cured silicone and 3 polyester fabric.



TEMPERATURE

-30 °C to +180 °C

(-22 °F to +356 °F)

Short peaks up to +200 °C (+392 °F).



CERTIFICATIONS

- DNV TAP00002FX (upon request)
- UL-94 V1
- RoHS compliant



STANDARD MANUFACTURING LENGTH

Available in 4 m (13.12 ft) standard length. Custom lengths available.



APPLICATIONS

- | | | |
|---|---|---|
| <ul style="list-style-type: none"> • PEM fuel cell anode circuits • PEM fuel cell cathode circuits • Electrolyzer gas circuits | <ul style="list-style-type: none"> • Hydrogen transfer systems • Oxygen transfer systems • Low permeability gas applications | <ul style="list-style-type: none"> • Clean energy gas management systems • Fuel cell gas distribution lines |
|---|---|---|

PRODUCT VARIANTS

Need higher pressure?

VENA® PEM FUEL PLUS



▷ 4 PLIES OF POLYESTER FABRIC

Need vacuum or tight bending radius?

VENA® PEM FUEL FLEX



▷ SPIRAL STEEL WIRE BETWEEN TWO PLIES

1.1.4 VENA® PEM PURE

High purity platinum-cured silicone hose



MATERIAL

Inner Platinum cured silicone and peroxide cured silicone with 3 polyester fabric.

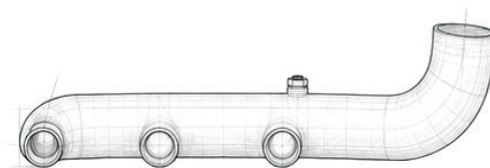


TEMPERATURE

-60 °C to +180 °C

(-76 °F to +356 °F)

Short peaks up to +200 °C (+392 °F).



CERTIFICATIONS

- USP Class VI (inner layer)
- DNV TAP00002FX (upon request)
- UL-94 V1
- RoHS compliant
- PFA-Free



STANDARD MANUFACTURING LENGTH

Available in 4 m (13.12 ft) standard length. Custom lengths available.



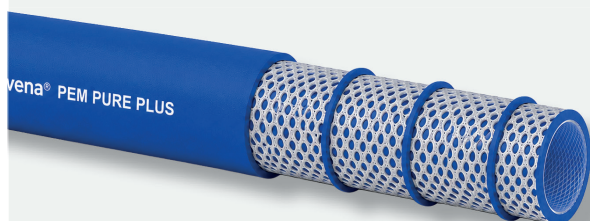
APPLICATIONS

- | | | |
|---|---|---|
| <ul style="list-style-type: none"> • PEM fuel cell cathode circuits • Electrolyzer cathode circuits • Deionized (DI) water systems | <ul style="list-style-type: none"> • Cooling circuits • Ultra-high purity fluid transfer • Low extractables applications | <ul style="list-style-type: none"> • Low conductivity systems • Clean energy thermal management |
|---|---|---|

PRODUCT VARIANTS

Need higher pressure?

VENA® PEM PURE PLUS



▷ 4 PLIES OF POLYESTER FABRIC

Need vacuum or tight bending radius?

VENA® PEM PURE FLEX



▷ 3 PLIES OF FABRIC + SPIRAL STEEL WIRE

1.1.5 VENA® PEM COOL

High purity cooling silicone hose



MATERIAL

Peroxide cured silicone with 3 polyester fabric.

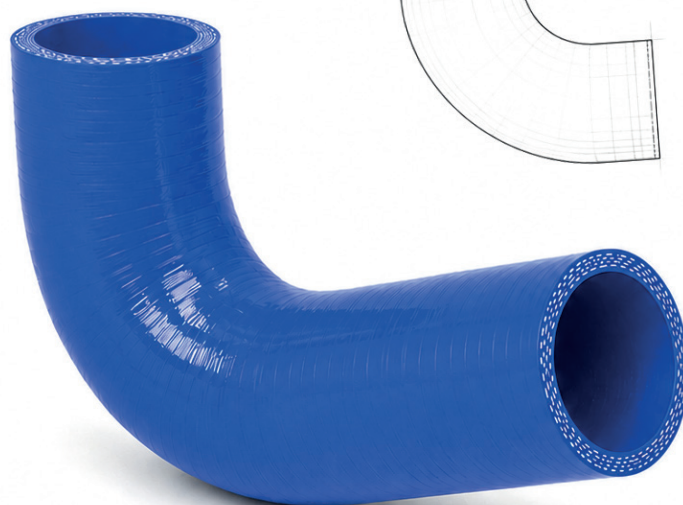


TEMPERATURE

-60 °C to +180 °C

(-76 °F to +356 °F)

Short peaks up to +200 °C (+392 °F).



CERTIFICATIONS

- SAE J20 R1
- DNV TAP00002FX (upon request)
- RoHS compliant
- PFA Free



STANDARD MANUFACTURING LENGTH

Available in 4 m (13.12 ft) standard length. Custom lengths available.



APPLICATIONS

- PEM fuel cell cooling circuits
- Electrolyzer cooling systems
- Deionized (DI) water circuits

- Coolant transfer systems
- Thermal management systems
- Low conductivity fluid applications

- Fuel cell refrigeration lines
- Clean energy cooling applications

PRODUCT VARIANTS

Need higher pressure?

VENA® PEM COOL PLUS



▷ 4 PLIES OF POLYESTER FABRIC

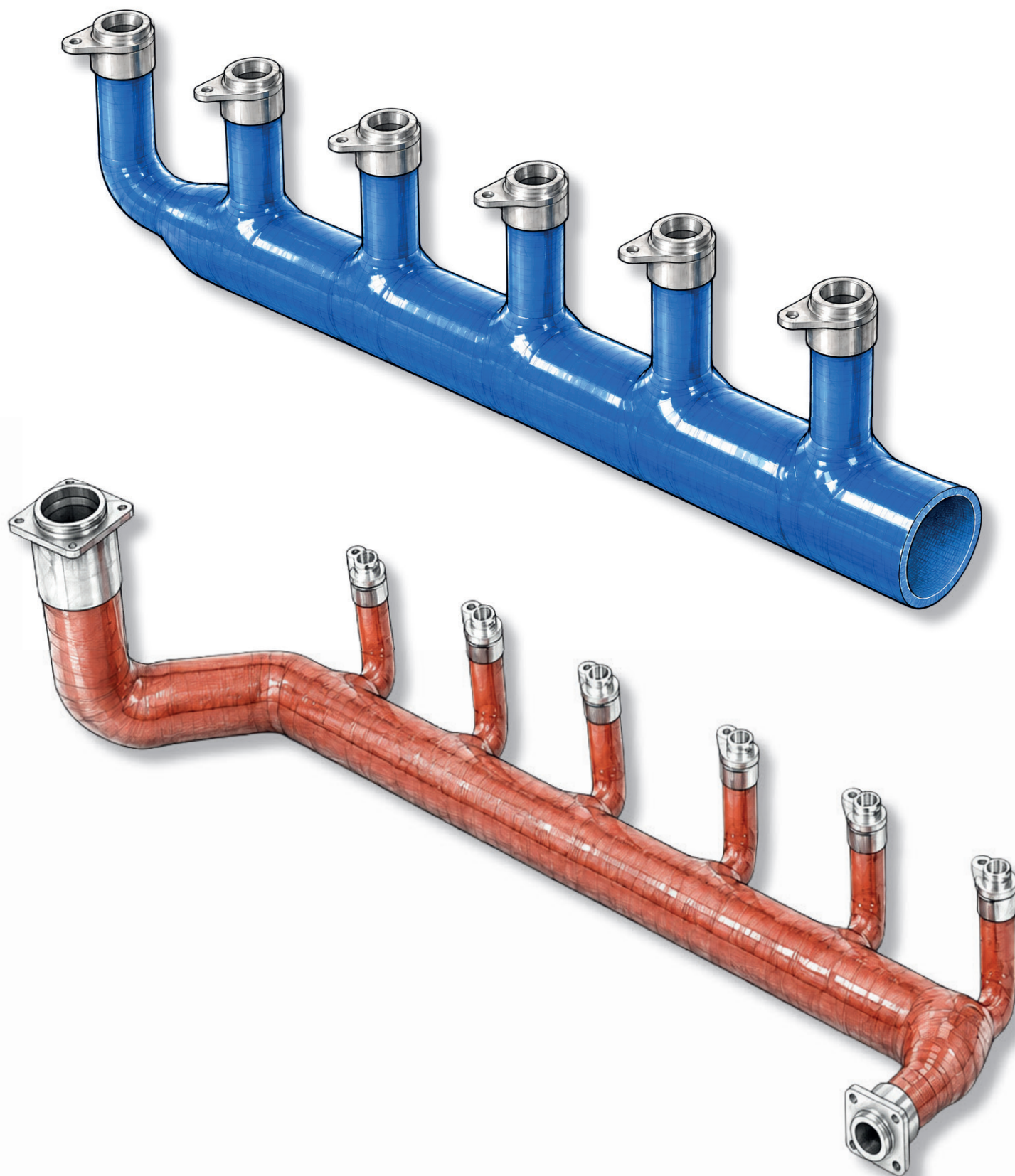
Need vacuum or tight bending radius?

VENA® PEM COOL FLEX

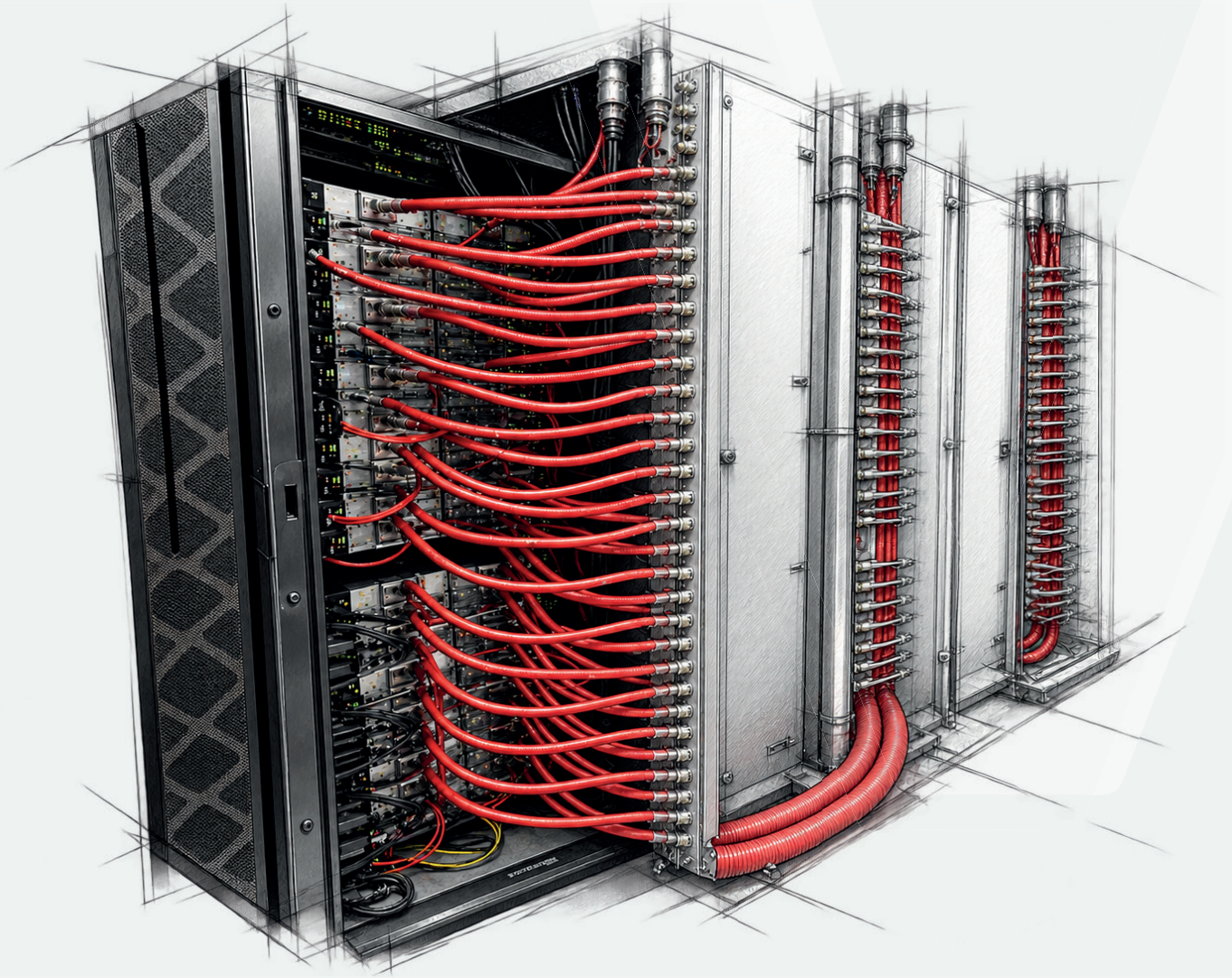


▷ SPIRAL STEEL WIRE BETWEEN TWO PLIES

CUSTOM FLUID TRANSFER SOLUTIONS DESIGNS



1.2 DATA CENTER THERMAL MANAGEMENT



The rapid expansion of cloud computing, AI and digital services is increasing the demand for high-performance data centers, where efficient thermal management is essential for reliability and energy efficiency.

Modern cooling systems rely on advanced liquid cooling technologies and auxiliary circuits to dissipate heat from high-density servers and electronic equipment while ensuring continuous operation.

Venair develops high-performance fluid transfer solutions for demanding cooling applications, helping data centers improve cooling efficiency, maximize uptime and protect critical infrastructure.

1.2.1 VENA® THERMIC FLEX

Highly Flexible Silicone Hose



MATERIAL

Flame-retardant silicone rubber with textile reinforcement and metal wire.

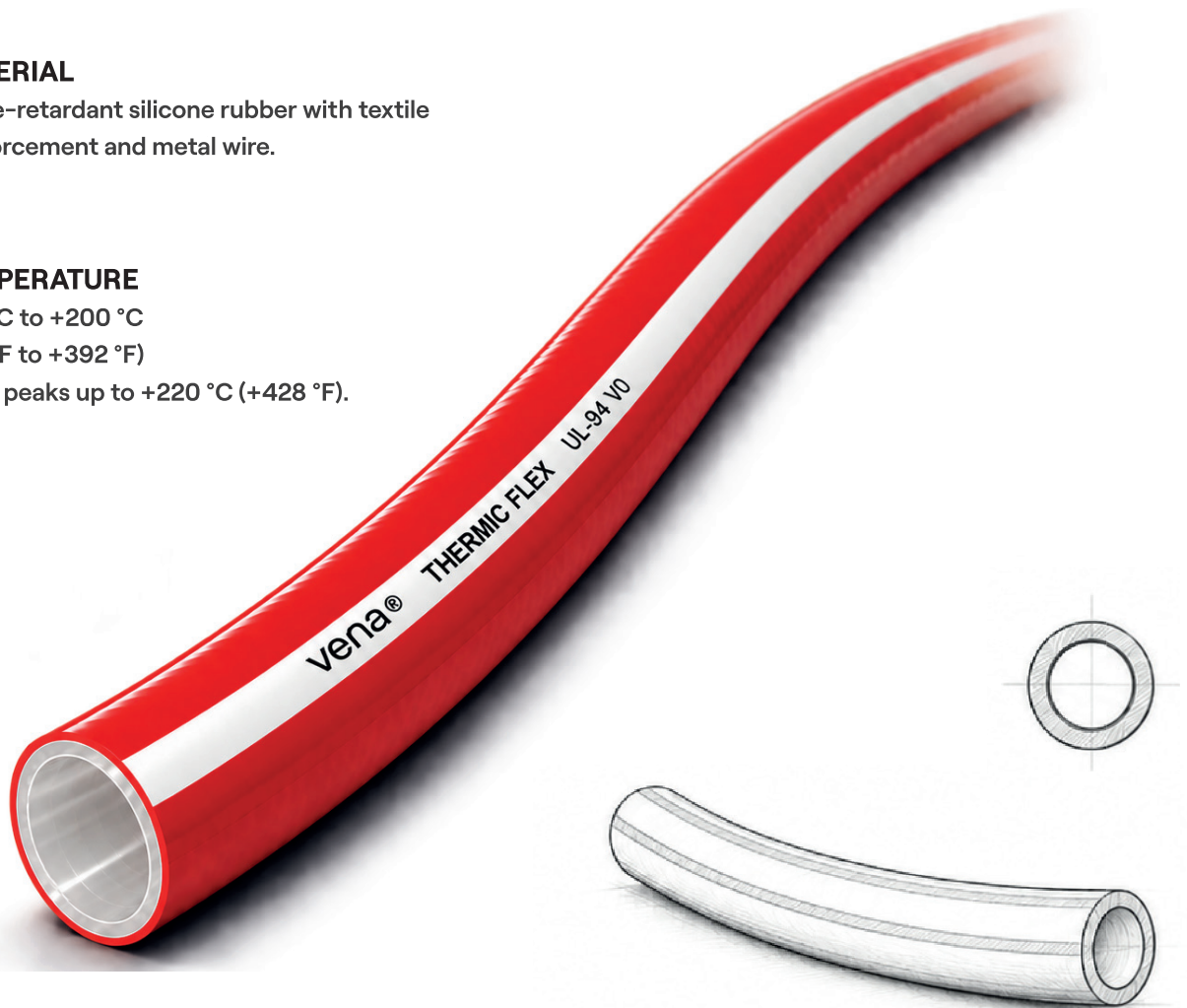


TEMPERATURE

-60 °C to +200 °C

(-76 °F to +392 °F)

Short peaks up to +220 °C (+428 °F).



CERTIFICATIONS

UL-94 V0



STANDARD MANUFACTURING LENGTH

Available in 4 m (13.12 ft) standard length. Custom lengths available.



APPLICATIONS

- Secondary cooling loops in data centers
- CDU to server rack connections
- Cold plate cooling circuits
- Heat sink cooling systems
- High-performance computing (HPC) systems
- Compact server enclosure installations

1.2.2 VENA® THERMIC CORE

Excellent chemical compatibility



MATERIAL

Flame-retardant EPDM derived composite elastomer with textile reinforcement and metal wire.



TEMPERATURE

-50 °C to +130 °C

(-58 °F to +266 °F)

Short peaks up to +150 °C (+302 °F).



CERTIFICATIONS

UL-94 V0



STANDARD MANUFACTURING LENGTH

Available in 4 m (13.12 ft) standard length. Custom lengths available.



APPLICATIONS

- | | | |
|---|--|--|
| <ul style="list-style-type: none">• Secondary cooling loops in data centers• CDU to server rack connections• High-performance computing (HPC) cooling systems | <ul style="list-style-type: none">• In-rack liquid cooling circuits• Dielectric fluid cooling systems• Inhibited glycol cooling circuits | <ul style="list-style-type: none">• High-density server installations• Applications requiring UL-94 V0 flame retardancy |
|---|--|--|

1.2.3 VENA® THERMIC FLOW

High-Flow Reinforced EPDM Hose



MATERIAL

Peroxide-cured EPDM rubber with textile reinforcement and steel helix.



TEMPERATURE

-40 °C to +120 °C
(-40 °F to +248 °F)



CERTIFICATIONS

UL-94 V0



STANDARD MANUFACTURING LENGTH

Up to 40 m (131.23 ft) continuous lengths.



APPLICATIONS

- Primary cooling loops in data centers
- Chiller connections
- Cooling tower connections
- CDU supply and return lines
- High-flow coolant transfer systems
- Infrastructure cooling networks
- Large-scale thermal management systems
- Data center cooling distribution circuits

METAL MANIFOLDS

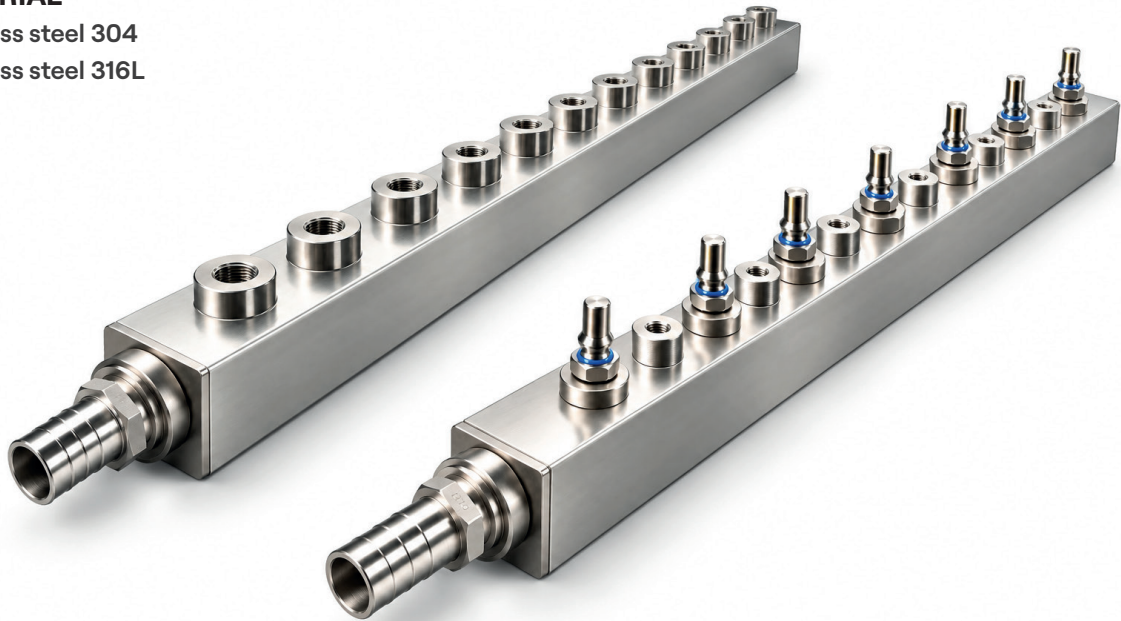
Customizable manifolds engineered for liquid cooling in data centers



MATERIAL

Stainless steel 304

Stainless steel 316L



Venair offers custom-engineered metal manifolds designed to meet specific customer requirements, providing a more complete and integrated solution for Direct-to-Chip Liquid Cooling systems in data centers. By combining customized metal manifolds with our flexible hoses and integrated connections, Venair can supply a comprehensive fluid distribution solution tailored to each cooling system.

Our manifolds can be manufactured in different configurations, dimensions, and designs, incorporating multiple side outlets to ensure efficient coolant distribution. A wide range of connection options is available for both main inlets and outlets, as well as side branches, with Universal Quick Disconnect (UQD) connectors being the most commonly used for side outlets. This combined approach simplifies system integration, reduces assembly complexity, and ensures reliable performance across the entire liquid cooling circuit.



CONNECTIONS SPECIALLY FOR DATA CENTERS

UQD – Universal Quick Disconnect

Advantages of UQD Connections

- Fast installation and removal without specialized tools.
- Minimal coolant leakage during maintenance.
- Prevention of air entering the cooling circuit.
- Reduced maintenance downtime.
- High reliability over thousands of connection cycles.
- Compatibility between different manufacturers following the OCP UQD specification.
- Improved serviceability of modern liquid cooling infrastructures.



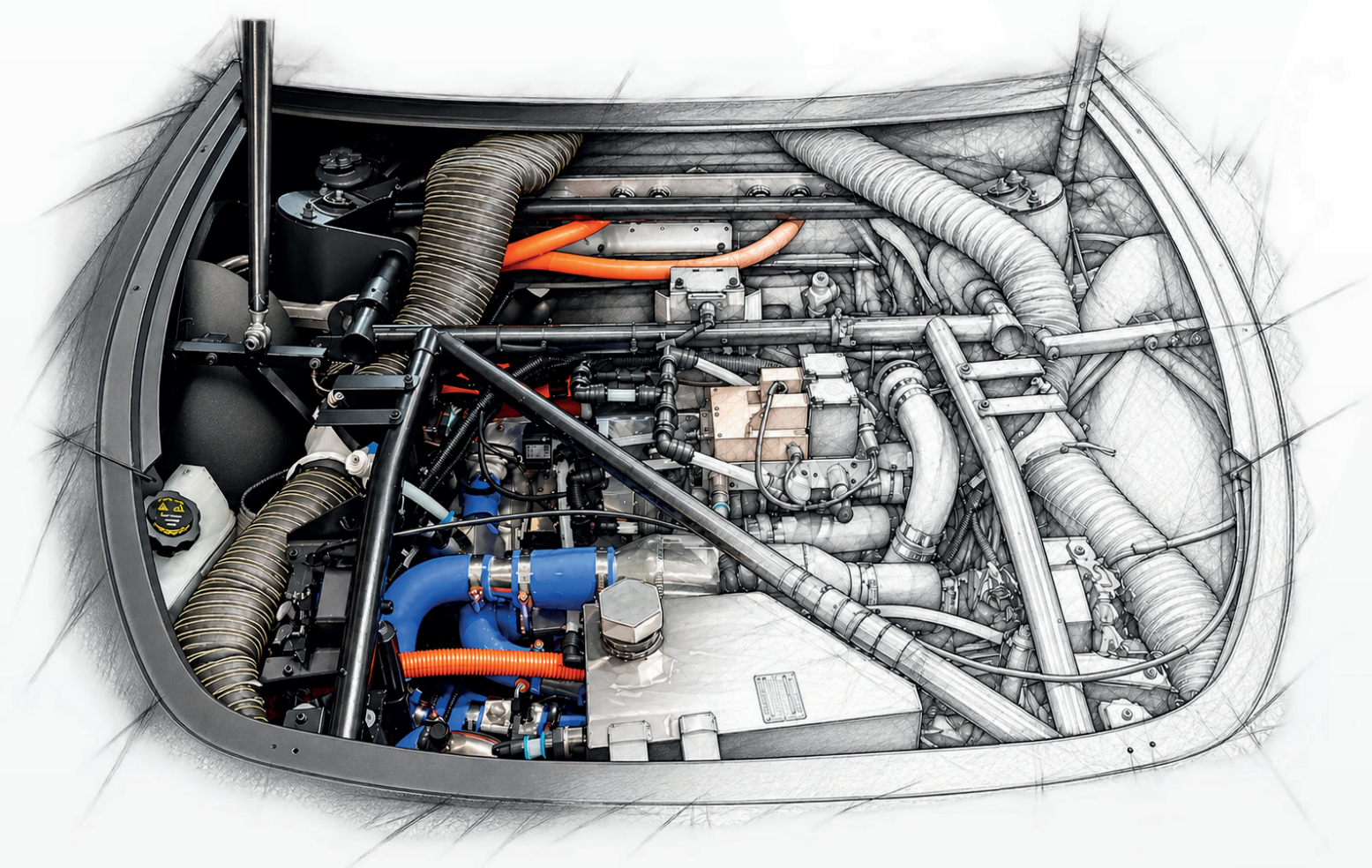
UQD Size	Hose Nominal ID	UNF male thread	BSPP male thread
UQD02	1/4" (6 mm)	7/16-20"	G 1/8-28
UQD04	3/8" (9 mm)	9/16-18"	G 1/4-19
UQD06	1/2" (13 mm)	3/4-16"	G 3/8-19
UQD08	5/8" (16 mm)	7/8-14"	G 1/2-14

Interlock ball valve connector

Venair offers Interlock Ball Valve connections available in 1" and 2" sizes, designed to provide secure and reliable fluid transfer solutions. These valves can be supplied with different connection configurations, including hose barb spigot, Tri-Clamp (TC), and threaded connectors, ensuring flexibility and compatibility with various system requirements. Their versatile design allows easy integration into customized fluid transfer and liquid cooling systems.



1.3 COOLING & HEATING SYSTEMS



Efficient thermal management is essential to ensure the performance, reliability and longevity of modern equipment and industrial processes.

Cooling systems across industries require flexible, durable fluid transfer solutions capable of withstanding demanding thermal, mechanical and environmental conditions while ensuring continuous operation.

Venair develops advanced hose solutions for cooling applications, combining excellent temperature resistance, vibration absorption and long service life to optimize heat dissipation and improve system efficiency.

1.3.1 VENA® SIL

Flexible silicone hose



MATERIAL

Peroxide cured silicone with 3 polyester fabric.



TEMPERATURE

-60 °C to +180 °C

(-76 °F to +356 °F)

Short peaks up to +200 °C (+392 °F).



(Former Vena® Sil 200)



CERTIFICATIONS

- SAE J20 R1 CLASS A
- RoHS compliant
- PFA Free



STANDARD MANUFACTURING LENGTH

Available in 4 m (13.12 ft) standard length. Custom lengths available.



APPLICATIONS

- | | | |
|--|--|--|
| <ul style="list-style-type: none"> • Cooling and heating circuits in buses, coaches, trucks and industrial vehicles • Marine engine cooling systems • Cogeneration unit cooling systems | <ul style="list-style-type: none"> • High-temperature fluid transfer • Industrial cooling circuits • Water and glycol cooling systems | <ul style="list-style-type: none"> • Heavy-duty vehicle cooling applications • Systems exposed to continuous thermal cycling |
|--|--|--|

PRODUCT VARIANTS

Need higher pressure?

VENA® SIL PLUS



(Former Vena® Sil 240)

▷ 4 PLIES OF POLYESTER FABRIC

Need vacuum or tight bending radius?

VENA® SIL FLEX



(Former Vena® Sil 700/V)

▷ SPIRAL STEEL WIRE BETWEEN TWO PLIES

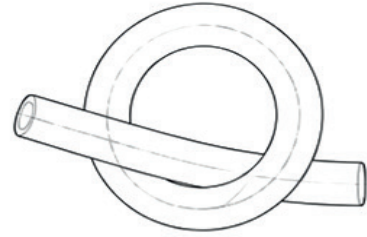
1.3.2 VENA® HEATER

Braided silicone tubing



MATERIAL

Peroxide cured silicone + Polyester braiding.

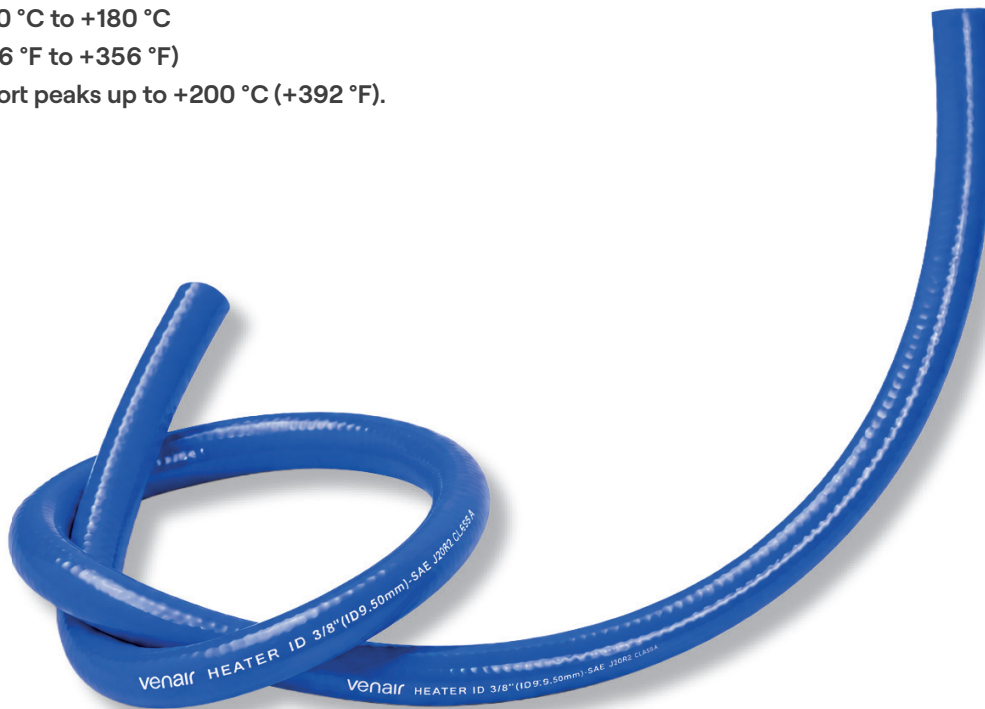


TEMPERATURE

-60 °C to +180 °C

(-76 °F to +356 °F)

Short peaks up to +200 °C (+392 °F).



(Former Vena® Technosil Heater Hose)



CERTIFICATIONS

- SAE J20 R3 CLASS A
- RoHS compliant
- PFA Free



STANDARD MANUFACTURING LENGTH

Standard 76 m (249.34 ft) coils. Shorter lengths available upon request.



APPLICATIONS

- | | | |
|---|--|---|
| <ul style="list-style-type: none"> • Heater systems • Engine coolant circuits • Water and ethylene glycol transfer | <ul style="list-style-type: none"> • Heavy-duty truck cooling systems • Bus cooling systems • Automotive coolant applications | <ul style="list-style-type: none"> • Ground vehicle thermal management systems • Auxiliary heating circuits |
|---|--|---|

1.3.3 VENA® SIL LL-RT

High-tech silicone hose



MATERIAL

Brick red peroxide cured silicone with 3 high temperature fabric.

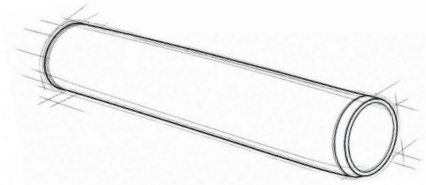


TEMPERATURE

-60 °C to +200 °C

(-75°F to +392 °F)

Short peaks up to +220 °C (+428 °F).



CERTIFICATIONS

- SAE J20 R1 Class A
- Pulse Pressure Fatigue Test during 1391hours, 500.000 cycles. Pressure test shows no pressure resistance loss after aging, no signs of chemical incompatibility with the coolant, small/regular opening angle, no diametric expansion after work.
- RoHS compliant
- PFA Free



STANDARD MANUFACTURING LENGTH

Available in 4 m (13.12 ft) standard length. Custom lengths available.



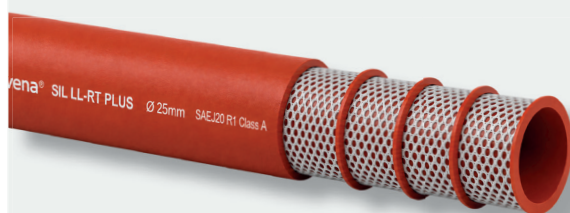
APPLICATIONS

- Cooling and heating systems in buses, coaches, trucks and heavy machinery
- Marine engine cooling systems
- High-temperature fluid transfer
- Water and glycol cooling circuits
- OAT coolant systems
- Cogeneration unit cooling systems
- Heavy-duty industrial cooling applications
- Systems exposed to extreme thermal cycling

PRODUCT VARIANTS

Need higher pressure?

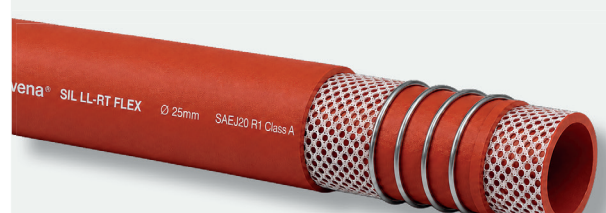
VENA® SIL LL-RT PLUS



▷ 4 PLYS OF FABRIC

Need vacuum or tight bending radius?

VENA® SIL LL-RT FLEX



▷ SPIRAL STEEL WIRE BETWEEN TWO PLYS

1.4 RAILWAY FIRE- SAFE SOLUTIONS



Safety, reliability and regulatory compliance are essential requirements in the railway industry. Components installed in rolling stock must withstand demanding operating conditions while meeting strict fire protection standards to ensure passenger safety and system integrity.

Venair develops specialized fluid transfer solutions engineered for railway applications, combining excellent thermal and mechanical performance with advanced fire-resistant properties. Our products are designed to comply with stringent railway regulations, including EN 45545-2, providing low flame propagation, reduced smoke density and low toxicity emissions.

From cooling circuits and HVAC systems to power electronics, battery packs and auxiliary equipment, Venair railway solutions help manufacturers and operators improve safety, reliability and long-term performance across modern rail vehicles.

1.4.1 VENA® RAIL

Flame retardant silicone hose



MATERIAL

Blue flame-retardant silicone rubber with 3 textile reinforcement.

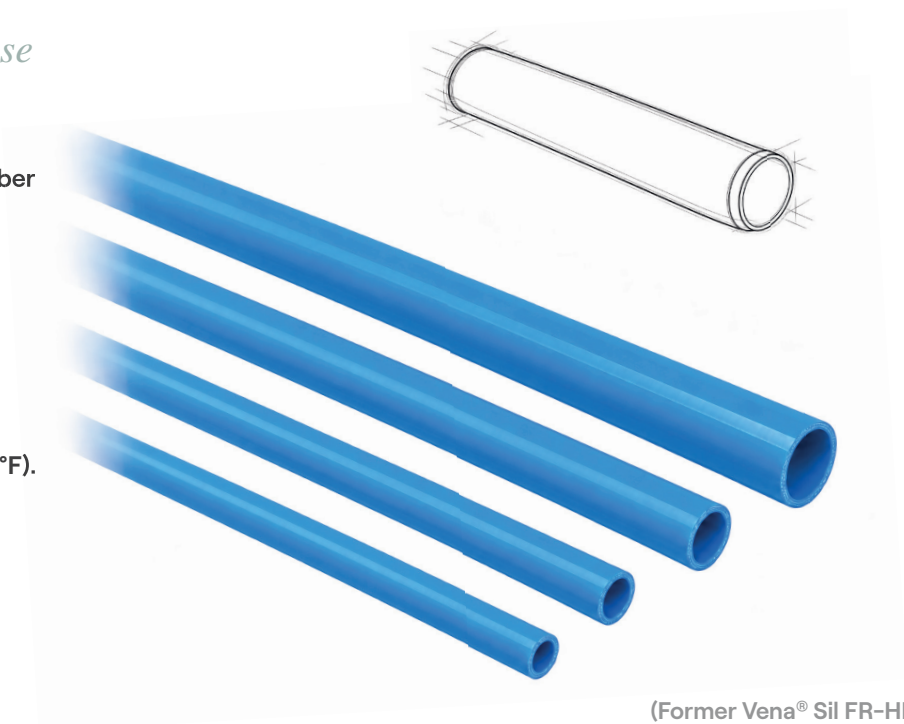


TEMPERATURE

-60 °C to +200 °C

(-75 °F to +392 °F)

Short peaks up to +220 °C (+428 °F).



(Former Vena® Sil FR-HL)



CERTIFICATIONS

• EN 45545-2 HL3 R23 & HL2 R22

• UL-94 V0

• RoHS compliant

• PFA Free

• NFPA 130

• ASTM 1354



STANDARD MANUFACTURING LENGTH

Available in 4 m (13.12 ft) standard length. Custom lengths available.



APPLICATIONS

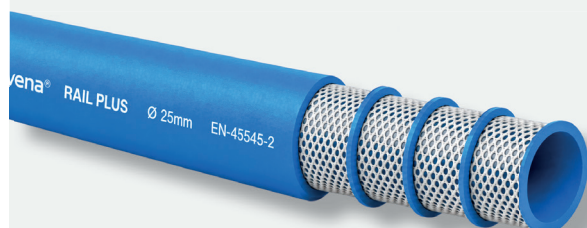
- Water cooling heating systems
- Cooling system batteries
- Pharmaceutical manufacturing equipment

- Flexible transfer lines with tight bending requirements
- Applications exposed to vibration and movement during operation

PRODUCT VARIANTS

Need higher pressure?

VENA® RAIL PLUS



▷ 4 PLIES OF FABRIC

Need vacuum or tight bending radius?

VENA® RAIL FLEX



▷ 3 PLIES OF FABRIC + SPIRAL STEEL WIRE

1.4.2 VENA® RAIL PURE

Highly Flexible silicone hose



MATERIAL

Blue flame-retardant silicone rubber with textile reinforcement.

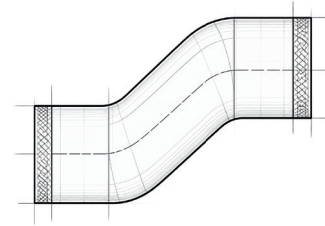


TEMPERATURE

-60 °C to +200 °C

(-75 °F to +392 °F)

Short peaks up to +220 °C (+428 °F).



CERTIFICATIONS

- EN 45545-2 HL3 R23 & HL2 R22
- RoHS compliant
- FDA compliant – inner layer
- PFA Free



STANDARD MANUFACTURING LENGTH

Available in 4 m (13.12 ft) standard length. Custom lengths available.



APPLICATIONS

- Water cooling heating systems
- Cooling system batteries
- Pharmaceutical manufacturing equipment
- Flexible transfer lines with tight bending requirements
- Applications exposed to vibration and movement during operation

PRODUCT VARIANTS

Need vacuum or tight bending radius?

VENA® RAIL PURE FLEX



▷ 3 PLYS OF FABRIC + SPIRAL STEEL WIRE

STANDARD SHAPES

STRAIGHT COUPLERS



AVAILABLE DIAMETERS (mm)

6/10/13/16/19/22/25
32/38/45/51
57/63/70/76
89/102

45° / 90° / 135° ELBOWS



AVAILABLE DIAMETERS (mm)

AVAILABLE DIAMETERS (mm)	LENGTH (MM)
6/10/13/19	100*100 150*150 200*200
25/32/38/51	
63/76/89*/102*	

*For ID 89 mm and ID 102 mm, the 90° elbow option (100 × 100 mm) is not available.

REDUCER



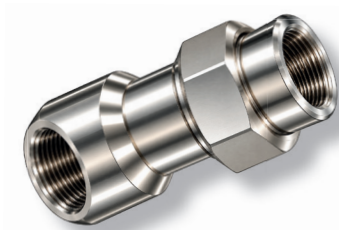
AVAILABLE DIAMETERS (mm)

LENGTH (mm)

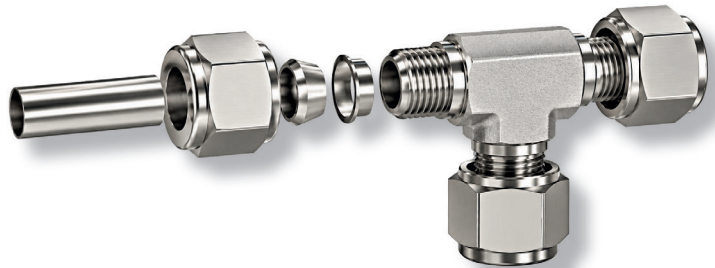
19 → 13	63 → 57	32 → 25	70 → 63	100
25 → 19	76 → 57	44 → 25	89 → 63	
38 → 25	76 → 63	51 → 32	89 → 76	
51 → 25	76 → 70	51 → 44	102 → 89	150
51 → 38	102 → 76	63 → 51		
57 → 51	127 → 102	76 → 51		
70 → 51	25 → 13	70 → 57		

2. CONNECTIONS

GAS CONNECTIONS (BSP, NPT...)



GAUGEABLE TUBE FITTING



CLAMP



TRI-CLAMP



FLANGE



MOLDED FLANGE



2.1 SIDE OUTLETS & EMBEDDED PORTS

Customized Designs with Integrated Side Branches with Connectors / Sensor Ports



Venair offers customized, one-piece solutions incorporating multiple side outlets and branches, adapting each design to specific application requirements. By integrating these features into a single component, we minimize the need for additional connections, reducing potential leakage points and enhancing overall system reliability. Our manufacturing capabilities also allow the integration of threaded sensor ports through embedded fittings, creating a secure bond between the fitting and the surrounding material for improved sealing and durability. Additionally, sensor ports can be designed with different heights and positioning options, ensuring optimal integration, accessibility, and functionality within each system.



3. SPECIFICATION CHARTS

VENA® PEM CELL FLAME

INNER DIAMETER*		WALL THICKNESS		WORKING PRESSURE** ISO 1402		BURSTING PRESSURE** ISO 1402	
mm	inch	+1/-0.05 mm	+0.04/-0.02 inch	bar at room temperature	psi at room temperature	bar at room temperature	psi at room temperature
6	1/4	4.30	0.17	14.0	203	42.0	609
13	1/2			10.5	152	31.5	457
19	3/4			8.8	127	26.4	382
25	1			7.5	109	22.6	328
32	1 1/4			6.4	93	19.3	280
38	1 1/2			5.6	82	16.9	246
45	1 3/4			4.9	71	14.6	212
51	2			4.3	63	12.9	188
63	2 1/2			3.4	49	10.1	146
76	3			2.5	36	7.5	109
90	3 1/2			1.7	25	5.2	76
102	4			1.2	17	3.5	51

*Other diameters can also be manufactured. Please consult.

** Pressure data is noted at ambient temperature. Pressure values should be reduced by 20% for each increase of 100°C(21°F)

VENA® PEM FUEL

INNER DIAMETER*		WALL THICKNESS		WORKING PRESSURE** ISO 1402		BURSTING PRESSURE** ISO 1402	
mm	inch	+1/-0.05 mm	+0.04/-0.02 inch	bar at room temperature	psi at room temperature	bar at room temperature	psi at room temperature
6	1/4	4.30	0.17	16.2	234	48.5	703
13	1/2			9.7	141	29.1	422
19	3/4			7.3	105	21.8	316
25	1			5.9	86	17.7	257
32	1 1/4			4.9	71	14.7	213
38	1 1/2			4.3	62	12.9	187
45	1 3/4			3.8	55	11.3	164
51	2			3.4	50	10.3	149
63	2 1/2			2.9	42	8.8	127
76	3			2.5	37	7.6	110
90	3 1/2			1.9	28	5.7	83
102	4			1.7	24	5.0	72

*Other diameters can also be manufactured. Please consult.

** Pressure data is noted at ambient temperature. Pressure values should be reduced by 20% for each increase of 100°C(21°F)

VENA® PEM PURE / COOL

INNER DIAMETER*		WALL THICKNESS		WORKING PRESSURE** ISO 1402		BURSTING PRESSURE** ISO 1402	
mm	inch	+1/-0.05 mm	+0.04/-0.02 inch	bar at room temperature	psi at room temperature	bar at room temperature	psi at room temperature
6	1/4	4.30	0.17	16.2	234	48.5	703
13	1/2			9.7	141	29.1	422
19	3/4			7.3	105	21.8	316
25	1			5.9	86	17.7	257
32	1 1/4			4.9	71	14.7	213
38	1 1/2			4.3	62	12.9	187
45	1 3/4			3.8	55	11.3	164
51	2			3.4	50	10.3	149
63	2 1/2			2.9	42	8.8	127
76	3			2.5	37	7.6	110
90	3 1/2			1.9	28	5.7	83
102	4			1.7	24	5.0	72

*Other diameters can also be manufactured. Please consult.

** Pressure data is noted at ambient temperature. Pressure values should be reduced by 20% for each increase of 100°C(21°F)

VENA® THERMIC CORE

INNER DIAMETER*		WALL THICKNESS		WORKING PRESSURE** ISO 1402		BURSTING PRESSURE** ISO 1402		BENDING RADIUS	
mm	inch	+1.5/-0.8 mm	+0.06/-0.03 inch	bar at 20°C	psi at 68°F	bar at 20°C	psi at 68°F	mm	inch
6	1/4	6.0	0.24	23.5	341	70.6	1024	41.3	2
10	3/8	5.5		20.5	297	61.5	892	57.0	2
13	1/2			18.2	264	54.7	793	68.8	3
19	3/4			15.0	218	45.1	655	90.8	4
25	1			11.8	172	35.6	516	112.8	4
32	1 1/4			10.6	155	32.0	465	179.4	7
38	1 1/2			9.6	140	29.0	421	236.5	9
51	2			7.4	108	22.4	325	360.3	14

*Other diameters can also be manufactured. Please consult.

** Pressure data is noted at ambient temperature. Pressure values should be reduced by 20% for each increase of 100°C(21°F)

VENA® THERMIC FLEX

INNER DIAMETER*		WALL THICKNESS		WORKING PRESSURE** ISO 1402		BURSTING PRESSURE** ISO 1402		BENDING RADIUS	
mm	inch	+1.5/-0.08 mm	+0.06/-0.03 inch	bar at 20°C	psi at 68°F	bar at 20°C	psi at 68°F	mm	inch
6	1/4	5.50	0.22	28.5	414	85.6	1241	62.0	2.42
10	3/8			27.3	396	81.9	1188	68.0	2.68
13	1/2			22.2	322	66.7	967	73.0	2.87
19	3/4			20.6	299	61.8	897	93.0	3.64
25	1			14.7	213	44.1	640	135.0	5.31
32	1 1/4			13.8	201	41.5	602	169.0	6.64
38	1 1/2			10.7	156	32.2	467	200.0	7.87
51	2			7.5	108	22.4	324	244.0	9.61

*Other diameters can also be manufactured. Please consult.

** Pressure data is noted at ambient temperature. Pressure values should be reduced by 20% for each increase of 100°C(21°F)

VENA® THERMIC FLOW

INNER DIAMETER*		OUTSIDE DIAMETER		WORKING PRESSURE** ISO 1402		BURSTING PRESSURE** ISO 1402		BENDING RADIUS
mm	inch	mm	inch	bar at 20°C	psi at 68°F	bar at 20°C	psi at 68°F	mm
15.90	5/8	25.00	0.98	10	145	30	435	55
19.00	3/4	30.00	1.18	10	145	30	435	65
25.40	1	37.00	1.46	10	145	30	435	90
31.80	1 1/4	44.50	1.75	10	145	30	435	110
38.00	1 1/2	52.00	2.05	10	145	30	435	135
50.80	2	66.00	2.59	10	145	30	435	180
63.50	2 1/2	79.50	3.13	10	145	30	435	220
76.20	3	92.00	3.62	10	145	30	435	270
89.00	3 1/2	106.00	4.17	10	145	30	435	315
101.60	4	118.60	4.67	10	145	30	435	360

*Other diameters can also be manufactured. Please consult.

** Pressure data is noted at ambient temperature. Pressure values should be reduced by 20% for each increase of 100°C(21°F)

VENA® SIL / SIL LL-RT

INNER DIAMETER*		WALL THICKNESS		WORKING PRESSURE** ISO 1402		BURSTING PRESSURE** ISO 1402	
mm	inch	+1.0/-0.5 mm	+0.04/-0.02 inch	bar at 20°C	psi at 68°F	bar at 20°C	psi at 68°F
6	1/4	4.30	0.17	16.2	234	48.5	703
13	1/2			9.7	141	29.1	422
19	3/4			7.3	105	21.8	316
25	1			5.9	86	17.7	257
32	1 1/4			4.9	71	14.7	213
38	1 1/2			4.3	62	12.9	187
45	1 3/4			3.8	55	11.3	164
51	2			3.4	50	10.3	149
63	2 1/2			2.9	42	8.8	127
76	3			2.5	37	7.6	110
89	3 1/2			1.9	28	5.7	83
102	4			1.7	24	5.0	72

*Other diameters can also be manufactured. Please consult.

** Pressure data is noted at ambient temperature. Pressure values should be reduced by 20% for each increase of 100°C(21°F)

VENA® SIL PLUS

INNER DIAMETER*		WALL THICKNESS		WORKING PRESSURE** ISO 1402		BURSTING PRESSURE** ISO 1402	
mm	inch	+1.0/-0.5 mm	+0.04/-0.02 inch	bar at 20°C	psi at 68°F	bar at 20°C	psi at 68°F
6	1/4	5.30	0.20	21.2	307	63.5	921
13	1/2			12.2	176	36.5	529
19	3/4			9.3	134	27.8	403
25	1			7.6	110	22.8	331
32	1 1/4			6.4	92	19.1	278
38	1 1/2			5.6	82	16.9	245
45	1 3/4			5.0	72	15.0	217
51	2			4.6	66	13.7	198
63	2 1/2			3.9	57	11.7	170
76	3			3.4	50	10.3	149
89	3 1/2			3.0	44	10.3	132
102	4			2.8	41	8.4	122

*Other diameters can also be manufactured. Please consult.

** Pressure data is noted at ambient temperature. Pressure values should be reduced by 20% for each increase of 100°C(21°F)

VENA® SIL FLEX

INNER DIAMETER*		WALL THICKNESS		WORKING PRESSURE** ISO 1402		BURSTING PRESSURE** ISO 1402		BENDING RADIUS ISO 1746	
mm	inch	+1.0/-0.5 mm	+0.04/-0.02 inch	bar at 20°C	psi at 68°F	bar at 20°C	psi at 68°F	mm	inch
6	1/4	5.00	0.20	18.8	273	56.4	819	21	0.8
13	1/2			16.5	239	49.5	718	34	1.3
19	3/4			14.7	213	44.0	638	49	1.9
25	1			13.0	188	38.9	565	66	2.6
32	1 1/4			11.1	161	33.3	483	92	3.6
38	1 1/2			9.8	143	29.5	427	113	4.4
45	1 3/4			8.4	122	25.2	366	143	5.6
51	2			7.3	107	22.0	320	173	6.8
63	2 1/2			5.7	82	17.0	246	239	9.4
76	3			4.5	65	13.5	196	324	12.7
89	3 1/2			4.0	58	12.0	174	429	16.9
102	4			4.1	60	12.3	179	513	20.2

*Other diameters can also be manufactured. Please consult.

** Pressure data is noted at ambient temperature. Pressure values should be reduced by 20% for each increase of 100°C(21°F)

VENA® HEATER

INNER DIAMETER*		WALL THICKNESS		WORKING PRESSURE** ISO 1402		BURSTING PRESSURE** ISO 1402		VACUUM PRESSURE	
mm	inch	±0.5 mm	±0.02 inch	bar at 20°C	psi at 68°F	bar at 20°C	psi at 68°F	bar at 20°C	psi at 68°F
6.3	1/4	3.45	0.14	9.6	139	28.8	418	0.95	13.78
7.9	1/3	3.55	0.14	8.8	128	26.5	384	0.95	13.78
9.5	3/8	3.55	0.14	7.7	112	23.0	334	0.95	13.78
12.7	1/2	3.80	0.15	6.8	99	20.3	294	0.90	13.05
15.8	5/8	4.35	0.17	5.9	86	17.8	258	0.70	10.15
19.0	3/4	4.45	0.18	5.1	74	15.2	220	0.70	10.15
22.0	7/8	4.65	0.18	5.0	73	15.0	218	0.70	10.15
25.4	1	4.55	0.18	4.9	71	14.8	215	0.55	7.98
28.0	1 1/8	5.00	0.20	4.4	64	13.2	191	0.20	2.90
32.0	1 1/4	5.50	0.22	3.9	57	11.8	171	0.16	2.32

*Other diameters can also be manufactured. Please consult.

** Pressure data is noted at ambient temperature. Pressure values should be reduced by 20% for each increase of 100°C(21°F)

VENA® RAIL

INNER DIAMETER*		WALL THICKNESS		WORKING PRESSURE** ISO 1402		BURSTING PRESSURE** ISO 1402	
mm	inch	+1.0/-0.5 mm	+0.04/-0.02 inch	bar at 20°C	psi at 68°F	bar at 20°C	psi at 68°F
6	1/4	4.30	0.17	30.6	444	91.8	1331
13	1/2			15.7	228	47.2	684
19	3/4			10.8	156	32.3	469
25	1			8.2	119	24.6	357
32	1 1/4			6.4	93	19.2	279
38	1 1/2			5.4	78	16.2	235
48	1 7/8			4.4	63	13.1	189
51	2			4.0	59	12.1	176
63	2 1/2			3.3	47	9.8	142
76	3			2.7	39	8.1	118
89	3 1/2			2.3	34	7.0	101
102	4			2.0	29	6.1	88

*Other diameters can also be manufactured. Please consult.

** Pressure data is noted at ambient temperature. Pressure values should be reduced by 20% for each increase of 100°C(21°F)

VENA® RAIL PLUS

INNER DIAMETER*		WALL THICKNESS		WORKING PRESSURE** ISO 1402		BURSTING PRESSURE** ISO 1402	
mm	inch	+1.0/-0.5 mm	+0.04/-0.02 inch	bar at 20°C	psi at 68°F	bar at 20°C	psi at 68°F
6	1/4	5.30	0.21	31.0	450	93.1	1350
13	1/2			18.2	264	54.6	792
19	3/4			13.2	191	39.6	574
25	1			10.5	152	31.4	455
32	1 1/4			8.5	123	25.5	369
38	1 1/2			7.3	106	22.0	319
48	1 3/4			6.1	89	18.3	266
51	2			5.7	83	17.2	249
63	2 1/2			4.8	69	14.3	208
76	3			4.1	59	12.2	177
89	3 1/2			3.6	51.7	10.7	155.2
102	4			3.2	46.1	9.5	138.3

*Other diameters can also be manufactured. Please consult.

** Pressure data is noted at ambient temperature. Pressure values should be reduced by 20% for each increase of 100°C(21°F)

VENA® RAIL FLEX

INNER DIAMETER*		WALL THICKNESS		WORKING PRESSURE** ISO 1402		WORKING PRESSURE** ISO 1402		BURSTING PRESSURE** ISO 1402	
mm	inch	+1.05/-0.8 mm	+0.06/-0.03 inch	mm	inch	bar at 20°C	psi at 68°F	bar at 20°C	psi at 68°F
6	1/4	5.5	0.22	45	1.77	31.7	460	95.1	1379
13	1/2			65	2.56	19.8	288	59.5	863
19	3/4			85	3.35	15.0	218	45.0	652
25	1			105	4.13	12.2	178	36.7	533
32	1 1/4			125	4.92	10.2	149	30.6	444
38	1 1/2			145	5.71	9.0	131	27.0	392
51	2			185	7.28	7.2	105	21.7	315
63	2 1/2			230	9.06	6.2	90	18.6	270
76	3			280	11.02	5.7	78	16.2	235
89	3 1/2			335	13.19	4.8	70	14.4	209
102	4			395	15.55	4.4	63.1	13.1	189.4

*Other diameters can also be manufactured. Please consult.

** Pressure data is noted at ambient temperature. Pressure values should be reduced by 20% for each increase of 100°C(21°F)

VENA® RAIL PURE

INNER DIAMETER*		WALL THICKNESS		WORKING PRESSURE** ISO 1402		BURSTING PRESSURE** ISO 1402	
mm	inch	+1.0/-0.5 mm	+0.04/-0.02 inch	bar at 20°C	psi at 68°F	bar at 20°C	psi at 68°F
6	1/4	4.30	0.17	30.6	444	91.8	1331
13	1/2			15.7	229	47.2	684
19	3/4			10.8	156	32.3	469
25	1			8.2	119	24.6	357
32	1 1/4			6.4	93	19.2	279
38	1 1/2			5.4	78	16.2	235
51	2			4.0	59	12.1	176
63	2 1/2			3.3	47	9.8	142
76	3			2.7	39	8.1	118
89	3 1/2			2.3	34	7.0	101
102	4			2.0	29	6.1	88

*Other diameters can also be manufactured. Please consult.

** Pressure data is noted at ambient temperature. Pressure values should be reduced by 20% for each increase of 100°C(21°F)

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ELECTRIC & ELECTRONIC SYSTEMS

venair

Engineered *fluid solutions*
for electric & electronic
applications

venair
Fluid solutions. Solid performance.



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