nationalgrid

Gas Transmission innovation

Impact protection slabs

Value Case Study

Safety

Project: NIA_NGGT0007 Risk Assessment Methodologies for Pipelines and AGI's
PEA cost: £32k
Duration: 1 year
Supplier: DNV GL
PEA benefits: Safety – cost avoidance
Benefits realised: £471k

Carbon savings:

Concrete

1.69 tCO_2

PE slabs

0.95 tCO_2

44% less

for 3x5m coverage

£471k

Total savings for installations to date

Background

Impact protection slabs are used as additional safeguards against pipeline damage from mechanical plant and equipment. These slabs are installed above the pipeline and are typically buried more than 1m below the surface. They are designed to protect buried pipes from construction and agricultural machinery digging or dredging.

What's new?

Conventionally, reinforced concrete has been the material of choice for impact protection slabs. However, NIA funding has been used to research and develop the use of polyethylene (PE) slabs as an innovative alternative. They are especially useful in shallow ditch-crossing situations and give machine operators early visual warning of the presence of the pipeline. PE impact protection slabs are made from Ultra High Molecular Weight Polyethylene (UHMWPE). An initial order was placed and the first installations have been taking place in East Anglia.

The benefits

- Installation is quicker
- Installation is safer
- Lower installation costs
- No risk of corrosion of the concrete reinforcement
- No risk of interference to the pipeline cathodic protection
- No risk of pipe damage if the slab sinks or is pushed onto the pipe.

Funancial savings

Financial savings from using PE slabs are associated with both capital savings from the purchase of the slab and the significantly lower installation costs, compared to a concrete slab. The purchase and installation of 159 PE slabs to date has realised total savings of £471k. It is anticipated that future savings will be significant as the rollout programme continues nationally.