

# KLIMOVSK PIPE PLANT: ANOTHER FIVE YEARS OF SUCCESS

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*General Director of Klimovsk Pipe Plant (KPP) in 2006–2011*

**K**limovsk Pipe Plant (KPP) became the largest PE pipe producing plant in Europe after five years in operation. The plant continuously developed and grew during its second five years, widening its product range, introducing new pipe sizes, and developing new products. The equipment was also updated and new powerful units were deployed. This in turn meant a need for more space and the area occupied by the plant increased from 13 to 23 hectares. All quantitative indexes show proof of rapid and continuous growth.

## Pressure (smooth) pipes

The pressure range expanded to include up to 1600 mm diameter and thick-walled pipes (D=315 mm SDR 7.4, D=1000 mm SDR 9, D=1200 mm SDR 13.6). KPP was the first in Russia to produce these sizes and specialist equipment was required to meet the challenges. Long-term cooperation with Cincinnati resulted in a successful technological partnership. POLYPLASTIC Group was among the first to buy the new equipment including Monos and Monos+ extruders and rapidEX. However none of the Cincinnati customers achieved 90% capacity and when the equipment was pushed to the maximum with an increased load, the cylinders, screws and reduction gear failed. Both parties worked together to detect the faults and all equipment was repaired under warranty.

Modern Battenfeld-Cincinnati equipment is the result of that joint approach and a new generation of soLEX & BEX extruders replaced Monos. The modifications incorporated all the observations and the weaknesses of Monos and Monos+ were eliminated.

Production of high quality large diameter thick-walled pipes became possible thanks to a unique design which incorporated internal pipe cooling using a specially designed head. This was deployed in 2007 for the production of large diameter pipes (800 mm & 1200 mm) and achieved great results. Two years later Cincinnati implemented the technology and today Tecnomatic and other companies use it too. KPP were the first to design, implement and patent this technology.

In years six to ten, the widening of the KPP pressure pipe range (with design and specifications by Plastic R&D Centre) led to a significant quality surge in plastic pipes. For example, the GOSTs for HDPE pipes used in the gas pipelining

industry have changed and now include large diameter pipes with a different SDR range. Previous GOSTs only included 315 mm pipes for the gas industry, whereas now they have requirements for pipe diameters up to 1200 mm.

The widening of the HDPE pipe range was not only due to standard pipe sizes. In 2007 KPP designed and implemented new types of multilayer pressure pipes such as PROTECT, with protection coatings from 63 mm to 1200 mm in diameter. MULTIPIPE pipes, protective PE pipes for communication cables, as well as high quality outer casings with diameters from 500 mm to 1600 mm were also produced.

## Corrugated pipes

KPP began production of CORSYS pipes in 2005 as these were in high demand. Over 1,000 tonnes were produced that year and by 2011, production levels had reached 13,000 tonnes for KPP alone. CORSYS pipes are now produced by five other plants in the Group.

KPP have updated the existing lines by installing new high production extruders and new corrugators as well as a second workshop for CORSYS pipe production. KPP have also mastered production of CORSYS PRO SN16 polypropylene pipes with diameters from 110 mm to 1200 mm plus tube socket welding to CORSYS pipes with diameters from 315 mm to 1200 mm. One of the most essential technology components was the development and production of 'masterbatch' for CORSYS pipes, including ring stiffness modifiers and a processing aid. This task was successfully completed by the Group's Engineering Plastics Division, POLYPLASTIC Research & Production Enterprise.

Krah German profile equipment is used for the production of CORSYS PLUS pipes. KPP then mastered CORSYS PLUS pipe production with an internal diameter of 1200 mm to 2600 mm and a hoop stiffness of SN2–SN8; CORSYS PLUS pressure pipes for operating pressures up to 6 bar were also produced. In fact KPP were the first in Russia to produce these types of pipes and fittings and to use electro-diffusion welding techniques.

KPP has since implemented protective polypropylene winding on pressure PROTECT pipes with diameters from 710 mm to 1200 mm. Also the special winding unit was developed for preformed flanges from 710 mm to 1200 mm.

The innovation doesn't stop there. Another new product, never before used in Russia, is composite profiled CORSYS ARM pipes with internal diameters of 800 mm to 1600 mm. These pipes are made with adhesives designed by POLYPLASTIC Research & Production and incorporated with a heat shrinking sleeve to connect the pipes.

## Moulding

In the last five years KPP has become the largest company in Russia producing connection parts using high pressure moulding technology. KPP's moulding shop was expanded while the equipment was still in operation; KraussMaffei (Germany) and other injection moulding machines with a clamping force of 2,000 tonnes have been installed. The capacity of the new production facility is over 1,500 tonnes per year. Here KPP produces fittings with diameters from 32 mm to 315 mm for high pressure gas pipelines and couplings for gravity CORSYS and CORSYS PLUS pipelines with diameters from 110 mm to 1000 mm.

KPP is proud to have found a solution to each technological challenge and now produces couplings for unpressurised pipelines from polyethylene (CORSYS) and from polypropylene (CORSYS PRO), using the same casts.

## Production of bespoke items

The production of bespoke items has been radically changed at KPP. The 300 m<sup>2</sup> segment fittings and manholes area has been transformed into a well-equipped workshop and KPP makes manholes of different types in sizes up to 8 m. Chambers, pumping station units and tanks are also

manufactured here. The facility includes a special shop for hydrostatic testing where all items undergo a 100% leak integrity check.

## Laboratory

The testing laboratory at the Klimovsk Pipe Plant has been accredited by the Federal Agency for Mechanical Regulation and Metrology. The lab features advanced equipment and can provide the whole range of tests, including acceptance, periodical, certification and raw material tests. Large items can also be accommodated and it is worth noting that this is the only testing lab in Russia that can provide pressure resistance tests at 80°C on PE pipes and fittings with the diameters up to 2000 mm and over.

KPP have created testing equipment for crack propagation (S4) and can test gas pipes with diameters up to 400 mm.

## Plans for the future

Following a period of intensive research and development, today KPP is the largest plant in Europe with a wide range of products, and an innovation centre whose designs are implemented across the POLYPLASTIC Group and by other companies in Russia and beyond.

The trends observed today will continue to inspire ongoing innovation and research. Today the plant produces pipes, fittings, modernises equipment, develops new technologies, updates existing techniques and finds solutions that address challenges and support future market growth.

