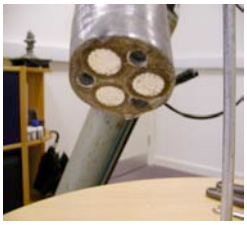
# AES Cables

# Hydrogel Technology

The environmentally accepted method of cleaning and removing oil from redundant power cables, storage tanks and pipelines.

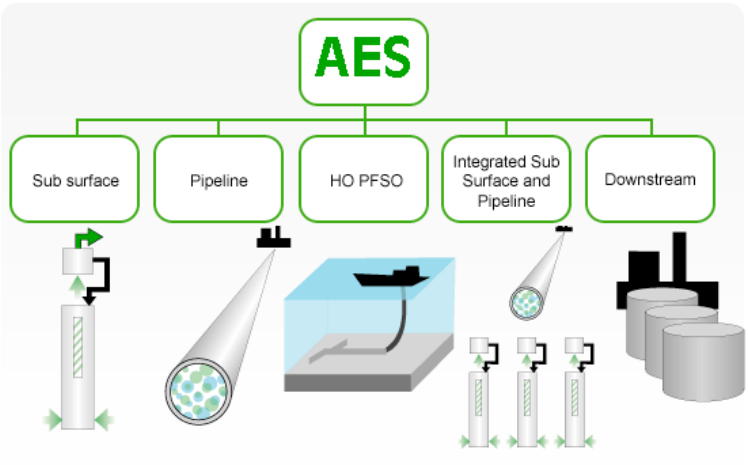


AES Hydrogel Purging System is a new and unique technology for the in-situ cleaning and purging redundant oil-filled power cables, oil feeder tanks and pipelines. They can then be safely left underground or removed at a later date without further contamination to the environment. The recovered oil is uncontaminated by our process and can be safely re-cycled.

AES Hydrogel Pusher is a newly patented cross-linked PVA molecule that has unique physical properties. It can be used to “push” all grades of petroleum based products from confined areas such as cables, pipelines and storage tanks or it can be mixed or agitated to form an emulsion which can later be easily split into separate phases for oil recovery and re-use.

By the addition of a catalyst we are able to turn the Hydrogel Pusher liquid into a solid gel material that is completely stable and unaffected by other chemicals or heat. The gelling time can also be controlled so that the material can be circulated through complex systems ensuring all areas have been penetrated and sealed before setting takes place. The Hydrogel can encapsulate highly flammable materials and render them inert and safe to handle or leave in-situ.

AES Hydrogel also acts on heavy oil to dramatically reduce the viscosity thereby allowing better pumping and transport through conventional pipelines without the need for expensive thermal or conventional oil diluting methods. The Hydrogel encapsulates the heavy oil molecules in an aqueous phase and on settlement quickly separates allowing the heavy oil to be recovered uncontaminated.




**Benefits & Advantages**

- Reusable Gel and Oil
- Can be used on oil spills.
- Pushes and removes oil from power cables and feeder tanks.
- Contains no petroleum distillates or solvents.
- Contains 95% water
- No removal or replacement of contaminated materials is necessary.

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## Viscosity Reduction

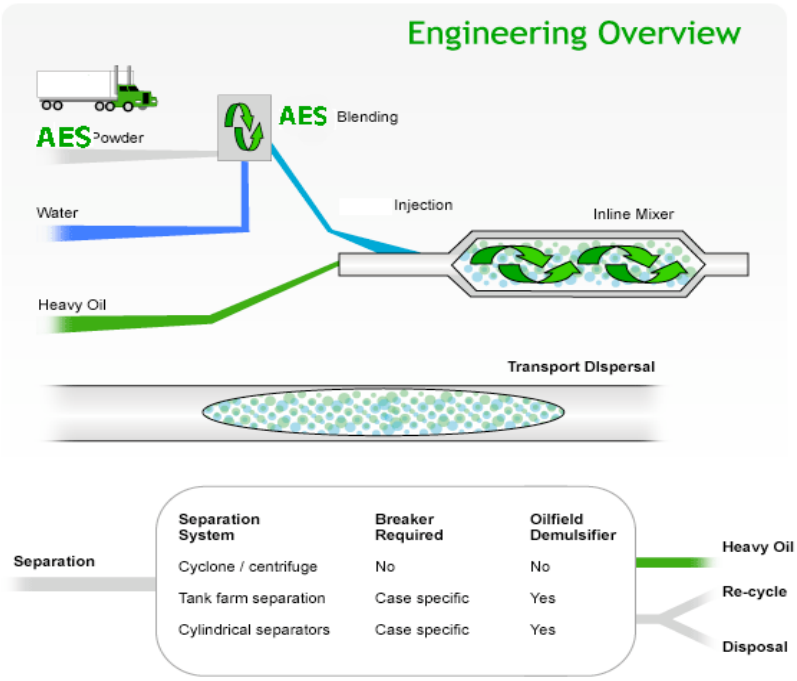
The Hydrogel dispersions can typically reduce the viscosity of heavy oil with a rating of 3000 cPS at 35 C temperature to a thin viscosity of 100 cPS.

The impact Hydrogel has on a pumping system is that for a 40 Km 8” pipeline, the pressure drop per Km is reduced by a factor of 10 from 700 psi per Km to less than 70 psi per Km. Previously irretrievable oils can now be pumped and recovered.

## Separation and Re-use

A key property of the AES Hydrogel system is that once the original heavy oil is required at the point of end use, the Hydrogel can be separated easily under ambient operating conditions without the need for additional heating. The original properties of the heavy oil are re-established. The Hydrogel dispersion can be broken and separated using conventional oilfield separation systems. The separated Hydrogel can be re-cycled and re-used many times.

This technology is field approved with: National Grid, Northern Ireland Electric, Scottish & Southern, Electricity Alliance West, Balfour Beatty Power Networks, and Prysmian Cables.

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