

FREQUENTLY ASKED QUESTIONS

1. **What is DAR?**
 - a. DAR is an abbreviation for Density Activated Recovery, an all-new inflow control solution.
2. **Can it be described as a density-based AICD?**
 - a. It is much more than that! It's the world's first Universal Inflow Control System (UICS), capable of controlling all fluids, in any well.
3. **What makes DAR different from other inflow control technologies?**
 - a. There are many things that differentiate DAR Technology from other forms of inflow control, but there are four capabilities that are currently unique to DAR:
 - i. DAR utilizes fluid density, as opposed to viscosity, to identify and control well fluids, which allows it to control water in light-oil reservoirs.
 - ii. It is insensitive to pressure and flow rate, which means it will perform as designed throughout the life of the well.
 - iii. It can also operate with a low pressure drop to provide unrestricted production of oil prior to water and/or gas breakthrough.
 - iv. And last, it allows the operator to pre-set the maximum water cut for a well ensuring it will not have to be shut in prematurely due to a surface facility constraint.
4. **Can DAR control both water and gas with the same downhole tool?**
 - a. Yes, DAR employs a modular system approach where solution functionality is dictated by the modules selected, e.g. Water Control Module (WCM) and Gas Control Module (GCM).
 - b. The downhole tool, referred to as the "DAR Assembly", is deployed as a separate load-bearing tool in the lower completion.
5. **Can DAR control water in a gas well application?**
 - a. Yes, the same operating principles and associated benefits can be applied to control water in a gas production scenario, utilizing the Liquid Control Module (LCM).
6. **What is the minimum density difference between fluids required for DAR to function?**
 - a. DAR can be effectively applied provided there is at least 100 kg/Rm³ difference between the density of the desired and the undesired fluid.
7. **Does the DAR Assembly require orientation?**
 - a. The DAR Assembly itself does not require orientation. Instead, an inner barrel, weighted and mounted on roller bearings, upon which the modules are mounted, will self-orientate when the lower completion enters the horizontal section of the wellbore.
8. **Can DAR only be deployed in horizontal wells?**
 - a. The DAR Assembly has been tested to $\pm 8^\circ$ from horizontal.
 - b. Deployment in vertical wells can be considered on a case-by-case basis.
9. **What are the operating limits and service rating of the DAR Assembly?**
 - a. DAR is currently qualified for standard service, 150 °C and 10,000 psi.
 - b. Sour service and applications with higher pressure or temperature can be evaluated on a case-by-case basis.
10. **What is the maximum oil rate for each DAR Assembly?**
 - a. One DAR Assembly can operate reliably at oil rates up to 1000 Rbbl/day, which is several times higher than the capacity of viscosity-based technologies.
11. **Is there a limit to the number of DAR Assemblies that can be deployed in the well or within each packer interval?**
 - a. There is no limit to the number of DAR Assemblies that can be deployed in a well.
 - b. The lower completion design, including the optimal number of DAR Assemblies for each packer interval, can be determined by (NETool) modelling.

12. Can some level of pressure regulation, like an ICD, be incorporated into the DAR system to balance the reservoir inflow profile?
 - a. Yes. DAR is a binary system; it is either open or 'closed', and it is possible to customise the pressure drop in both positions to provide an 'ICD effect' if required.
 - b. That said, DAR also has the capability to pre-set the maximum water cut at which it will function (switch from open to 'closed'). In most cases, utilizing the reservoir's inherent energy to accelerate oil production is preferable.
13. Is it possible to inject through the DAR system?
 - a. Yes, DAR has bi-directional flow capability, and so injection for e.g. scale squeeze or stimulation is possible, without the need for intervention.
 - b. If selecting the optional Injection Control Module (ICM), it is also possible to provide selective / regulated injection.
14. Does the DAR completion require an inner string (wash-pipe) during the deployment phase?
 - a. No, if selecting the optional Backflow Control Module (BCM), injection through the DAR completion can be temporarily prevented during deployment.
 - b. The resulting 'closed system' allows circulation during RIH operations, simplifying well control measures and removing the need for an inner string.
 - c. The 'closed system' also allows the use of hydraulic-set isolation packers.
15. Does DAR have a fail-safe mechanism?
 - a. If an oil-based fluid (baseoil, diesel etc.) is bullheaded through a DAR Assembly, the fluid control module(s) will be forced into open position and remain open during subsequent oil production.