# Keyhole in Europe : focus on GERG test

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In cooperation with

GTI Keyhole Group

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# OUTLINE

- 1. Context of GERG project
- 2. Tests sites in Europe
- 3. Next steps

GTI Keyhole Group

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# 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 | Budget |
|---|---|---|
| Project in execution for distribution | 7 | 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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With traditional vac- truck

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

# 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!**

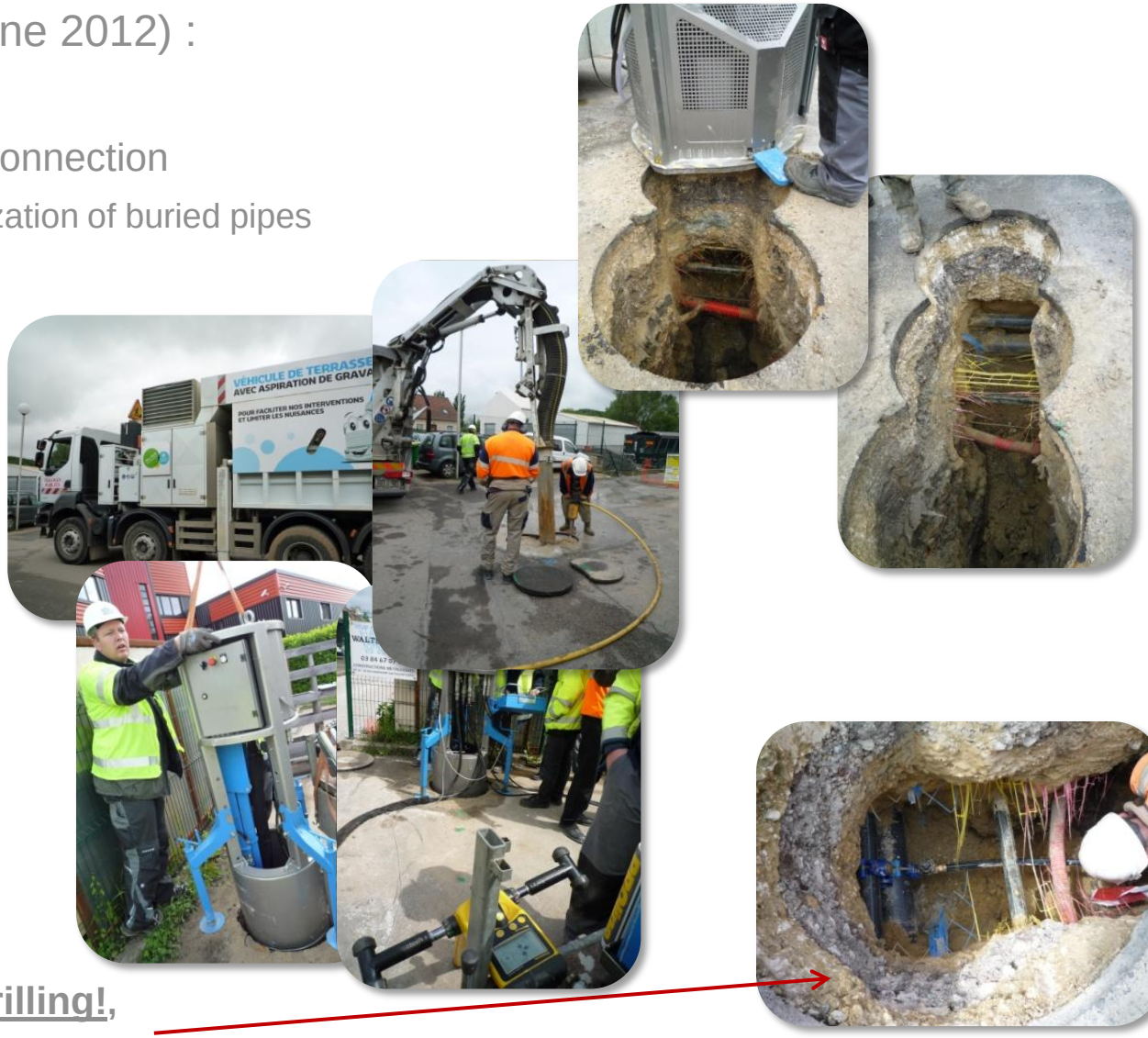
# 2.1 Experimental site for water purpose(2/2)

- **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

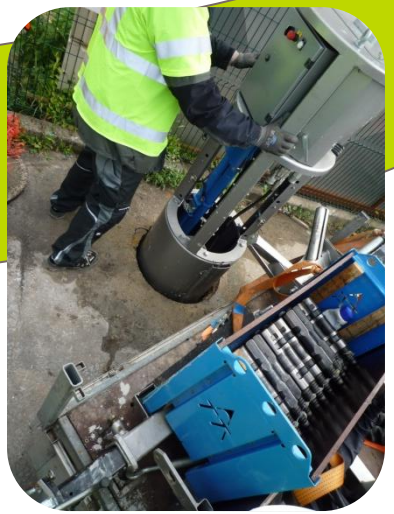



Micro drill done by TT

**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

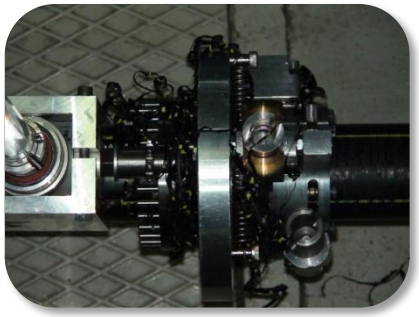

# 2.3 Test in Germany - Augsburg

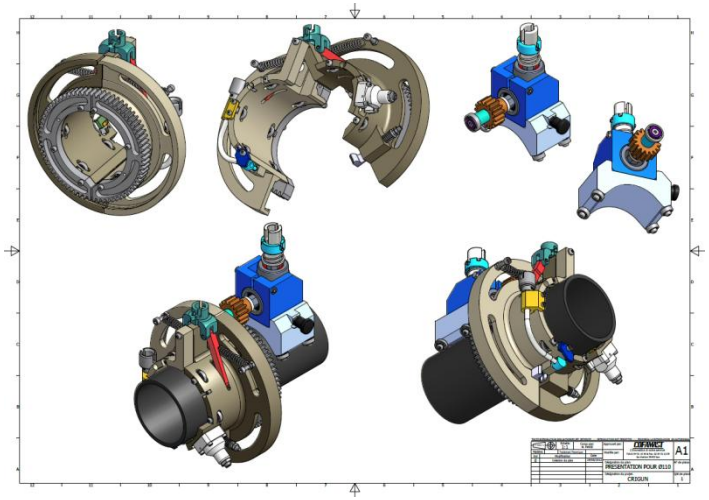
- **Some limitations …**

# 2.4 Toolings from top excavation

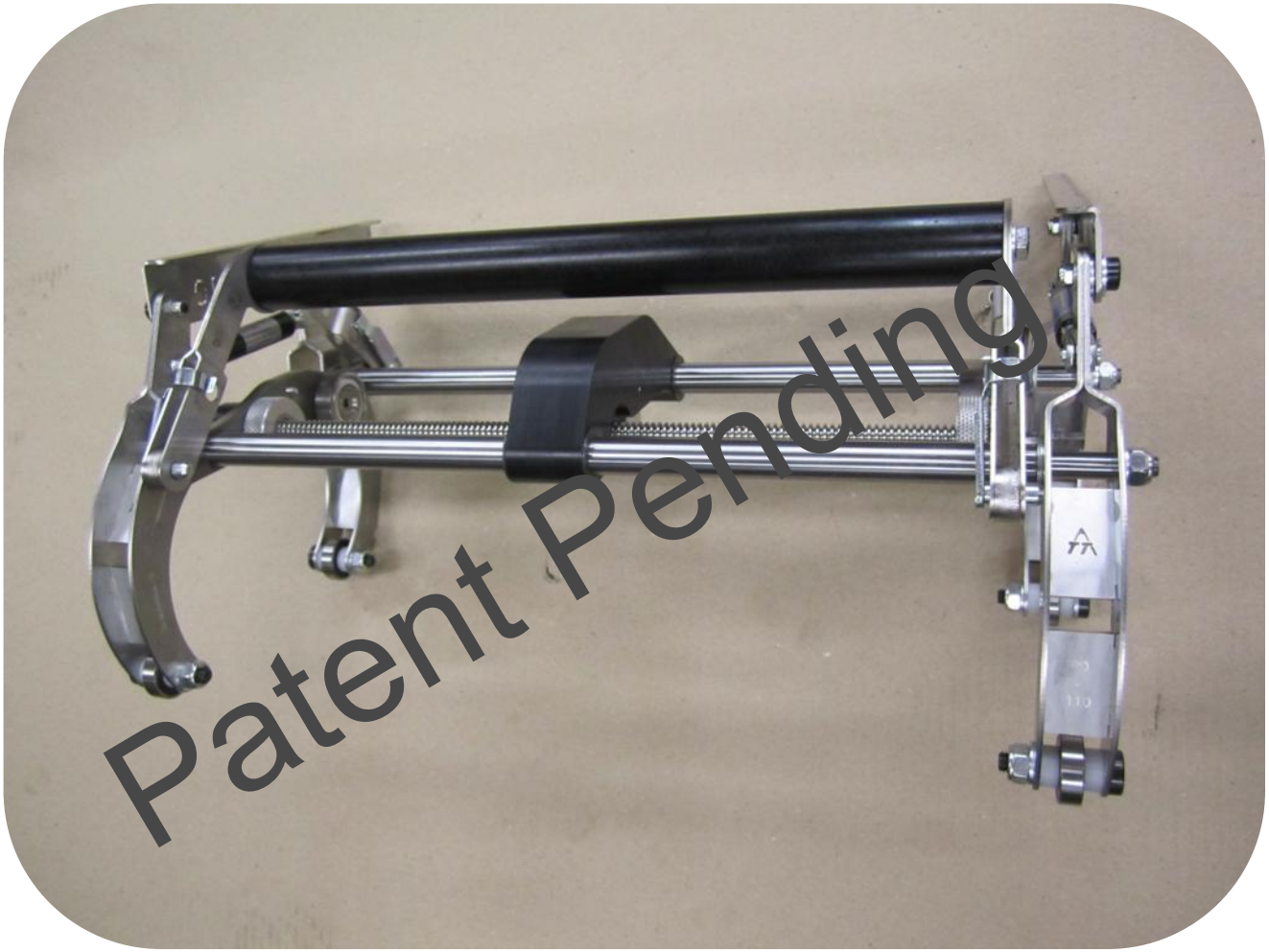
- **For intervention on PE Pipe**:

  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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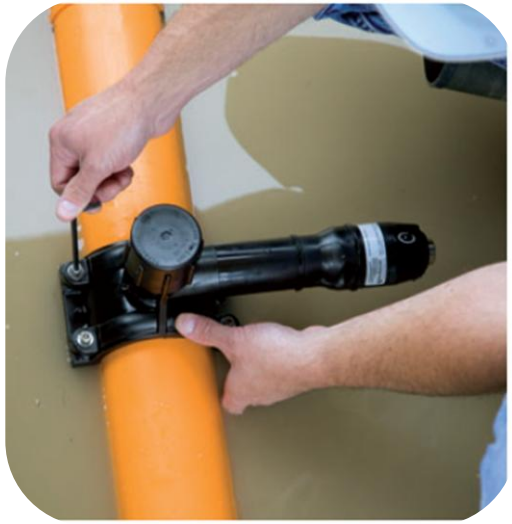
# 2.4 Cleaner for cast iron and steel pipes

- For Water in France
- For Gas and Water in Germany

# 3. Next step : mechanical fitting vs new tapping tee ?

PSI Elster Perfection



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# 3. Next step : improving localization

- **RFID Tag**

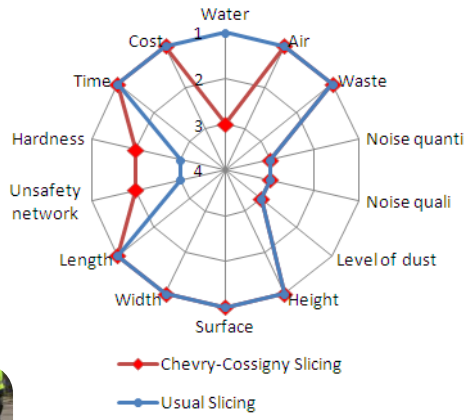
  All pipes detection & localization, traceability information (incl. maintenance)

## 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!