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‘Repowering Coal’ is a key focus for energy leaders at CERAWeek 2022

Initiative to decarbonize coal plants by 2050 will make a major contribution to the global transition to clean energy



Photo caption: Photorealistic image showing an existing coal plant re-fitted with an advanced heat source. Source: TerraPraxis

TerraPraxis, a non-profit organization focused on action for climate and energy and tech-powered design company, **Bryden Wood**, are unveiling digital tools that underpin the ‘Repowering Coal’ initiative this week at CERAWeek (in Houston, Texas), the leading global energy conference.

‘[Repowering Coal](#)’ will deliver a substantial portion of the clean electricity required to achieve Net Zero by 2050 by replacing coal-fired boilers at existing power plants with advanced heat sources (AHS), which will be ready for deployment as soon as 2028.

The TerraPraxis ‘Repowering Coal’ system is a fast, low-cost, and repeatable strategy to repower hundreds of existing coal plants that would otherwise continue to burn coal, and whose closure is likely to encounter fierce political resistance and cause economic harm to communities. This initiative is designed for radical cost reduction to enable production of reliable, competitive, clean energy, rapidly repowering the 2TW global coal fleet and cutting carbon emissions by 40%. The repowering system transforms the coal plants into flexible clean generators, making them better partners for renewables on the grid.

TerraPraxis has assembled a world-class consortium of partners including **Bryden Wood**, **MIT**, **University at Buffalo**, along with a consortium of global utilities, to launch the Repowering Coal initiative.

- **TerraPraxis** is leading the development of an integrated cloud-based platform that radically reduces the time, investment and complexity required for coal plant owners to plan, license, and construct their repowering projects, making repowering viable and achievable.

- **Bryden Wood** has designed a standardized building system, using a design for manufacture and assembly approach, and incorporating seismic isolation to eliminate the need for site redesign. The building system will be configurable to accommodate a range of advanced heat sources, sites, and power plant requirements.
- The heat transfer and storage system designed by **MIT** acts as a versatile 'USB plug' for a range of existing power plants.
- New digital infrastructure enables all key stakeholders, including regulators, suppliers, and customers to be connected like never before in the nuclear energy sector.
- Algorithmic design tools created by **Bryden Wood** will assess coal plant viability for boiler replacement, create initial concepts using a design configurator in just days, and produce detailed design outputs for manufacturing.

CERAWeek sees global energy leaders from utilities, investors, environmental groups and government come together to debate and discuss the most urgent issues confronting the global transition to clean energy. Together, TerraPraxis and Bryden Wood are exhibiting 'Repowering Coal' at the **Microsoft Agora House, in the George R. Brown Convention Center, from March 7th-11th for CERAWeek**. The team will be demonstrating how all project stakeholders are supported throughout the project development and delivery process of Repowering Coal, using:

- Site and business viability tools so that customers can easily and accurately assess repowering their coal fleet
- Design tools (currently in development) to make quick designs based on standardised components
- Regulatory tools to enable quick approval of projects based on standardised, product-based licensing
- Supply chain tools for AHS and building suppliers to manage their pipeline
- Tools for investors to assess opportunities in real time.

Delegates will be able to view individual plants as they are today, understand the potential for repowering, and the potential carbon emissions savings. They will also see an early version of the interface that coal plant owners will use to manage their projects across all stakeholder groups.

Martin Wood, co-founder, Bryden Wood, says: "We're building the market for advanced heat sources at the same time as the product itself is being developed. The building systems and digital tools we're creating will enable us to have a huge number of projects, across multiple sites, ready to go in the late 2020s. Speed and agility have never been so important."

Kirsty Gogan, co-founder, TerraPraxis, says: "Repowering existing coal plant infrastructure is the largest single carbon abatement opportunity on the planet. This initiative would quickly transform coal-fired power plants from polluting liabilities facing an uncertain future, into jewels of the new clean energy system transition. But time is short. We invite everyone interested in pragmatic and global-scale solutions for tackling the climate crisis to join us in Repowering Coal."

Eric Ingersoll, co-founder, TerraPraxis, says: "The tools we are developing will enable every coal plant owner in the world to evaluate the benefits and value created from repowering. Giving assets that would otherwise be written off decades more operating life as clean generators, presents an attractive option for investors facing the challenge of \$1 Trillion of unrecovered capital in the global coal fleet."

[Microsoft industry blog from Darryl Willis](#), Corporate Vice President, Worldwide Energy Industry
Microsoft:

Microsoft and TerraPraxis have been working together to create Azure tools to enable automated analysis of the US (and ultimately global) coal power generation fleet for retrofit. Microsoft will build the analytics tools with TerraPraxis and help undertake strategic partnerships with Repowering Coal consortium stakeholders. At the Microsoft booth during CERAWeek, TerraPraxis will offer demonstrations of the Azure tools showcasing the opportunity for retrofitting coal power plants.

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[Short paper on the 'Repowering Coal' initiative](#)

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About TerraPraxis

TerraPraxis is a non-profit organisation focused on accelerating action for climate and prosperity, by enabling high-impact rapid transitions for the toughest parts of the decarbonisation challenge.

TerraPraxis defines innovation pathways to achieve results at the cost, speed, and scale necessary for widespread decarbonisation, by mobilising customers, governments, industry, investors, NGOs and regulators around recommendations on policy and market incentives; technical, supply chain, siting and licensing requirements; and access to finance.

@TerraPraxis terrpraxis.org

About Bryden Wood

Bryden Wood is a tech-powered global company of creative technologists, designers, architects, engineers and analysts. We are shaping the future of construction by bringing integrated expertise, innovation, deep experience, open minds and creativity to unravel our clients' most complex problems and create exceptional, sustainable design solutions – all for a better built environment.

Bryden Wood is an industry leader in the Platform approach to Design for Manufacture and Assembly (P-DfMA); Chip Thinking®; algorithmic design and creative technologies; integrated design; and automation in construction. All of which support our driving purpose: Design to Value.

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