DEVELOPMENT OF BRANCH DRILLING AND CONNECTION DEVICE FOR PLASTIC GAS PIPE INSERTION METHOD

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History of Materials for Buried Pipes

- 1970: Galvanized Steel pipe
- 1980: Polyethylene-coated Steel pipe
- 1990: Polyethylene pipe

Risk of leakage from galvanized steel pipes by corrosion is increasing!!
Gas operator’s responsibility (as far as gas valve in the house)
Schematic of PE Insertion Method

- Air bag
- Corrugated pipes
- Connection
- Saddle
- Target
- Branch drilling device
- Winch
- Insertion material
- Branch connection
Diagram of branch drilling device

- Processing unit
- Hinge
- Control unit

- Air picker
- Optical head (Assist gas outlet)
- Rotating shaft motor
- Pipe lengthwise direction motor
- Magnetic sensor
- CCD camera
- Magnetic sensor
Procedure of drilling the branch points

Installing the target

Drilling the branch point

Branch drilling device
branch connection device

Branch connection device
Cable dram
High frequency electrical generator
Cooling device

High frequency coil
Air bag
Procedure of drilling the branch points

Insertion of the branch pipe

Connection of the branch pipe

Main pipe

Branch pipe

connection saddle

Air bag

High frequency coil

Connection of the branch pipe
Conclusion

We have successfully developed a Branch Drilling and Connection Device used to perform branch pipe connections to apply the PE insertion method.

This device can be used in pipes with extremely small diameters of 50mm or 80mm.

This device can sharply reduce the costs of the PE insertion method by drilling branches and connecting branch pipes very quickly without excavating.