From Chimney to Chimney: Successful Adsorber Technology for Clean Industrial Emission Now Also Available in Mobile Unit

Smart gas cleaning technology from Krajete GmbH integrated into transportable test unit. Connecting laboratory with industrial plant.

Mobile Test Unite

PASCHING, AUSTRIA, August 24, 2023 /EINPresswire.com/ -- Pasching (Austria), 23. August , 2023. A technology based on natural raw materials can remove numerous gaseous emissions from waste gas streams including nitrogen oxide and provide them to a circular economy – and is now available for the first time in a mobile test unit. Krajete GmbH is thus making a low-threshold offer to all those companies that want to reduce pollutant emissions and produce sustainably. In this way, the Austrian company's Advanced Adsorption Technology can now be tested easily. The mobile test facility allows cost-effective testing of the technology for individual industrial needs directly at the point of emission. In this way, the technology's potential for neat recovery and subsequent commercial use of the captured emissions can also be verified.

A test is the best – especially when it comes to making fundamental sustainability decisions for industrial companies. This is because many new technologies for reducing emissions promise more than they can deliver when implemented. This is not the case with the physisorption-based Advanced Adsorption Technology from Krajete GmbH, the Austrian innovation leader in gas purification. This technology has already proven its potential for the almost complete removal of nitrogen oxides from exhaust gases for large cities, car manufacturers, waste disposal companies and mining companies – and is now available for the first time in a mobile test plant. This is loaned out to interested companies on a weekly basis, traveling "from jimney to jimney" so that the companies can assess the benefits and value of the technology for their own processes.

Potential of Physisorption

"We specialize in converting problematic emissions as completely as possible into valuable ressources through natural processes," explains Dr. Alexander Krajete, CEO of Krajete GmbH. "To do this, we use a principle known as physisorption – the reversible binding of harmful gas emissions such as nitrogen oxides to natural adsorber materials such as silica, zeolite or aluminum oxide. The advantages of this technology for the circular economy are obvious: all bound pollutants can be removed from the adsorber by simple means, collected, refined and used commercially." Although the use of these adsorber materials for gas purification is well known, reversible binding of the pollutants – and thus their subsequent use as a valuable material – has not yet been achieved. Building on its expertise in optimizing physical and chemical principles of basic science for use in large-scale industry, Krajete GmbH has succeeded in doing so in recent years in cooperation with major companies. It is a principle that has proved particularly successful in the case of nitrogen oxides. By simply heating the Advanced Adsorber, the bound NOx can be collected and refined into valuable fertilizer by means of simple chemical processes. The adsorber material is then 100% reusable.

Flexible & Mobile

Following successful applications of the technology in various industries (automotive, waste management, mining), demand for the Advanced Adsorption Technology has grown steadily over the past year. Dr. Krajete comments: "In order to meet this gratifying interest, we have reacted flexibly and developed a mobile test plant. This can be connected and tested by any interested party directly to its emission stream in the stack. Thus, the potential of our technology can be tested directly and comprehensively without any adaptation of existing processes." At the same time, exploiting this potential is still at its beginning. For example, the removal of nitrogen oxides is not only important for cleaning up emissions, but also for future CO2 storage technologies. In addition, other impurities (CO, SO2, H2S, HC) can be captured and utilized with Advanced Adsorption Technology. "We are further developing the technology into a versatile gas fractionation & recovery system", explains Dr. Krajete, "finally creating a commercially attractive alternative to today's "disposable" processes that collect contaminants but do not allow further utilization. This is no longer in keeping with the times."

The plant thus serves as a bridge-builder between the laboratory, where initial tests prove the suitability of the technology, and the later large-scale plant. It has exactly the same design as the latter and has a capacity of 400 m3/h. Dr. Krajete says: "Until now, interested parties could either test the technology in the laboratory or not at all – both of which were fraught with risk for subsequent upscaling. With the mobile test facility, we have eliminated this risk. It is a confidence-building measure between us and our prospects and will have a catalytic function for the use of the Advanced Adsorption Technology."

Photos available on request

About Krajete GmbH (as of 2023):

The Austrian company innovates & develops nature-inspired solutions for gas purification and

high-performance gas fermentation. Activities focus on adsorber-based purification of emission gases and biological methane production using archaea. Successful processes from nature serve as a starting point for high-performance processes with commercial added value.

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