POLYMELT

Made in Germany

POLYMELT MECHANICAL PP-RCT pipe systems

THE SUPERIOR PIPE SYSTEM FOR LIQUID COOLING OF DATA CENTRES

Reliable Cooling for Critical Infrastructure

Data centers are the backbone of our digital world, housing critical servers and IT equipment that require consistent and efficient cooling. With increasing server density and power usage, traditional air cooling often falls short in managing heat loads effectively. Liquid cooling has emerged as the superior solution, offering unmatched thermal efficiency to maintain optimal operating conditions.

Heat is the enemy of IT infrastructure. Even minor temperature increases can significantly reduce equipment lifespan and lead to costly failures or downtime. Liquid cooling not only mitigates these risks but also enhances energy efficiency, making it the ideal choice for modern data centers.

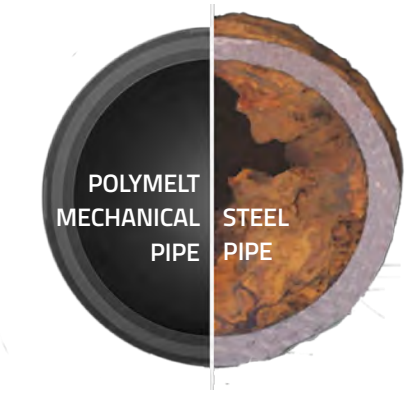
Why Choose Liquid Cooling with POLYMELT MECHANICAL PP-RCT pipes?

- Up to **3 times more efficien**t at removing heat compared to air.
- Supports **higher server densitie**s.
- **Reduces energy costs** and optimizes data center operations.
- Liquid cooling systems require **less energy** and are quieter than air-cooled alternatives.

The Challenge of Traditional Piping Materials

Overcoming common piping pitfalls

Not all piping systems are created equal. Traditional materials like steel, stainless steel, copper, and PVC come with significant drawbacks that make them less suitable for liquid-cooled data centers:



- **Corrosion risks:** Metal pipes like steel and copper are prone to rust and scaling, leading to contamination and potential failures.
- **Condensation issues:** Both metals and plastics with poor insulation properties can cause condensation, increasing humidity and risking hardware damage.
- **Complex installation:** Welding and soldering proces ses introduce fumes and potential fire risks, complica ting on-site installations.
- **Heavy weight:** Steel and copper are cumbersome to transport and install, often requiring specialized machinery and more labor.

These limitations have driven the need for innovative materials tailored to the unique demands of liquid cooling systems.

Traditional Materials vs. PP-RCT

Material	Drawbacks
Steel/Copper	Prone to rust and corrosion
PVC	Fragile and susceptible to cracks
Stainless Steel	Expensive and time consuming

PP-RCT: The Ideal Solution – Introducing POLYMELT PP-RCT Piping Systems

Polypropylene fiber reinforced pipe systems (PP-RCT) set new standards for liquid-cooling systems in data centers. This advanced thermoplastic material offers unmatched performance, reliability, and sustainability.

Key Advantages of PP-RCT:

- **Corrosion-free:** PP-RCT resists scaling, erosion, and chemical reactions, ensuring clean, efficient operation over decades.
- **Durability**: With a expected lifespan of 50+ years, PP-RCT piping systems are built to last, reducing maintenance and repla cement costs.
- **Lightweight**: Up to 80% lighter than metal pipes, simplifying transport and installation.
- **Insulation properties**: PP-RCT has a natural R-value, reducing the need for additional insulation and preventing condensation.
- **Eco-friendly**: PP-RCT is fully recyclable, making it a sustain able choice for forward-thinking data centers.

What Makes PP-RCT Unique?

- Heat fusion creates seamless, **leak-free connections.**
- **Operates effectively** in low and high temperatures.
- **No toxic chemicals** or heavy metals in its composition.

Simplified Installation and Maintenance

Streamlining data center projects

PP-RCT piping systems are designed with simplicity and efficiency in mind, making them ideal for both new installa-tions and retrofits. Once installed, PP-RCT systems require minimal maintenance, providing peace of mind for opera-tors and reducing total cost of ownership.

Key Installation Benefits:

- **Heat fusion technology**: Joints are bonded into a single, homo genous material, eliminating weak points and potential leaks.
- **No open flames:** Unlike welding, heat fusion doesn't require open flames, reducing fire risks and allowing installation in active data centers.
- **Fast fabrication**: PP-RCT components can be pre-fabrica ted off-site, minimizing downtime and accelerating project timelines.
- **Ease of handling**: Its lightweight nature makes PP-RCT safer and quicker to install, especially in tight or overhead spaces.

Installation Made Easy

- Up to **80 % lighter than steel** pipes
- Heat fusion takes **less time** than welding or gluing.
- Installable in working data centers with **no disruptions.**

Sustainability and Environmental Impact – a Greener Choice for Data Centers

Sustainability is becoming a priority for data centers worldwide, and PP-RCT piping systems are a step in the right direction.

Eco-Friendly Features of PP-RCT:

- **Low environmental impact**: Requires minimal refining, reducing the carbon footprint compared to metal alternatives.
- **Fully recyclable**: At the end of its lifecycle, PP-RCT can be repurposed, eliminating waste.
- **Energy efficient**: The material's insulation properties help reduce energy consumption for cooling.

By choosing PP-RCT, data centers can align with green initiatives such as Leadership in Energy and Environmental Design (LEED) certifications, contributing to a more sustainable future.

Why Sustainability Matters

- Data centers account for **1% of global electricity** use.
- Eco-friendly solutions like PP-RCT can help **reduce this footprint**.

The Polymelt Advantage

At POLYMELT GmbH, we are committed to providing cutting-edge solutions for liquid-cooling systems. With decades of experience and a dedication to innovation, our PP-RCT piping systems deliver unmatched performance and peace of mind for data center operators.

Trusted in high-profile data centers

PP-RCT piping systems have already been implemented in some of the most advanced data centers in the world, demonstrating their reliability and efficiency under demanding conditions.

Partner with POLYMELT

Invest in the future of your data center with PP-RCT piping systems. Contact us today to learn more about how we can help optimize your cooling systems with sustainable, leak-free, and high-performance piping solutions.

Why Choose POLYMELT for liquid cooling in data centers?

- **Industry-leading expertise** in PP-RCT systems.
- **Comprehensive support** from design to installation.
- Proven track record
- Pipe dimensions from **20 up to 500 mm**

Comparing PP, Steel and Copper pipes

	PP-R/PP-RCT Pipes	Steel Pipes	Copper Pipes
Impact Resistant	✔	✔	✔
Chemical Resistant	✔	●	●
Abrasion Resistant	✔	⊘	⊘
Scale Resistant	✔	⊘	⊘
Corrosion Resistant	✔	⊘	⊘
Nontoxic combustion products	✔	✔	✔
Resists chemical leaching into water	✔	●	●
50-year rating on both pipe and fittings	✔	⊘	⊘
Leak-proof connections	✔	●	⊘
No foreign material (solders)	✔	⊘	●
Joints as strong as the pipe itself	✔	⊘	●
Fusion outlet (saddle) and other low cost fittings	✔	●	⊘
Controlled thermal expansion	✔	✔	✔
Recyclable	✔	✔	✔
Opaque to avoid microbiological growth	✔	✔	✔
Inherent R-value	✔	⊘	⊘
No open flames	✔	●	●
Connections usable in less than 1 hour	✔	✔	✔
Does not easily sweat	✔	⊘	⊘
Stable competitive pricing	✔	⊘	●
Environmentally friendly piping system (LEED v4 credits)	✔	⊘	⊘

✔ superior ⊘ not recommended ● partly

Would you like to find out more about our pipe solutions for data centre cooling?

Get in touch with us! We look forward to supporting you with your project.

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