Japan-Australia Decarbonisation Tech Showcase 2024-CCUS-

PASS source for the CCS/CCUS continuous monitoring

Akihisa (MayQ) Takahashi Wavelet, Inc. 2024.8.22



Introduction of Wavelet, Inc. Startup Company from the Univ. of Tokyo



The University of Tokyo Tsuji Laboratory



Research on imaging and monitoring of the earth interior

CCS and Energy Resources





Space Exploration

WAVELET

ET Social implementation of technologies from the Univ. of Tokyo

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Name	Wavelet, Inc.
Address	Tokyo, Japan
Office	Growth Bunkyo-Iidabashi
Est. on	July 2022



CEO MayQ Takahashi Dr. Eng. Former Ex. Officer of JAPEX

Practitioner Connections



CTO Takeshi Tsuji Professor of Univ. Tokyo

Forerunner of the Technology



Director Shu Shimada Dr. Eng., MBA ONE Innovators General Partner

Partner VC Experience of Startup operation



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Japan's CCS Initiative

The Japanese government is driving its 2050 carbon neutrality goal through strategic investments and advanced initiatives in Carbon Capture and Storage (CCS) starting in 2023.

Target

- 2050: Carbon neutral
- 2050: 120-240 M CO2-ton /year CCS
- 2030: 6 12 M CO2-ton /year CCS

Act

2024: Act on CCS
Including mandatory monitoring of reservoir conditions to detect any
CO2 leakage

Program

2023-

Advanced CCS Support Program by METI

Nine CCS projects are ongoing

Advanced CCS Support Program by METI



METI HP, 28 Jul 2024



Wavelet's PASS System and Applications

Portable Active Seismic Source (PASS) System

- Small & portable seismic source
- Seismometers and/or distributed acoustic sensing (DAS)
- Original imaging software

Example of 4D imaging in the Otway field



Berridge et al. (2022)

Application of Our PASS system





Solution : Portable Active Seismic Source 5 PASS

Kyushu University developed PASS (Portable Active Seismic Source) in 2021

Wavelet, Inc. was established in July 2022 in order to implement PASS to the public commercial use



Industrial Vehicles International, Inc. HP





Concept of Biaxial PASS



Signal arrival of long distance can be achieved by a large number of stacks of continuous source sweep.





Various Size of PASS









Setting of PASS M1





Borehole Experiment



Further more, we confirmed the arrival of the PASS signal down to 2,200 m (to be published) WAVELET

Characteristics of PASS

- Movable by human
- Battery operation assures the flexibility of PASS source position
- Servo-motor control enables multi-PASS operations Compact, but Powerful

• Noise from PASS is very low, and it is possible to shoot in urban areas.









Further Development of PASS

The University of Tokyo is carrying out long-term PASS operation tests with the solar battery. Commercialization will be conducted by Wavelet, Inc.





Wavelet's Business Model & Service

Wavelet offers a service to provide imaging data to customers using its proprietary PASS system.

WAVELET

Exploration: temporarily deploy Monitoring: permanently install



Data Analysis Center⁽¹⁾



Request for Exploration or Monitoring

Client

CCS operators

- Imaging for site survey
- Continuous Imaging for monitoring
- Alert for symptoms of CO2 leakage





Thank you for your attention



Tsuji et al. (2023)

