F150 First Floor, Cherwell Business Village, Southam Road, Banbury OX16 2SP
t +44(0)20 7235 7938 **f** +44(0)20 7235 0074 **e** hqsec@pipeguild.com **www.pipeguild.com**

2023 TECHNICAL AWARDS ENTRY FORM

Entry Deadline: Thursday 30th March 2023

Please tick which categories you are entering (entries may be submitted in multiple categories using the same entry form)

Landbased Pipeline Project Award	☐
Landbased Pipeline Technology Award	☐
Utility Pipeline Project Award	☐
Utility Pipeline Technology Award	☒
Subsea Pipeline Project Award	☐
Subsea Pipeline Technology Award	☐
iICE Award	☐

1. **Brief title of entry:** **Origin No Dig® - Game changing leak reduction technology**
2. **Company name:** **Origin Tech**
3. **Signed:** 
4. **Date:** **28th March 2023**
5. **Company contact name:** **John Marsden**
6. **Telephone:** **07525747382**
7. **Email:** **john@origintech.co.uk**

8. **Precis of your entry (50 words):**

Origin No Dig® is patented technology which automatically fixes leaks in potable water pipelines. It's injected into the pipe and flushed out when the leak is repaired. It's non-toxic and complies with BS6920. It fixes leaks without pinpointing them, no digging, no disruption, and 100 times quicker than traditional repairs.

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9. Summary of entry:

We have been working with Northumbrian Water (NWL) over the last 18 months validating and commercialising Origin No Dig®. Over the last 6 months we have been deploying Origin No Dig® on live water mains within NWL network.

Origin No Dig® has been derived from a product used during drilling in the Oil and Gas Industry. The directors have extensive experience in Oil & Gas and wanted to diversify into the utilities markets and so set about inventing a novel way of fixing water pipe leaks – and so Origin No Dig® was conceived.

Origin No Dig® is a water based fluid with suspended mineral particles as seen on the left image.

The product is designed to fill the pore space of the substrate surrounding the pipe, this could be as small as sand or a large as pea gravel, once the pores are full they then do not allow water molecules to pass. This is achieved by suspending minerals which have been engineered in both size and distribution to allow most soil types surrounding the leak to be sealed.

There are significant advantages to sealing leaks with Origin No Dig® these are:

- No need to find the exact location of the leak
  - This means its significantly quicker to repair leaks and therefore reduces water losses
  - Nonvisible leaks can now be repaired without being located, reducing leakage
  - No more dry holes/ multiple digs to locate leaks

- No need to dig to repair the leak
  - Less labour, no working in trenches, significant improvement in safety
  - No plant
  - No traffic disruption
  - No CO_2 emissions
  - No waste to landfill
  - No reinstatement
  - Significant reduction to customer Interruption to Supply (ITS)

The benefits we have measured/predicting are:

- Over 100 times quicker to fix leaks using this method
  - Communication pipes take 10 minutes including flushing
  - Mains typically take 30 minutes
- Its at least 25% cheaper often half the cost of traditional methods
- Opportunity to achieve Outcome Delivery Incentives (ODIs) is significantly improved
  - For example visible leaks can now be fixed within 1 day (previously 6.5 days average)
- When used at scale this technology could enable Water Sector target of reducing leakage by 50% by 2050

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We have now completed enough live mains repairs that we can confidently predict a repair outcome, below is a table of our repair capability, it is unaffected by pipe diameter, larger diameters require more product.

Pipe Types - Tested on Live Mains

Leak Type	PE	Alkathene	PVC	Cast	Ductile	Galv Iron	AC	Copper	Lead
Hole	✓	✓		✓	✓			✓	✓
Fitting	✓	✓	✓				✓		
Flange/Joint	✓	✓	✓	✓	✓		✓		✓
Split		×	×						
Crack				✓			✓		
Threaded Collar									

Small splits can be repaired, but generally if a split is repaired when the pressure increases the split just elongates and then leaks again. The only pipe type not currently tested in a live environment is galvanized iron, it is expected to behave in a similar manner to cast.

There are additional secondary benefits we are discovering when using this technology operationally. We have found that problem pipelines, i.e. ones which fail frequently can now be fixed multiple times very quickly. This should allow for the life extension and thus deferred capital replacement for these pipes.

Below is a case study from a repair we have carried out:

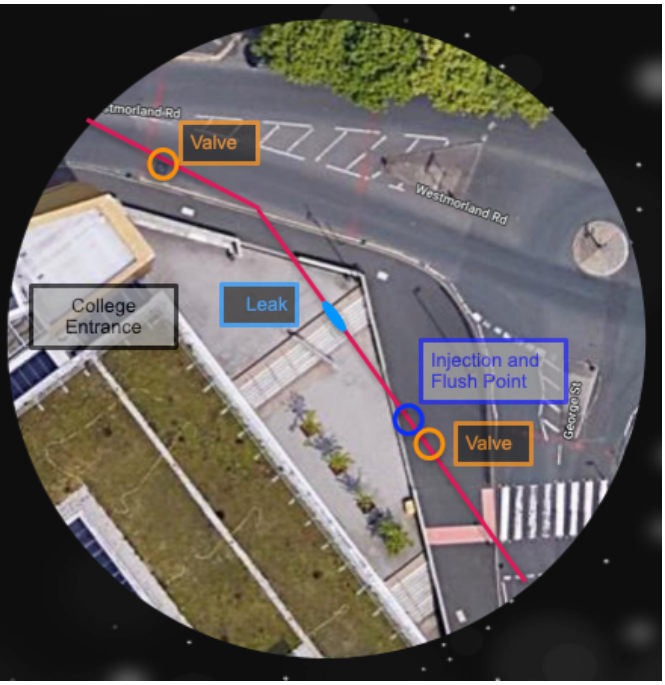
Injecting a Shot - Cast Main

Challenges During Repair

- Suspected ring crack in cast main
  - Never tested this type of leak
- High leak rate +6000ltr/day
  - Concerned about wash out
- Leak rate meant pressure may reduce before shot reached leak site

Benefits

- No road closures, no traffic management, no council permit
- Rapid repair - 1 hour
- Significant cost savings (10 times less)
- Water quality acceptable within 1 hour
- Lack of viable repair alternatives would have resulted in diverting main



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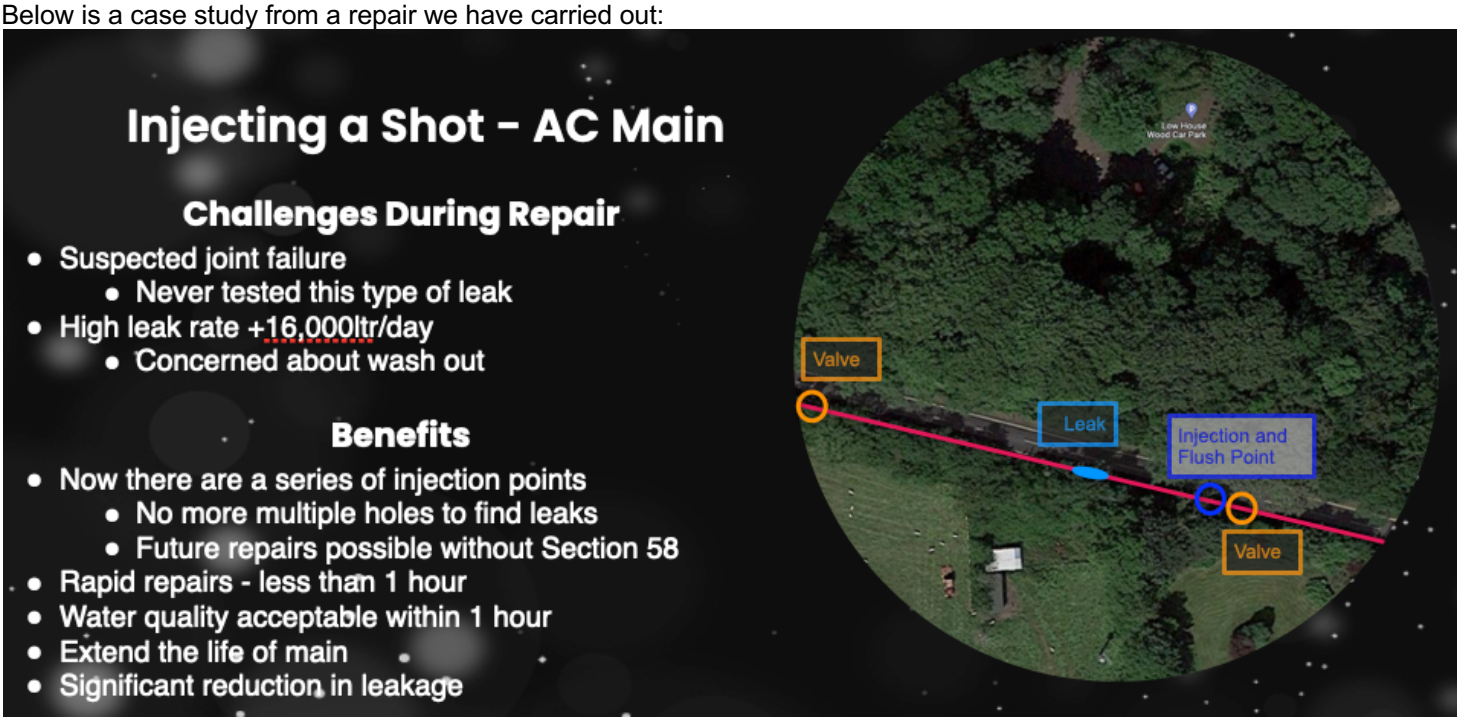
The most significant challenge was that the leak was under stairs adjacent to the college entrance and a traditional repair would have had a significant impact on the students during term time. The man was almost 2m below the street level and the only viable option would have been to divert the main.

Below is a case study from a repair we have carried out:



The challenge with this repair is the leaks are frequent, are always nonvisible, and often significant. The road has just been resurfaced and so resurfacing costs are high and traffic management essential. It is now possible to repair future leaks without traffic management and it will be possible to extend the life of this asset.

Brand logo: