SP Pipe Centre is one of the leading laboratories in Europe for testing and research on distribution systems for water, sewage, gas, district heating and cooling.

Plastic pipes and district heating pipes
In SP’s laboratory, testing of plastic pipes started in the late 1960s, and research and testing of district heating pipes started in 1985. In 2007, SP Pipe Centre became the first institution approved to be an Euroheat & Power laboratory. The research focus has naturally been on life time assessment, degradation mechanisms, joining and installation procedures, and has evolved due to material developments.

Plastic pipes for water and waste water, gas and heat systems
We carry out testing according to most standards concerning pipes and constructions in the ground such as chambers and mud separators of polyethylene (PE), polypropylene (PP), polyvinyl chloride (PVC), cross-linked polyethylene (PEX).

High pressure pipes are tested according to EN 1555 (gas), EN 12201 and EN ISO 1452 (water), and waste water pipes according to EN 1401, EN 1852 and EN 13476. Raw material evaluations for classifications of pressure pipe materials are carried out according to ISO 9080.

Accredited laboratory
SP Pipe Centre is an accredited laboratory and a part of SP Technical Research Institute of Sweden. As an accredited laboratory we perform type testing and audit inspections as well as preparing reports for Nordic Polymark issued by INSTA-CERT and also for Euro Heat and Power.
SP Technical Research Institute of Sweden

SP is a polytechnic research institute with 1500 employees located at about 30 sites in Sweden and also at two sites in Denmark and Norway. SP was founded in 1920 and has provided high quality value-added solutions to clients ever since. The headquarters are currently located in the city of Borås, Sweden. The laboratories have ISO 17025 accreditation. SP is the national metrology laboratory with the national references for all technical units except for radiation.

Research
During the last five years SP Pipe centre participated and, in some cases, also coordinated several national and international projects. Among our financiers are the EU commission, IEA DHC, the Swedish Water & Wastewater Association and City of Gothenburg. We collaborate with national and international companies within, eg, EU, Korea and Norway. We also conduct failure investigations. We are active in the standardization work in CEN/TC 155 & SIS/TK 226.

In FC-District we contributed to the overall goal of demonstrating energy autonomous districts and the development and verification of an enhanced insulated district heating pipe. We also had the role as work package leader in that project.

Water tightness of flange joints connecting plastic pipes to valves have been investigated. The pipes have a reduced flange adaptor, a HP-flange adaptor, or a transition fitting of steel. In the full scale experiments all flanges have a bolt circle diameter Ø725 mm. Four types of gaskets are used: an O-ring, a standard and a profiled gasket of EPDM with a steel core without and with an O-ring part, respectively, and also a planar gasket. In parallel, finite element analyses have been used for simulating the bolt tightening and relaxation of the flange joints investigated.

Temporary closure of plastic pipes by squeeze-off has been investigated. A few pressure tests were carried out on the squeezed PE80 and PE100 pipes as well as the untouched pipes. The results show that no significant reduction of the lifetime could be shown.

Methods for tightness testing of pressurized polyethylene pipelines have been scrutinized. Problems have been reported regarding tightness testing of plastic pipelines, particularly so for larger sizes and higher pressures. Pipelines that are in fact tight enough for acceptance are rejected when first tested.

Contacts - Testing and certification
Lars Erlandson
Telephone: +46 (0)10 516 5805
E-mail: lars.erlandson@sp.se

Pär Liljestrand
Telephone: +46 (0)10 516 5808
E-mail: par.liljestrand@sp.se

Contacts - Research and failure investigations
Jan H Sällström
Telephone:+46 (0)10 516 5802
E-mail: jh.sallstrom@sp.se

Nazdaneh Yarahmadi
Telephone:+46 (0)10 516 5921
E-mail: nazdaneh.yarahmadi@sp.se