

# GEOHERMAL INJECTION / EXTRACTION BORE HP JETTING REMEDIATION

AGE Developments manufactures a range of ASR (Aquifer Storage & Recovery) and AIC (Aquifer Injection Control) equipment to assist with geothermal injection bore fouling issues. Fouling can be caused by a number of factors and will typically occur in both injection and extraction bores. Due to the nature of down hole conditions it is an issue that can never be completely eliminated, though with the right method of injection control it can be substantially slowed and reduced. Fouling issues prevent bores from operating at their peak performance and can promote corrosion, lowering the overall life span of the bore.

Issues experienced with extraction bores may be:

- Lower production rates due to fouled screen apertures
- Higher draw down due to fouled screen apertures
- Submersible motor overheating due to reduced yields
- Submersible pump deterioration due to entrained sands and solids

Issues experienced with injection bores may be:

- Lower injection flow rates due to fouled screen apertures and fouled aquifer porosity



- Higher injection pressures due to fouled screen apertures and fouled aquifer porosity

The fouled screen apertures and fouled aquifer porosity can be caused by any combination of bio fouling, calcite formation, silted sands and mineralised deposits formed by chemical reactions between the injection and extraction bore water chemistries.

There are a number of treatment options to cater for the different forms of fouling however injection bores typically require a program consisting of:

- Initial CCTV camera inspection to determine the required actions, action locations and to form a visual baseline for the before and after comparison to establish remediation effectiveness



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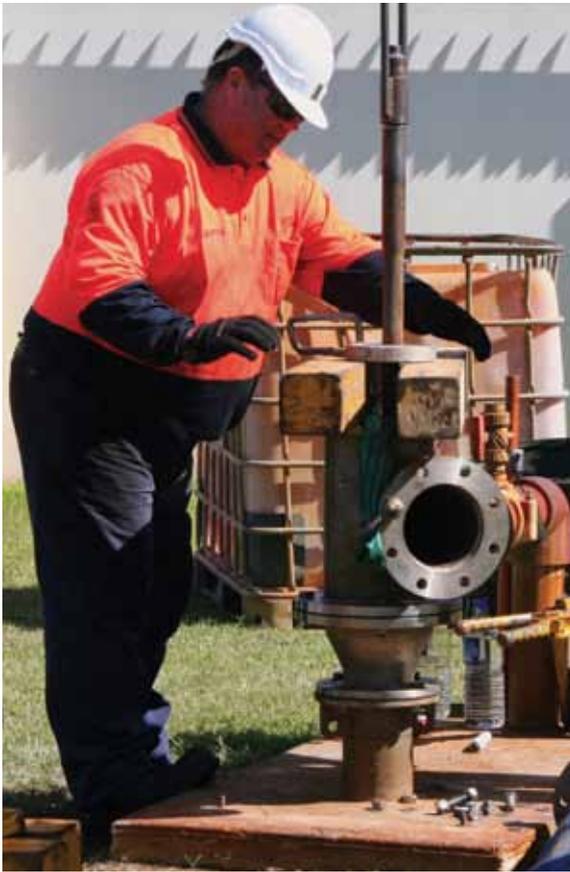
- Where biofouling is evident, chemical treatment will also be administered once all mechanical remediation has been completed.

The typical procedure outlined above ensures that not only are the fouled screen apertures cleaned (similar to a mechanical brushing technique), but more importantly the fouled aquifer porosity issue is addressed, ensuring a more effective and longer lasting clean out without any mechanical damage to the bore.

AGE has a proven track record remediating geothermal bores and will be happy to discuss your particular bore symptoms, propose tailored solutions and to provide client references for similar work where requested.

Contact AGE Developments for more information or to discuss your particular bore symptoms.

- Dual tube vacuum airlift to remove any silts, sands and solids within the base of the bore
- High Pressure (HP) jetting and concurrent airlifting to loosen and remove all fouling from the screen apertures and the fouled aquifer pores
- Completion CCTV camera inspection to visually confirm the remediation effectiveness



AGE Developments Pty. Ltd. is a Perth based company dedicated to servicing the onshore, offshore **water**, oil, gas, mining and geotechnical investigation industries. The company was founded by **Adriano Giacomel** on the *philosophy* of providing a complete **design, manufacturing and operating service available 24 hours a day, 7 days a week.**

**water . oil . gas . mining . geotechnical**