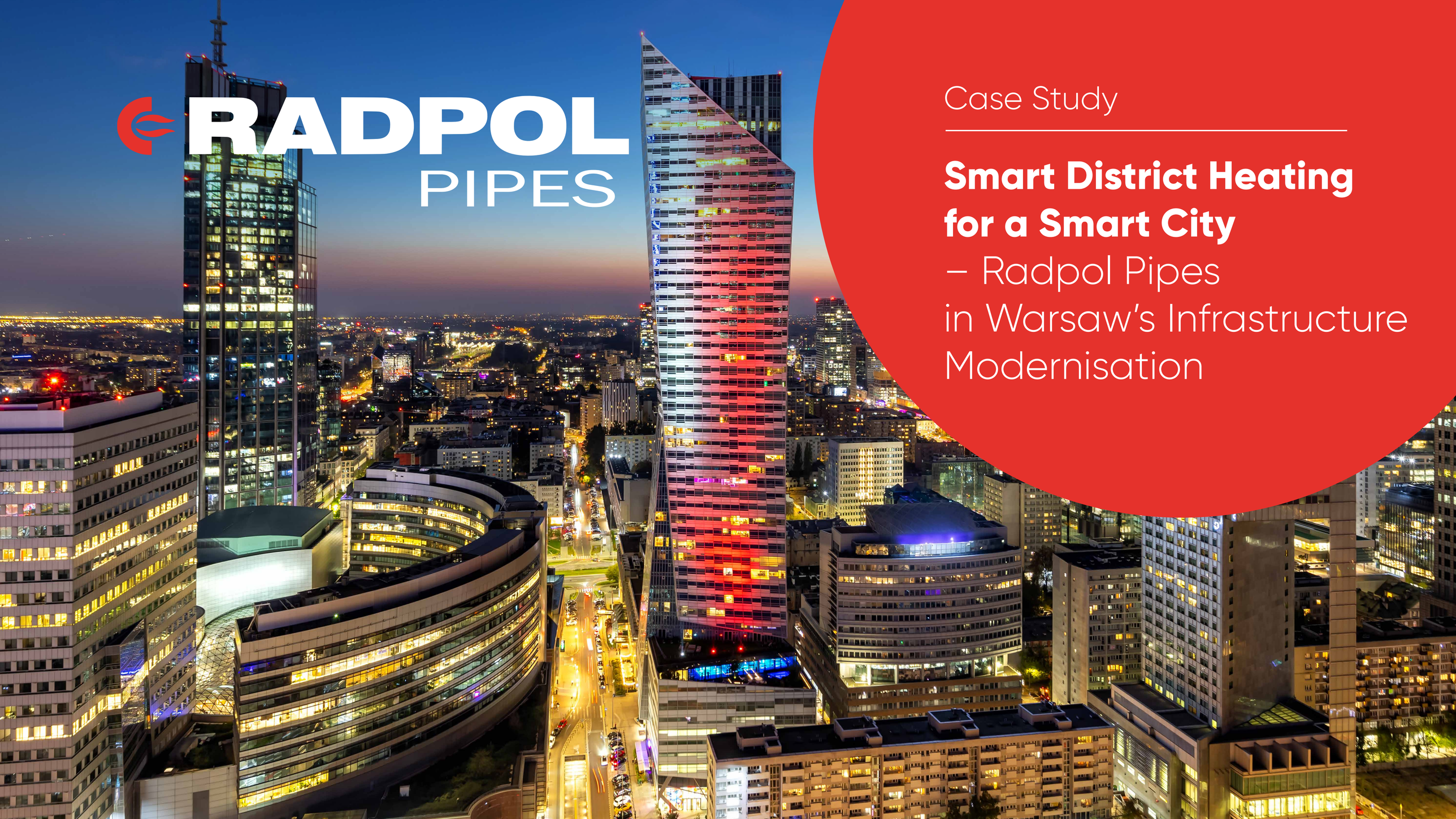

Case Study

Smart District Heating for a Smart City – Radpol Pipes in Warsaw's Infrastructure Modernisation

RADPOL PIPES

Introduction

The construction of the new tram line to Wilanów district is one of the most ambitious and technically complex infrastructure projects undertaken in Warsaw in recent years. As part of the works, a comprehensive reorganisation of underground utilities was required — including the modernisation of several sections of the city's district heating network.

A completely new transmission system was designed and built to meet the demands of modern, low-emission urban energy infrastructure. Radpol Pipes was selected as the supplier of the complete pre-insulated pipe system. The decision was based on the system's technical quality in line with EN 253, proven delivery reliability, and cost-effectiveness — all crucial in ensuring timely integration with the main contractor's schedule.

Challenge

The reconstruction of the heating network along the new Wilanów tram corridor supported Warsaw's broader commitment to decarbonising its urban energy infrastructure. The existing pipelines within the project area were ageing, inefficient, and no longer compliant with current performance or energy efficiency standards.

The project was executed in a dense urban setting, directly adjacent to other utility networks, under a demanding construction timeline. On-site storage was extremely limited, requiring just-in-time delivery and installation.

All system components had to arrive on site shortly before assembly — early deliveries or long-term stockpiling were not feasible.

Solution

Radpol Pipes supplied a complete pre-insulated pipe system in the DN80–DN1000 diameter range, covering nearly 9 kilometres of new district heating infrastructure.

The most technically demanding sections involved DN1000 trunk mains. All components — including pipes, bends and joints — offered excellent thermal insulation performance, ensuring long-term operating stability across the network.

Replacing the ageing infrastructure with Radpol Pipes' low-loss pre-insulated system significantly reduced transmission losses, improved heat supply reliability, and contributed to a measurable reduction in local CO_2 emissions.

Deliveries were precisely synchronised with the contractor's programme, ensuring seamless integration into site operations and eliminating delays caused by material shortages or storage constraints.

Benefits

Reduced heat loss

The system features rigid polyurethane foam (PUR) insulation with a thermal conductivity coefficient of λ = 0.0235 W/mK, fully compliant with EN 253.

This ensures minimal heat loss during transmission, directly improving network efficiency and reducing both operational costs and carbon emissions.

Reliable and consistent installation

Using a fully compatible system of pipes and fittings enabled fast, repeatable installation. Unified connection technology simplified jointing, minimised risk of installation errors, and helped maintain consistent quality across the entire route.

For the contractor, this translated into faster progress, lower rework risk, and simplified inspection procedures.

Stable long-term operation

The system is designed for continuous operation at medium temperatures of up to +120°C, with short-term peak tolerance up to +140°C, and nominal operating pressure of up to 16 bar.

These parameters ensure safe, long-lasting performance under real-world operating conditions typical of district heating systems.

Logistics aligned with on-site progress

Pipe deliveries were phased precisely according to installation progress, eliminating the need for bulk on-site storage and helping maintain a clean, efficient work area.

This logistics approach reduced downtime and supported uninterrupted construction flow.

RADPOL PIPES

TOP QUALITY IN EVERY LAYER.

Conclusion

Radpol Pipes played a key role in the modernisation of Warsaw's district heating infrastructure, executed alongside one of the city's flagship public transport investments.

The use of high-performance pre-insulated pipe systems, combined with carefully coordinated delivery logistics, enabled safe, timely, and permanent integration of the new heating network into the evolving urban landscape.

This project confirms that proven technology, combined with reliable industrial partnerships, remains fundamental to delivering efficient, future-proof energy systems for modern cities.

Learn more at:
www.radpolpipes.eu