

Buried gas network

Case: Buried Gas Pipe Network Project in Residential Communities
PE 100+ member: PetroChina Dushanzi Petrochemical Company
Author: Xi Jun
Period: From June, 2014 to April 2016
Country/Region: Gansu Province, P.R.C
Network owner: PetroChina Kunlun Natural Gas Tianshui Company
Engineer/Installer: Sichuan Hongda Petroleum & Natural Gas Engineering Company
Pipe producer: Pipe Producing Division of PetroChina Kunlun Natural Gas Company

This installation project is for two newly-build residential communities named Shanshuixincheng and Jinxiuyuan in Qinzhou District of Tianshui City, of which either belong to the Government Affordable Housing programme. In Shanshuixincheng residential community, which lies at Xishili of Qinzhou District and has 3942 apartments, 660 meters of MP pipe and 1130 meters of LP pipe have been installed. In Jinxiuyuan residential community, which has 3982 apartments, 524 meters of MP pipe and 750 meters of LP pipe have been installed.

Tianshui City in the meantime owns a low pressure pipeline network of 96 km and 310 km of a medium pressure network. By this more than 60,000 residential consumers, 129 commercial consumers and 2 industrial consumers and one CNG switch station in Qinzhou District, Maiji District and Tianshui National Economic & Technical Development Zone were connected with peak gas supply amount at 50,000 cubic meter per day.

The project was realized by PetroChina Kunlun Natural Gas Tianshui company after 8 year of construction.



Urban Routing of Natural Gas Network of PetroChina Kunlun Natural Gas Tianshui Company

The project of installing gas pipes was realized with diameters ranging from 63 mm to 250 mm. As these communities are designed to use PE100 pipe, no alternative/previous material was used.

As prominent advantages firm connection with butt fusion or electro fusion were named. Moreover, good flexibility making it possible to bypass obstacles within the allowable bending radius of pipes during construction reduce installation costs. In addition, large elongation to prevent pipe fracture from foundation sinking, light in weight and easy of handling made PE 100 the preferred material. Other advantages are good corrosion resistance and no rust, resistance to low and high temperature and aging. Moreover, the material was considered suitable for long-term use at temperatures of between -20°C – 40°C . The long service life of over 50 years and the small flow resistance because of smooth inner surface were further aspects in favour of PE 100.

In terms of cost aspects, a pipe DN 400 out of PE100 is equivalent to that of DN 350 steel pipe with the same inside cross section. For diameter less than DN 400, PE100 pipes have price advantages while for diameter larger than 400, steel pipes are favourable in terms of price. Construction cost and test cost of a PE100 pipe are much lower than those of steel pipes.

Further positive aspects PE 100 are the corrosion resistance and the environment-friendliness. Lower impact on surroundings during works, a lower failure rate, quicker installation, lifetime more than 50 years played an eminent role for the selection of PE 100.

On the other hand, welding quality test technology still seems immature, preventing vigorous promotion and use.



Installed pipe