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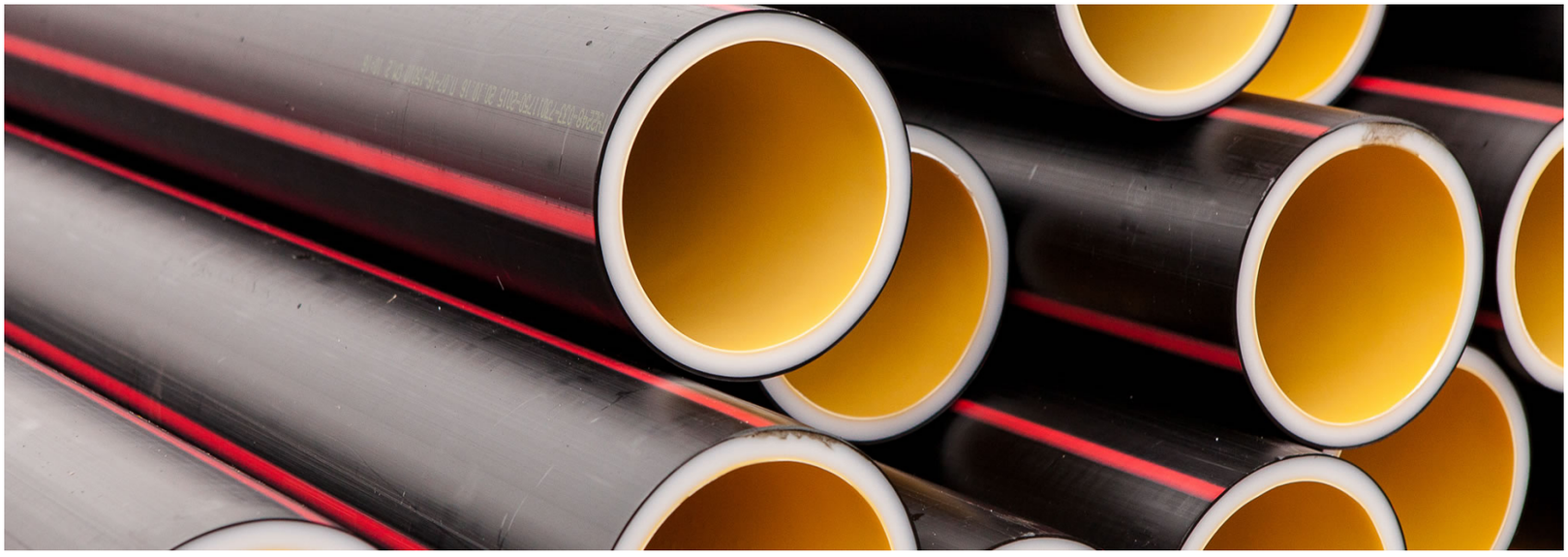

POLYMER PIPING TO SUPPORT PUBLIC UTILITIES

SIBUR participates in the POLYPLASTIC Group’s event set to promote cutting-edge materials for public utilities

Russia has embarked on the major upgrade of its public utilities. New technologies are bringing in cutting-edge polymeric materials with a wide range of applications.

In December, SIBUR participated in an extended offsite conference also attended by central government agencies and service and utility providers based in the Moscow Region. The conference was hosted by one of SIBUR’s key partners, POLYPLASTIC Group, which is a major manufacturer of plastic pipes and compounds in the CIS and a technology leader. In addition, both companies collaborate on joint research programmes with the NIOST, SIBUR's R&D centre, and participate in developing new grades.

POLYPLASTIC is looking forward to launching ZapSibNeftekhim, currently under construction, which will be producing pipe grade polyethylene on a large scale to make up for the current domestic shortage and move the industry away from counterfeit products. This was one of the key discussion topics at the conference. The participants also discussed the current trends in materials for public utilities and explored state-of-the-art technologies.

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POLYMERIC MATERIALS ARE RUST PROOF. POLYMERIC PIPES ARE MORE RELIABLE, LONGER LASTING AND MAINTENANCE FREE UNLIKE STEEL AND CAST-IRON PIPES.

The meeting centred around making utility piping more reliable and fail-proof in the Moscow Region. Andrey Laptev, First Deputy Minister of Housing and Utilities of the Moscow Region, opened the conference saying that such meetings are vital for federal agencies to explore the newest technologies and their potential applications.

The service and utility providers based in the Moscow Region are embarking on an important mission, specifically the nation-wide programme to rehabilitate the Volga River basin. Such events help get an insight into new opportunities offered by cutting-edge technologies and bridge a gap between manufacturers and consumers.

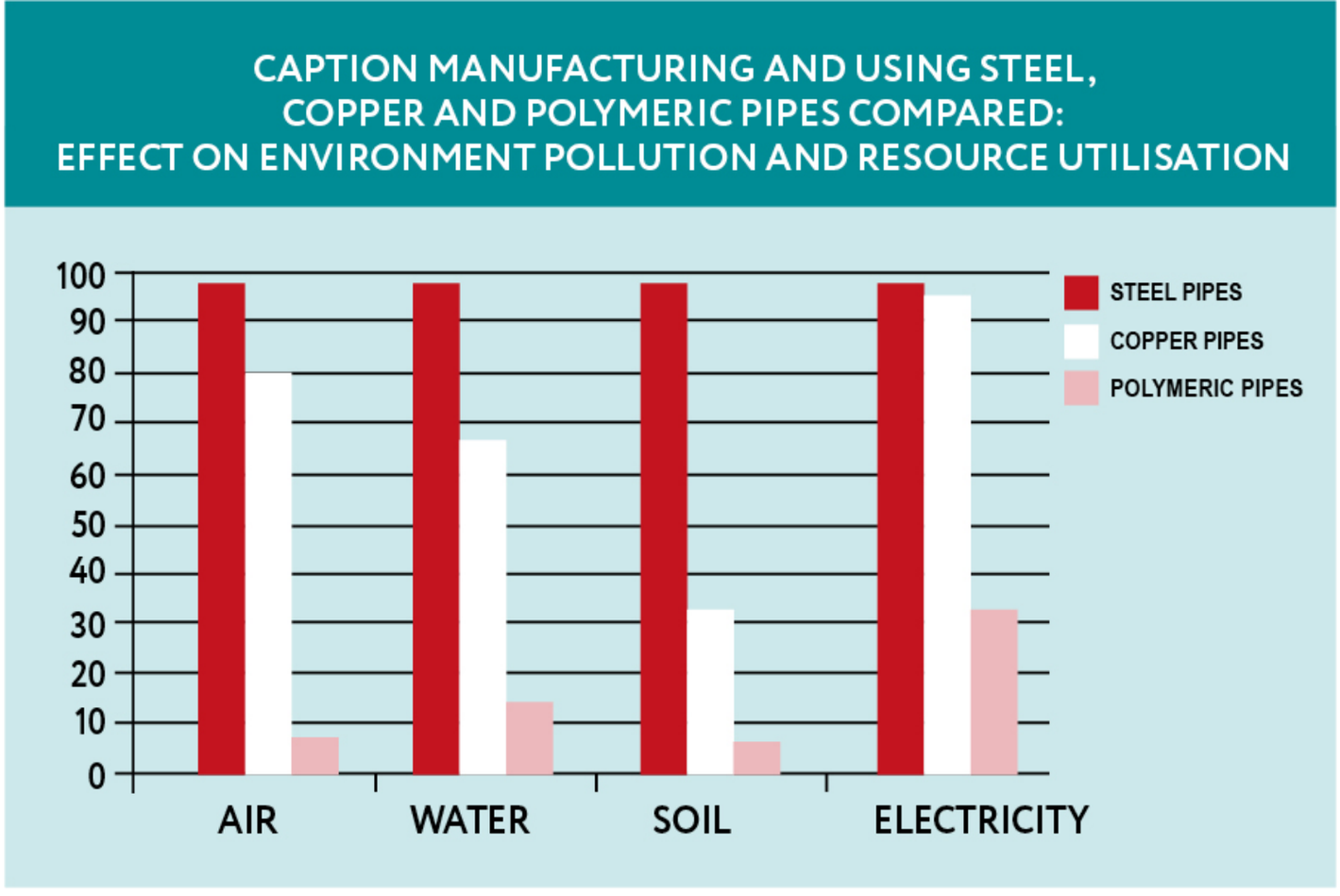
The speakers talked about polymeric materials used in public utilities across Europe and Russia, their unique properties and potential applications.

The conference was opened by Andrey Laptev, First Deputy Minister of Housing and Utilities of the Moscow Region.

Less cost, more reliability

Nowadays, polymeric pipes are everywhere spanning from hot and cold water supply, sewerage, gas supply, heating systems to wiring ducts and optical fibres.

The reason why polymers dominate the pipe making industry is quite simple as these exceed steel and copper pipes in a number of ways. Polymers cost less in terms of transportation and their plasticity makes utility engineering easier, installation works quicker and piping more reliable.



Manufacturing and using steel, copper and polymeric pipes compared: effect on environment pollution and resource utilisation.

The internal surface of a polymeric pipe is smoother, which is another unmatched advantage offsetting deposition risks and reducing flow turbulence.

Polymeric materials are rust proof. Polymeric pipes are more reliable, longer lasting and maintenance free unlike steel and cast-iron pipes.

No wonder plastic pipes have a wider range of applications beyond water supply and sewerage. In terms of gas supply, for instance, these add value through their excellent capacity to resist atmospheric precipitation, aggressive chemical compounds and stray currents.

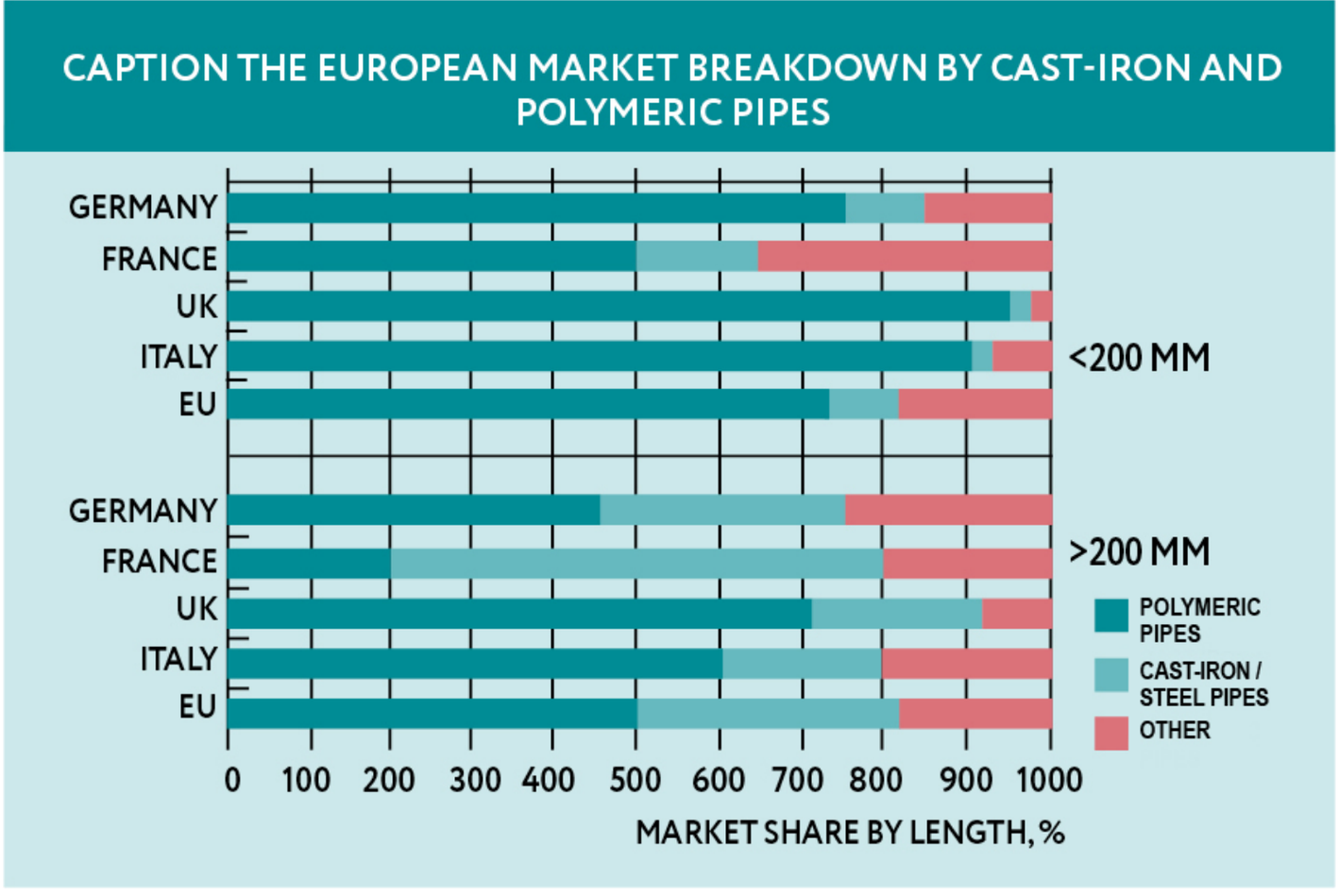
Polyethylene gas pipes are highly durable and flexible, which makes them irreplaceable in a challenging climatic and geodesic environment.

In terms of electricity supply, polyethylene and polypropylene pipes also add value by making utility engineering easier. Power cables benefit from supplementary insulation and get better protected (IP 55), including against rodents and groundwater flows.

In 2015, Moscow launched two initiatives, My Street and Clear Sky, with the latter set to convert overhead power supply lines into underground ones. Moscow now operates a total of 75,000 km of underground power supply lines, with another 470 km of cable ducts added over the last three years. Moscow authorities chose to follow the ways of Berlin, London and Madrid first removing street banners and then dismantling unpleasant and unsafe overhead cables. Currently, cutting-edge polyethylene pipes are used when installing underground cables for new street lighting facilities and upgrading older ones.

When the market rules

Interestingly, with all their merits, the FSU countries still use two to three times fewer polymeric pipes than the USA, UK, EU or China. That is not to say that Russia has the second largest underground pipework globally.

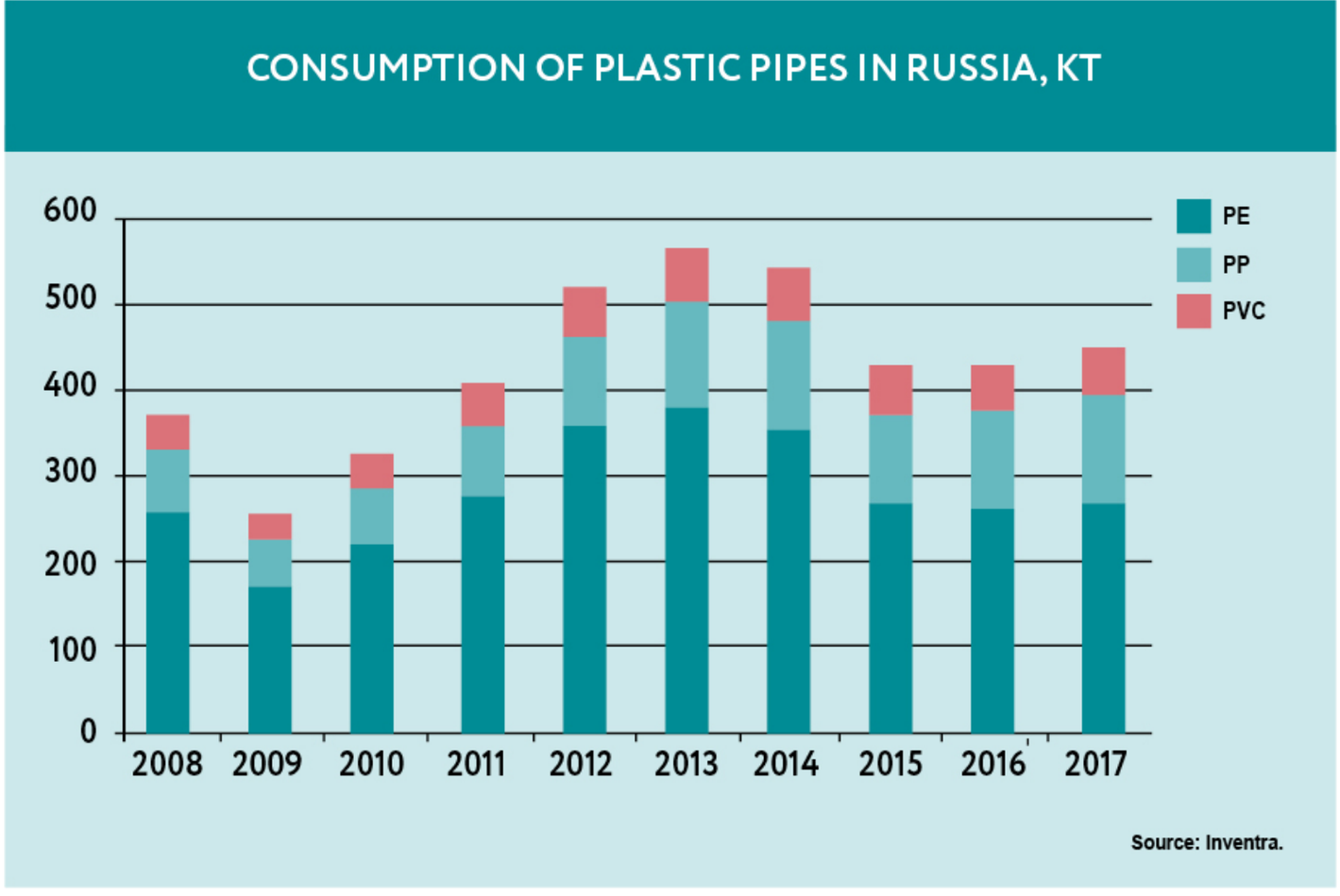


The European market breakdown by cast-iron and polymeric pipes.

THE SHARE OF IMPORTED POLYMERS USED IN MANUFACTURING RUSSIAN PIPES SHRANK FROM 53% IN 2013 TO 23% IN 2017.

The progress is unstoppable and the general development of economy dictates its rules. Manufacturers need fail-safe business processes, specifically a reliable supply of power and water. Utility providers directly depend on loss reduction. The traffic load is increasing across municipal, regional and federal routes, also affecting storm-water sewers. Though facing lower prices, developers are building more and more residential housing.

As a result, each and every industry of economy needs reliable, cheap and easy to install pipes. Despite stagnation in 2014, the polymeric pipe market is now growing rapidly. In 2017, consumption added 442 kt, being driven in particular by infrastructure projects and the housing market.



Consumption of plastic pipes in Russia. Source: Inventra.

At the same time, pipe manufacturers are increasingly switching to domestic raw materials. The share of imported polymers used in manufacturing Russian pipes shrank from 53% in 2013 to 23% in 2017. In 2017, Russian companies produced 88.5 kt of pipe grade polypropylene vs 50 kt in 2015.

The benefits are clear

Russian experts are actively exploring polymers and developing new pipe designs meeting tough challenges. “Judging by many years of our successful cooperation with developers all over Russia, we see that our partners are interested in both conventional and innovative materials. Service providers become increasingly aware of the clear benefits of newest polymer products,” said Petr Vasilyev, Deputy Director for Strategy at POLYPLASTIC.

We were making heavy use of Russian technologies in the lead-up to the 2014 Olympics in Sochi, including pipework construction.

MULTIPIPE GRADES WITH A DIAMETER OF 1,600 MM ENDURE THE PRESSURE OF UP TO 10 ATM. THESE INNOVATIVE PRODUCTS HELPED US BUILD AN OFFSHORE TREATED WATER OUTLET, A FACILITY OF IMMENSE COMPLEXITY INTENDED FOR THE 2014 OLYMPICS.

There are a few companies in Europe that match POLYPLASTIC in terms of manufacturing MULTIPIPE grades with a diameter of 1,600 mm and enduring the pressure of up to 10 atm. These innovative products helped us build an offshore treated water outlet, a facility of immense complexity intended for the 2014 Olympics.

In recent years, Russian metropolitan cities have been renovating their utility systems to make them more reliable and fail-proof. While renovating water and gas supply networks, Moscow authorities rely on newest PROTECT and MULTIPIPE systems with a protective coating preventing damage during transportation and installation, which ensures around 50 years of fail-safe operation.

Sergey Skopintsev, Head of Technical Control at Mosvodokanal, provided the participants with insights into how they were achieving excellence: “Municipal programmes such as My Street and My District, the Moscow Metro expansion, the Moscow renovation programme commit Mosvodokanal to meet tight deadlines. That is why we pay special attention to the advanced trenchless pipe laying technologies when renovating utility systems. This is a present-day alternative to the conventional trench laying technique, which is a great time saver. The trenchless pipe laying technology now accounts for 70% of pipework renovation.”

Water supply systems being renovated in Moscow.

New opportunities

The manufacturers of polymeric pipes are working to reach new heights, continuously developing new product types set to find even more applications for polymers. They are looking forward to launching polyethylene 112, a new material stronger than the well-known PE-100. It helps reduce pipe weight at normal operating pressure and ensures faster welding during installation.

As described by the speakers during the POLYPLASTIC Group's offsite conference on public utilities in the Moscow Region, the above applications of newest materials are just few examples of their unique properties. The experts strongly believe in a ringing success of polymeric materials and their widest possible applications going forward.