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New solvent gives hope for cheaper CCS

Steel rod corrosion testing
APBS against MEA

CARBON CLEAN SOLUTIONS LIMITED (CCSL) has developed a solvent which can be used in current CCS plants that can reduce the operating costs by 40%.

At US$60/t, CCS technology is currently viewed as expensive to operate at large scale. CCSL says that by replacing the industry standard solvent monoethanol amine (MEA) with its proprietary solvent, ABPS, the immediate operational costs can be reduced. ABPS is up to seven times less corrosive than MEA.

CCSL has also developed a new plant set-up for the CCS process, known as CDRMax, which it claims can save carbon-producing customers up to 25% in capital expenditure as the plant can be built using cheaper materials due to the less corrosive properties of ABPS.

Prateek Bumb, chief technology officer at CCSL, explained the drop-in approach. He said APBS can operate at a lower temperature, using approximately 27% less thermal energy during the capture process.

APBS has a higher capture capacity than MEA – 3.3 mol/l compared to 2.4 mol/l. The higher capacity allows for greater CO2 capture efficiencies, and can be used in carbon-intensive industries such as power plants, refineries, and manufacturing.

Bumb said the solvent is more resistant to oxidative degradation than MEA, estimating a life span of 3–4 years. CCSL's research team has developed a method for cleaning the solvent, and hopes to double its lifespan by removing metal and ammonia contaminants.

Turning to the CDRMax process, Bumb said the less-corrosive ABPS means that steel infrastructure for plants can now be constructed using cheaper carbon steel rather than expensive stainless steel as is current practice.

Aniruddha Sharma, CEO of CCSL, said the company is ready to sell cheaper CCS technologies to high-energy producers of glass, plastics or chemicals who are looking to capture CO2 emissions. Sharma revealed that CCSL is in talks with the owners of two UK industrial plants to provide CCS and utilisation technologies.

Sharma said the company has an eight-year return of investment plan, providing a system that can capture flue gases, separate components, and possibly reutilise the captured CO2 as a

feedstock for making plastics or base materials for infrastructure, potentially reducing further costs for materials.

The next stage for CCSL will be to develop a new solvent and refine its capture process to further reduce the cost of CCS. The company says the new project will commence in Q2 of 2016 and is planned for completion by 2018.

Speaking exclusively with The Chemical Engineer, with Bumb said, “We are developing a complete new process and a new solvent. The pilot plant is already commissioned for demonstration. We are trying to demonstrate that this new process gives you the bill of US$10/t.”

http://www.thechemicalengineer.com/latest%20news/2016/apr/new-solvent-gives-hope-for-cheaper-ccs.aspx#.VxCtb_krKCh

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