Keyhole in Europe: focus on GERG test

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1. Context of GERG project
2. Tests sites in Europe
3. Next steps
1.1 What about GDF SUEZ Keyhole project?

- Test on site of McLaughlin vacuum and Utilicor coring unit on 2009 and 2010
- Development of micro drilling unit in cooperation with Tracto-technik
- Promising results, but....
1.1 What about GDF SUEZ Keyhole project?

- All the civil engineering work is subcontracted:
  
  • Difficulties to give enough new connections to justify such an investment for subcontractor

  - Feedback of subcontractor:
    - Lack of power of cyclonic aspiration for other use than Keyhole
    - No possibility to use wet aspiration for environmental reason
    - Need to buy two trucks
    - Coring unit is oversized regarding asphalt and concrete depth in France
    - Lack of standardization for tapping tee → multiplication of tooling

- Need another approach with water and other European utilities
1.2 Overview of Gas European Research Group

- **4 Program committee**: utilization, general studies, transmission …
- **Main utilities in Europe for distribution:**
  - Netherland: Kiwa Gas Technology
  - England: National Grid
  - Germany: DVGW and Eon
  - Spain: Gas Natural
  - Norway, Turkey, Italian utilities
  - …and GDF SUEZ

- **Number of projects in execution for distribution**: 7
- **Budget**: 2,215 M€

- **Type of projects**: 
  - Gas bag for high pressure
  - Smart Pipes
  - Power to Gas
  - Non destructive technics for electrofusion fittings
  - ……
1.3 Overview of Gas European Research Group

- **GERG Project**
  - Share experiences and provide sufficient interest of manufacturers and subcontractors
    - With GDF SUEZ, Eon, DVGW
    - Interest of Italgas, Gas natural and Kiwa
    - Launched for 18 months beginning of 2012
    - More than 30 sites done in France and Germany

- **Ecores project:**
  - Share experiences with water utilities in France and provide sufficient market for a good ROI for subcontractors
    - With Lyonnaise des Eaux
    - Development of a software to evaluate the technical/environmental and cost benefits
1.4 Latest improvements with Tracto technik
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Micro drilling is tested in all site with a small coring unit:

- until the basement for German site
- until the Gas box for French site

With traditional vac-truck
2.1 Experimental site for water purpose(1/2)

Tests in situ (France - June 2012):

- Paray-Vieille-Poste: water connection
  Two cores like an “8” made in the sidewalk - tooling from top of excavation were not available for such diameter

Vacuum excavation was made by subcontractor (BIR)

Micro drill done with Tracto Technik machine

Success!!
Good accuracy of the drilling!
Tests in situ (France - June 2012):

- Chevry-Cossigny: water connection
  
  Triple coring due to bad localization of buried pipes

Vacuum excavation done by a Lyonnaise des Eaux truck

Micro drill done by TT

Good accuracy of the drilling!,
....in a very dense underground!
2.2 Micro drill test site near Paris - illustration
2.2 Micro drill test site near Paris - Illustration

- **Technical feedbacks**: 
  - Importance of the soil composition for aspiration and micro drilling
  - Need a precise localization of the pipe
2.3 Test in Germany - Hannover

Drilling into the basement – 50 mm

Fixation of the coring on the drill string – 100 mm

Pulling back a reamer to the micro drill to upsize the hole and laying the sleeve
2.3 Test in Germany - Saalhausen
2.3 Test in Germany - Augsburg

- Some limitations …
2.4 Toolings from top excavation

- For intervention on PE Pipe:
  All the tools for laying AGRU saddle tee on 63, 110 et 125 are available
2.4 Tooling in development: scrapper

Available for 90 to 225 mm
2.4 Tooling in developments: scrapper
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2.4 Cleaner for cast iron and steel pipes

- For Water in France
- For Gas and Water in Germany
3. Next step: mechanical fitting vs new tapping tee?
3. Next step: improving localization

- **RFID Tag**
  All pipes detection & localization, traceability information (incl. maintenance)

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**Advantages**
- All types of materials
- Easy to detect and localize
- Precise localization (< 10 cm in x,y,z)
- Read/Write tag
- Wireless communication
- No power supply
- For new and existing pipes
Summary & future work

- Technical feedback is good
- End of test sites: beginning 2013
- ..but how to go on industrial phases?
- Pre industrialization in France with an industrial partner: 2013
- Still to improve: tooling
- Software: end 2013

Other potential use

- Live inspection for main live:
  - Introduction of a camera through a specific tapping tee (ULC Robotics system)
- Localization of buried Pipe through an internal probe
THANK YOU
FOR YOUR ATTENTION!