



Volume 9, Issue 4 December 2024
[Special Issue for ICPE 2024]

**The Third International Conference
on Press-in Engineering 2024, Singapore
3-5 July 2024**



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ICPE 2024 Highlights

Participants: 208 from 17 countries and regions

Japan, Singapore, Thailand, Taiwan, Australia, China, Malaysia, South Korea, the Netherlands, Pakistan, the Philippines, the United Kingdom, the United States, Vietnam, Brazil, Cambodia, Ukraine

Proceedings: 2 invited lectures and 64 papers

Photo Gallery: <https://2024.icpe-ipa.org/photo-gallery>

Program:

Welcome & Opening



Leung Chun Fai
Chair, ICPE 2024
Immediate President, IPA



Jeyatharan Kumarasamy
Immediate Past President, Tunnelling and
Underground Construction Society (Singapore)



Darren Chian
President, Geotechnical Society of
Singapore



Keh-Jian Shou
Vice President Asia, International Society
for Soil Mechanics and Geotechnical Engineering

Award Ceremony



ICPE 2024 Best Paper Award



IPA Awards

Keynote Lectures

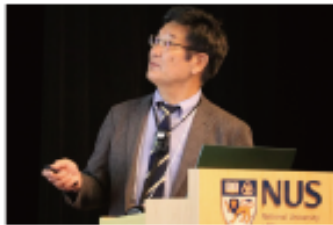


Shinobu Yume Yamaguchi
Director, United Nations University Institute
for the Advanced Study of Sustainability



Kenneth Gavin
Professor, Delft University of Technology
President, IPA

Introduction of IPA Press-in Piling Handbook



Tatsunori Matsumoto
Emeritus Professor, Kanazawa University



Tomotaka Hirose
Assistant Manager, Giken Seisakusho Asia Pte., Ltd.

Theme Lecture



Goh Teik Lim
Managing Director
Atsunew Giken Pte Ltd.



Wie Sein David Liaw
Managing Director
Guan Chuan Engineering Pte., Ltd.



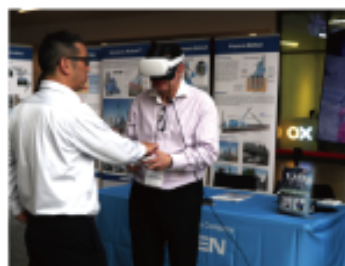
Tsunenobu Nozaki
General Manager
International Press-in Association

General Sessions

Site Visit, Exhibition and Banquet



Site Visit



Exhibition



Banquet

Remarks of ICPE 2024

Chun Fai Leung

Chair, ICPE 2024 Organizing Committee
Immediate Past President, IPA

In October 2022, Singapore was chosen as the venue for ICPE2024. The Conference Organizing Committee was soon formed, and working with IPA Secretariat for the preparation, organization, and financing of ICPE2024. To keep the conference registration fee affordable, the University Town of the National University of Singapore with excellent conference/meeting facilities was chosen as the venue. The National University of Singapore, Geotechnical Society of Singapore, and Tunnelling and Underground Construction Society of Singapore were invited to be the co-organizers of the conference together with IPA as the main event organizer. Members from the co-organizers enjoyed the same preferential fee as IPA members.

Bulletin 1 with the Call for Abstracts were circulated in early 2023. The number of abstracts was rather low at the beginning and the deadline for abstracts has to be extended by several months. Eventually over 60 abstracts were received, which were about the same as previous two ICPE conferences. The Call for Sponsorships also did not fare well at the beginning. Fortunately, many sponsorships were forthcoming within the last few months of ICPE2024 to be held in July 2024. The sponsorships had exceeded the expected amount such that a conference banquet with drinks could be held during the conference. The Bulletin 2 Call for Participation of Delegates were circulated in early 2024. Much of the conference delegates only registered for the conference in May/June 2024. The good news is that over 200 participants from 17 countries eventually attended the conference. The rather late forthcoming abstracts, sponsorships, and conference registrations probably reflect the post COVID-19 culture whereby authors, companies and delegates took time to decide for their action.

At the conference, delegates did enjoy the conference sessions very much with plenty of interactions among the delegates and the keynote speakers as well as paper presenters. Many happy faces were noticed at the conference sessions, tea breaks, and particular over drinks and food at the conference banquet which proves to be a happy occasion for renewing friendships and meeting new friends and contacts. The delegates also liked the exhibits by the sponsors as they learned many of the latest press-in techniques and new types of sheet piles and steel tubular piles commercially available. The last date of the conference ended with a visit to Guan Chuan Company Headquarter to visualize the demonstration of press-in technique very close to existing structures and gyro penetration into hard ground. It was certainly an eye-opening for many conference participants, particularly for those from Singapore and Southeast Asia.

Last but not least, I wish to acknowledge the great efforts of the Conference Organizing Committee, the IPA Secretariat, the conference sponsors, and persons who had contributed to the success of the conference organization.



Keynote Lecture 1

Progress of the Sustainable Development Goals and Synergy with Climate Change Action

Chair: Jiro Takemura

Technical Advisor, Takemura Industry Co., Ltd., Japan
IPA Vice President

The first Keynote Lecture of the 3rd ICPE2024 was delivered by Prof. Shinobu Yume Yamaguchi, Director of the United Nations University Institute for the Advanced Study of Sustainability. The theme and messages of the lecture are directly related to the key theme of ICPE2024, namely, “The Superiority of Press-in Piling towards Sustainable Construction in Tackling Climate Change for Infrastructure Development”.

Sustainable Development Goals, SDGs, are so common that almost everybody has known or at least heard about them, which comprise 17 goals and 169 targets. The SDGs are aimed at being achieved by 2030 by global commitments at all levels, from individuals, communities, companies, and local and national governments to international institutions. In the first part of the lecture on the progress of the 2030 agenda of SDGs, Prof. Yamaguchi surveyed the knowledge level of the audience on the progress through a Sustainable Development Quiz, for example, food insecurity of the world population, the most significant cause for people becoming refugees or migrants. From these quizzes, we realized rather poor knowledge of the progress, but we knew the causes of hindering the progress and priorities to accelerate, namely, reducing the conflict and violence, reforming the international financing system, transitioning around energy, food, and digital connectivity.

Prof. Yamaguchi also introduced COP28 Highlights. She especially emphasized the importance of the first Global Stocktake¹⁾. The outcome of GST-1 tells us as the key message that progress has been made towards the Paris Agreement goals, reaching near-universal action, but the efforts are insufficient, and the world is not on track to meet the long-term goals of the Paris Agreement, informing countries and stakeholders in updating their climate actions (including NDCs, LT-LEDS) and enhancing international cooperation. Key outcomes of GST-1 are 1) Urgent and deep GHG emission reductions and 1.5°C aligned pathway, 2) Rapid, transformational, incremental and multi-sectoral adaptation actions and support, and 3) Scaling up and access to finance, technology and capacity-building for climate action. Prof. Yamaguchi summarizes follow-up issues relevant to science and engineering in the implementation of GST outcome, such as synergizing climate action in energy infrastructure and leveraging the full potential of climate technology, pointing out that balancing complex and high-tech solutions with low-tech and accessible options can leverage the full potential of climate technology in the development and implementation of NDCs.

Introducing the Annual Flagship Report of UNU Institute for Environment and Human Security (UNU-EHS), which critically discusses root causes, drivers and impact events from an integrated, long-term and systematic risk perspective, Prof. Yamaguchi listed six interconnected risk tipping points analyzed in the 2023 report²⁾ and presented four case studies based on the 2023 report, namely, *Lagos floods*, *Groundwater depletion*, *Unbearable heat*, and *Uninsurable future* with relevant risk tipping points, illustrating the intricate connections between human activities, environmental changes and disaster risks. From the case studies in a complex world, Prof. Yamaguchi gave messages with hope, “Through analyzing the systems created by our attitudes and choices, we can begin to change these systems to work for the benefit of the world as a whole” and “Solutions must be implemented now with consideration of the interconnectivity to avoid maladaptation and maximize benefit”.

In conclusion, Prof. Yamaguchi summarized the expected roles and contributions of civil engineers to climate change, such as developing renewable energy using low-carbon construction materials and carbon capture technology for mitigation and designing infrastructures to survive extreme weather conditions (e.g., Boston Barrier in Lincolnshire, UK) for adaptation, reaffirming that promoting synergetic approaches and integrated solutions are crucial to achieving SDGs. Press-in technology is expected to play a key role for the synergy toward the SDGs.

Reference:

1) United Nations Climate Change, [Outcome of the first global stocktake | UNFCCC](#).

2) UNU_EHS, the 2023 Interconnected Disaster report, <https://interconnectedrisks.org/>

Keynote Lecture 2

The Potential Use of Press-in Methods in the Offshore Renewables Industry

Chair: Stuart Haigh

Professor of Geotechnical Engineering
University of Cambridge, UK

Professor Ken Gavin gave the 2nd Keynote Lecture of the 3rd ICPE2024 on the Challenges and Opportunities of utilizing press-in piling for offshore renewables. Prof Gavin is perfectly placed to do this being Professor of Subsurface Engineering at TU Delft, an accomplished practicing Offshore Engineer and incoming president of the IPA.

It was highlighted that the ever-increasing size of offshore wind turbines, with current 15 MW models having towers around 200 m tall has led to extremely large monopile foundations being used with diameters now reaching 10 m. These extremely large foundations lead to extreme challenges for installation in the complex offshore environment. Typically, offshore foundations are driven to achieve the benefit of locked-in stresses within the ground but the cyclic nature of the driving processes can lead to decreases in capacity (especially in the short-term) due to friction fatigue as well as potentially unacceptable impacts on marine mammals due to noise and vibration which may need to be mitigated with costly techniques such as bubble curtains. Jacking of piles has been shown by many past researchers to provide capacities and stiffnesses similar to driving but without damaging environmental impacts. Jacking has also been shown to achieve a much greater proportion of ultimate pile capacity in the short term than driving, leading to potential benefits of being able to utilize pile foundations quickly after installation.

Prof. Gavin also described several other current challenges in offshore piling which would need to be addressed if press-in piling is to be utilized. Offshore wind-farms cover extensive areas and subsurface data may be sparse. Ground modelling is thus vital to ensure that the ground conditions at individual pile locations can be well estimated, but this may not prevent the impact of buried boulders which can be too small to be picked up on a site-scale survey but may have a substantial impact on individual piles.

Pile-run is another phenomenon which is causing significant problems in areas of South East Asia. Variable soil strength with depth can cause runaway of piles with the soil resistance unexpectedly being insufficient to support the weight of the pile and hammer leading to an increasing pile velocity. This can cause loss of equipment and potentially damage to piling vessels. Press-in piling should be less sensitive to this problem than driven piling as the process is essentially displacement controlled.

Other challenges in the offshore mirror those that have already been surmounted onshore including piling through hard soils and rock layers which may require the use of augering.

If press-in piling is to be utilized for offshore wind, techniques must be developed to install foundations using press-in techniques of a substantially greater size than are currently being installed onshore. Pressing in individual piles of this size may be impossible, but techniques to create composite foundations from multiple smaller piles as demonstrated by Yetginer et al (2006) may be a way forward to moving the advantages of the press-in piling method into the offshore sphere.

Reference:

Yetginer, A. G., White, D. J. & Bolton, M. D. (2006).
Geotechnique 56, No. 5, 349-354

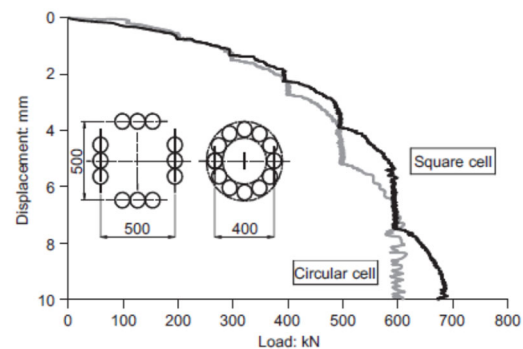


Fig. 1. Maintained load tests on square and circular cell foundations

Special Session

Introduction of IPA Press-in Piling Handbook

Chair: Nor Azizi bin Yusoff

Senior Lecturer, Faculty of Civil Engineering and Built Environment
Universiti Tun Hussein Onn Malaysia, MALAYSIA

The session highlighted the Introduction of IPA Press-in Piling Handbook. This handbook is crucial as a guideline for those who are interested in exploring this technology further. The publication for the Second edition of the Handbook in 2021 is the revised version of the 2016 copy. In general, structures shall be designed to satisfy the required performances and later prescribed from the construction stage to the design working life. During the session, two reputable speakers shared their views. Firstly, Emeritus Professor Tatsunori Matsumoto from Kanazawa University shared his view on the design aspect and later continued by Mr. Tomotaka Hirose, Assistant Manager, Giken Seisakusho Asia Pte. Ltd. Mr. Hirose was discussing another important topic, which is the construction aspect.

For the design aspect, Professor Matsumoto started by giving some general introductions of the design needs. The Press-in Piling Method is a construction method of installing various prefabricated pile materials. This technology is a non-vibratory, minimal noise hydraulic method of pile installation that Giken's construction methodologies are developed from to minimize environmental impacts during construction while enabling the development and placement of structures that can better protect communities from natural disasters. In this short sharing session, Professor Matsumoto shared a brief design need, performance, requirements, various design criteria, state design limits, different structural requirements such as important, normal and easy to repair structures. At the end, he highlighted the performance verification procedures and the design reporting needs.

The next presentation by Mr. Hirose highlighted many important elements of construction experience and practice especially in Singapore and Southeast Asia. This advanced technology in civil engineering allows the utilization of relatively small press-in piling machines which generate a greater force by homogenizing with the ground. Different types of press-in piling machines can install steel sheets and pipe piles within various types of constraints such as low headroom, limited side clearance, accessibility, marine conditions, and other types of constraints in which press-in machines can eliminate the necessity of temporary work. According to Mr. Hirose's presentation, due to rapid development in Singapore, press-in piling technology is one of the preferred choices especially for city construction, deep excavation support, cofferdam, water engineering structure, parking bay construction and more.

In conclusion, both speakers from the session highlighted the essential and useful information for design and construction aspects of press-in pling technology. This handbook is a state-of-the-practice to describe the basic concepts of planning, investigations, design and construction of the Press-in Piling Method. It is useful in assisting any engineering practitioners especially when it comes to adapting a new construction challenge such as noise and vibration. For further information, the IPA Press-in Pling Handbook is available for you and ready to assist your design needs in numerous parts of the world.

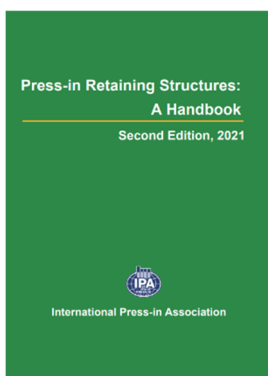


Photo 1 Press-in Pling Handbook

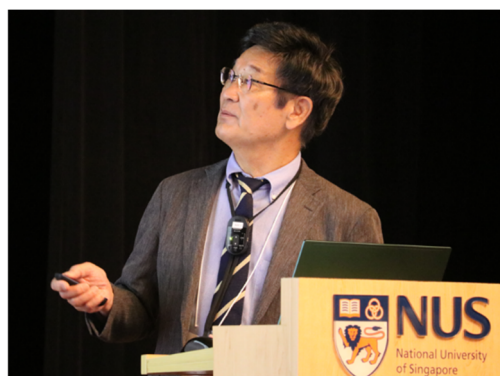


Photo 2 Prof. Matsumoto

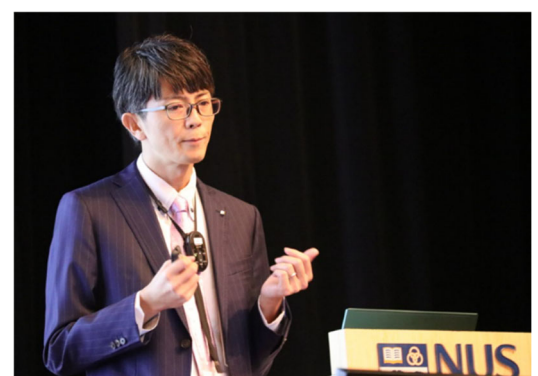


Photo 3 Mr. Hirose

Theme Lecture

Development of Press-in Technology in Southeast Asia with Applications on Coastal Engineering

Chair: Jeyatharan Kumarasamy

Director (Civil Design), Infrastructure Design and Engineering
Land Transport Authority

The Theme Lecture was held on the 2nd day morning session. There were three presenters covering various applications in the Southeast Asia focusing on coastal engineering.

First speaker Dr. Goh Teik Lim, Managing Director of Atsunew Giken Pte Ltd, covered development history of silent piler and various applications of silent piler in Southeast Asia. He highlighted the construction noise pollution in cities like Hong Kong and Singapore and the beginning of the silent piler in these countries to address the concerns on noise pollution. He then shared the development of various types of the silent over the years with enhanced technologies such as water jetting, super crush, integral auger, non-staging piling, GRB and zero clearance method for improved performance and efficiency. Several of the case histories shared were works near sea, rivers and reservoirs showcasing the applications for the coastal engineering works.

Second Speaker was Mr. David Liew Wie Sein who is Managing Director of Guan Chuan Engineering Pte Ltd. His presentation titled "Use of GYRO PILER for new applications in Southeast Asia". He shared that the GYRO PILER™ allows the Earth Retaining and Stabilizing System (ERSS) to be installed efficiently as well as environmentally-friendly, as compared to traditional sheet piles and soldier piles installed using vibration techniques. He further shared that GYRO PILER enables to install tubular piles with cutting bits attached to the piles toe by rotary press-in system, which can cut through existing RC structures or hard rock. It was also reported that GYRO PILER would install faster in hard rock than other traditional methods such as bored pile machines, making it more efficient method.

Third speaker Mr. Tsunenobu Nozaki, General Manager of International Press-in Association, has presented on bracing for rising sea levels – Effective countermeasures using press-in piling method. He highlighted the potential sea level rise in the next 30 years could be more than half a meter and the potential risks in keeping the coastal structures safe. He proposed implant structures to upgrade existing dyke structures along the coastal areas as a countermeasure against the rising sea levels. He shared how the press-in piling methods would help to build such implant structures more effectively.



Photo 1 Dr. Goh



Photo 2 Mr. David

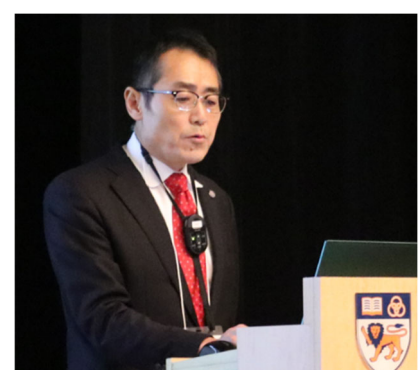


Photo 3 Mr. Nozaki

Theme Lecture

Special Singapore Southeast Asia Session Report

Chair: Muthusamy Karthikeyan

Immediate Past President
Geotechnical Society of Singapore

The session featured four distinguished lectures from various experts in the field of press-in and silent piling technologies from four different countries:

Lecture 1: "From What Has Been Learned in the Past Decade to Foresee the Future of the Silent Piling Market in Taiwan"
Speaker: Mr. David Kuo-Wei Lin, Chuen Chang Enterprise Pte Ltd, Taiwan.

Mr. Lin explored the evolution and future of silent piling in Taiwan. He highlighted that the press-in piling method is extensively used for flood prevention and increasingly applied in urban settings and high-tech factories due to its benefits in densely populated areas, close proximity to neighboring buildings, and vibration sensitivity. He emphasized that future growth would depend on demonstrating the advantages of press-in piling methods over price reductions.

Lecture 2: "Application of Silent Piler in Thailand"
Speaker: Dr. Pastsakorn Kitiyodom, ATT Consultants Company Limited, Thailand.

Dr. Kitiyodom discussed the adoption of silent piling technology in Thailand, noting its growing use due to advantages in managing noise, vibration, and concerns about adjacent properties. He presented four case studies: the MRT Orange Line East Project, The Customs House Project, the Pa Sak River Improvement Project, and the Bang Sue Canal Improvement Project.

Lecture 3: "The Future Prospect of Press-in Technology in Vietnam"
Speaker: Dr. Vu Anh Tuan, Le Quy Don Technical University, Vietnam.

Dr. Tuan addressed the future prospects of press-in piling technology in Vietnam. He noted the technology's significant potential not only in Vietnam and other developing countries but also in developed nations, where it can aid in disaster mitigation and environmental protection. Dr. Tuan highlighted that press-in piling technology provides optimal solutions in engineering, economics, environmental impact, and aesthetics, surpassing traditional methods.

Lecture 4: "Pressed-in-Pile Engineering in the Philippines: Current Practices, Future Prospects"
Speaker: Prof. Mark Albert H. Zarco, University of the Philippines, Diliman, Philippines.

Prof. Zarco reviewed the current practices and future prospects of pressed-in-pile engineering in the Philippines. He observed that, despite the common use of sheet piles, applications remain conventional, focusing on inland river and coastal protection. Press-in piling technology is mainly used with pre-cast piles and dead weight static drivers. He noted the potential for pre ss-in pling technology in disaster countermeasures but highlighted limited use of silent/gyro pilers due to unfamiliarity and cost concerns.

Overall, the session provided valuable insights into the advancements and applications of press-in piling technology across Southeast Asia, emphasizing its growing importance and potential in various regions.



Photo 1 Mr. Lin

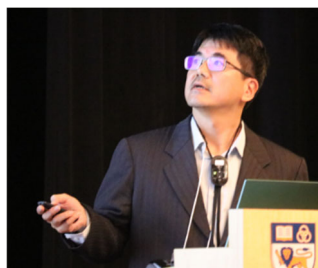


Photo 2 Dr. Kitiyodom

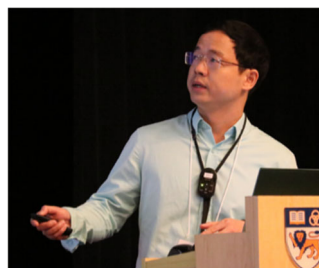


Photo 3 Dr. Tuan



Photo 4 Prof. Zarco

Session

Early Carrer Engineer Session

Chair: Yukihiro Ishihara

Center Director, Press-in Technology R&D Center
GIKEN LTD.

The “Early Carrer Engineer Session” was a newly built session for the winners of the “Early Carrer Engineer Award” of IPA. This time, two engineers won the award based on their research. In the session, the two engineers outlined their research in a form of oral presentation.

The first presentation was made by Mr. Yusuke Mochida, an engineer at Steel Structure Research Laboratories of Nippon Steel Corporation. The title was “Effectiveness and Failure Mode of a Levee Reinforced with Steel Sheet Piles against Overtopping and Scouring”. He investigated the effectiveness of reinforcing the earthen river levee with sheet pile walls, by conducting the 1-g model experiments with a 1/15 scale, and confirmed that the structure was maintained to be stable by ensuring a sufficient embedment depth of the sheet pile wall.

The second speaker was Mr. Benjamin Bautista Buensuceso III, an engineer at BRB Solutions Inc. The title was “Case Studies of Ultimate Compressive Capacity Prediction for Precast Jacked Piles Installed in the Philippines”. He collected 135 databases of dynamic load tests on jacked, square, precast piles in the Philippines, and explored the relationship between the pile slenderness ratio, pile capacity and the final jacking force. A lower-bound formula to predict the ultimate pile capacity based on the pile slenderness ratio and the final jacking force was proposed.

After each presentation, lively questions and answers were made by the audience and the presenters, and the session came to a close within a planned time slot.



Photo1 Mr. Yusuke Mochida



Photo2 Mr. Benjamin Bautista Buensuceso III

Session A-1

Pile Performance/Piling Mechanism

Chair: Hidetoshi Nishioka

Professor, Department of Civil and Environmental Engineering
Chuo University

In Session A1, six beneficial research results were presented that contribute to solving various practical problems related to the performance and mechanisms of sheet piles and steel pipe piles. A summary of these is given below.

A01: Some peculiarities of U-shape sheet piles driven into the sandy soil

Prof. Michael Doubrovsky of Odessa National Maritime University reported the results of his research focusing on the behavior of sheet pile interlocks. He reported on experiments in which 10 m sheet piles were driven into the ground, and the shear resistance of the interlock was measured directly. He also proposed methods for evaluating retaining wall stiffness and increasing stiffness by driving at an angle.

A02: Experimental study on bearing behavior of a single model pile in unsaturated sandy ground with various groundwater levels

Assistant Professor Xi Xiong of Kanazawa University reported on the vertical bearing capacity of open-ended pipe piles in unsaturated sandy soil. She conducted model experiments with carefully controlled saturation in a gravity field. She also made detailed measurements of the soil displacement inside the pipe and reported valuable insights into plugging behavior and the effects of skin friction. Note that Dr. Xiong received the ICPE 2024 Best Presentation Award.

A03: Application of optical fibers to measuring horizontal deformation of sheet piles during static load tests

Mr. Koichi Okada of GIKEN LTD. reported on the results of measurements using optical fiber in horizontal loading tests of actual sheet piles. He reported that the tilt angle and horizontal displacement obtained by integrating the results of continuous strain measurements agreed well with those obtained by conventional discrete inclinometers.

A04: Determination of the Optimal Angle between Vertical and Inclined Piles used for Embankment Protection during Earthquakes

Prof. Hemanta Hazarika of Kyushu University presented the reinforcement method of highway embankments on liquefied ground using diagonal piles. The reinforcement effect of the diagonal piles was evaluated by dynamic effective stress analysis, referring to a model vibration experiment in a gravity field that was conducted separately. The most appropriate angle of the diagonal pile was proposed.

A05: Finite element study on the response of screw pile with open and closed shaft in dense sand

Dr. Adnan Anwar Malik of The University of Newcastle reported on the results of the FEM analysis of screw pile tip behavior. The analysis is based on a numerically validated vertical loading test of a closed-end model pile in dry sandy soil with a 200 mm penetration depth. The effect of the presence of soil plugs is reported as a numerical parametric study for the case of open-ended piles.

A06: Effect of pile embedment length on horizontal and vertical displacement of a pile under repeated lateral loading

Prof. Yoshiaki Kikuchi of Tokyo University of Science (now Coastal Development Institute of Technology) presented the results of gravity field model experiments in dry sand on the behavior of piles subjected to repeated horizontal loading. He reported that when the pile rooting is short, it shows very interesting behavior that it is lifted vertically by repeated positive-negative cyclic horizontal loading. As a guide, the embedment ratio E_r , which is defined as L / l_{m1} (where L is the embedment depth and l_{m1} is the depth of the first zero bending moment of the pile in case of an infinitively long pile) is also reported to be important.

Session A-2

Pile Performance/Piling Mechanism

Chair: Kenichi Horikoshi

President & Representative Director
Seiwa Consultants Co., Ltd.

Session A-2: Pile Performance/Piling Mechanism: This session was held from 13:30 to 15:00 on July 4th and featured the following six papers focusing primarily on the bearing capacity and displacement behavior of pile foundations and retaining wall structures. The session also included discussions on the influences of these structures on surrounding structures and soils.

A07: Evaluation of penetration resistance, vertical bearing capacity and pull-out resistance of small diameter spiral piles subjected to positive and negative alternating loads in unsaturated sandy ground by Shah Faheem (Hokkaido University)

The paper presents an experimental study comparing the performance of spiral piles with that of conventional piles in both saturated and unsaturated soils. The performance of these piles under cyclic loading was also compared, demonstrating the effectiveness of spiral piles. Significant attention was given to the degree of degradation in bearing resistance of piles during cyclic loading.

A08: Two-dimensional model experiments on the pile group effect on existing piles by using additional piles with different properties by Tsubasa Ohata (Chuo University)

This paper examines the installation effects of an additional pile on an existing pile during horizontal loading. In the experiment, a two-dimensional model using aluminum rods was applied. The distance between the two piles was chosen as an experimental parameter. The proportion of horizontal load carried by the two piles was compared and discussed by varying the stiffness of the additional pile.

A09: Physical modeling on large diameter piles subjected to one-way cyclic loading in dense sand focusing on generalized scaling law by Lao Yilun (Tokyo Institute of Technology)

This paper presents a series of centrifuge modeling experiments to examine the applicability of the Generalized Scaling Law (GSL) proposed by lai (2005) and Tobita (2011 & 2016) on large diameter laterally loaded single piles, which are often used for offshore wind turbines. The study found that caution is needed when applying GSL to model large-scale prototypes in scaled models, particularly when the relative stiffness between the pile and soil is high, when non-linear behavior is a major focus, and in cases of larger pile-soil relative stiffness.

A10: Regulation of tubular pile bearing capacity by internal diaphragm by Michael Doubrovsky (Odessa National Maritime University)

This paper introduces a new concept of installing an internal diaphragm inside a tubular pile to increase its bearing capacity. Laboratory experiments were conducted by varying the position of the diaphragm. In these experiments, closures of different shapes were applied to enhance the effectiveness of the diaphragm. The results show that the diaphragm increases the pile's capacity by up to 15-20%.

A11: Plastic-deformation behavior of steel pipe piles based on large-deformation lateral loading tests by Taku Kobayashi (Nippon Steel Corporation)

Large-deformation lateral-loading tests were performed on steel pipe piles driven into in-situ soil. In the tests, pile diameter and thickness were varied, and a larger horizontal force was applied to the piles up to the ultimate limit state, where local buckling occurred, and the strength decreased. The observed pile responses also allowed for a comparison of energy absorption behavior.

A12: Experimental study on the effect of preloading on the horizontal displacement of steel sheet pile walls by Nanase Ogawa (GIKEN LTD.)

This paper introduces the Preloaded Retaining Wall, a new concept for retaining wall structures, where preload is applied to installed slanting walls to minimize wall displacement and bending moments during the service period. Two patterns of preloads were examined in the study, i.e., horizontal preloading at the top of the slanting wall, and vertical preloading to the ground just behind the wall. The results demonstrated the effectiveness of both preloading methods.

Session A-3 Pile Performance/Piling Mechanism

Chair: Pastsakorn Kitiyodom

Managing Director, ATT Consultants Company Limited, Chief Operating Officer
TEAM Consulting Engineering and Management PCL.

Session A-3 consisted of 3 presentations focused on the performance and mechanism of pile foundations installed by the press-in piling method. All presentations showed convincing compatibility between the press-in piling mechanism and pile performance. The session also implied a possibility of future expansion of utilization of the press-in piling data in this field.

The title and presenter for each paper are summarized in the following table:

No.	Paper Title	Presenter and Organization
A13	Development of rapid load test device and its applicability to piles installed by Rotary Cutting Press-in	Koichi Okada GIKEN LTD
A14	Use of Press-in Piling Data for Construction on the Moon: Estimating Subsurface Information and Pile Capacity	Yukihiro Ishihara GIKEN LTD
A15	Simple static vertical and horizontal loading tests on small pipe piles using press-in machine	Yukihiro Ishihara GIKEN LTD

A13 reported compatibility of load testing methods and the rotary cutting press-in method. In the presentation, a newly developed rapid load testing device and traditional static load testing device were utilized on steel tubular piles installed by the rotary cutting press-in method. Test results discovered reasonable compatibility between these two load testing methods.

A14 discussed the use of the press-in piling method with limited subsurface ground conditions, assuming the future use of the method on the Moon. A full-scale field test using the press-in method was carried out at a test site where the ground conditions were relatively similar to those on the Moon. Obtained press-in piling data during the field test were converted into SPT-N and CPT cone resistance q_c . The results showed reasonable similarities between the estimated soil parameters and actual ground investigation test results.

A15 introduced a simple static load testing methods using a press-in piling machine. Both vertical and horizontal load capacities of the pressed-in piles were measured by utilizing the press-in piling machine. The tests results were then compared to results of normal static load testing on the same piles. The comparison showed good compatibility between the simple static load testing and normal static load testing.

Session B

Climate Change/Infrastructure Development

Chair: Jianfeng Xue

Associate Professor, School of Engineering and Technology
The University of New South Wales, Australia

Six presentations were scheduled, however, only five presenters attended the session. There are three presentations on case studies (B01, 03, and 04), one on centrifuge modelling (B05), and another focusing on the educational and qualification aspects of machinery operators in press-in technology in Japan.

No.	First Authors	Paper Title	Presented
B01	Takeshi Yamazaki Tepco Customer Service Co., Ltd.	Reuse of removed electric PC pole to ground reinforcing member	Yes
B02	Andrew McNamara City, University London	Improving performance of existing deep foundations	No
B03	Hiroki Kitamura Giken Seisakusho Asia Pte., Ltd	Advanced Construction Solutions in Thailand: The Pasak Riverbank Protection Project from a Construction Perspective	Yes
B04	Goh Teik Lim Atsunew Giken Pte. Ltd.	Use of wider type of steel sheet piles for ERSS applications in Singapore	Yes
B05	Abdulaleem Omar Abdulaleem Dawood Tokushima University	Influence of sheet pile on stress distribution in non-invert tunnel: A centrifuge model study	Yes
B06	Daisuke Hirose International Press-in Association	Introduction of educational training and qualification systems for fostering press-in piling technicians in Japan	Yes

B01 presented the utilization of electric PC poles as ground reinforcement elements, highlighting the methods for preparing these elements by halving the poles to meet the size requirements specified in the Japan Standard for foundation reinforcement. Additionally, a bending test method was demonstrated to assess the structural integrity of these poles. Press-in technology was employed for their installation.

B03 presented a case study of using press-in sheet piles in a riverbank protection project. The design and construction of the sheet piles were introduced. The piles were designed to the same length, resulting in varying factors of safety (FOS) to enhance construction efficiency. It shows the advantage of using press-in sheet piles in river bank protection projects.

B04 is about the advantage of using wider type of steel sheet piles as earth reinforced seawall structures in Singapore. It discussed the construction efficiency of using wider sheet piles in press-in technology compared to normal standard sizes.

B05 introduced results of a set of centrifuge tests on stress distribution in non-invert tunnels with and without sheet piles. It demonstrated that sheet piles can effectively reduce the negative impact of nearby construction activities or structures on induced stresses on on-invert tunnel members.

B06 demonstrated the success professional training scheme adopted in Japan on machinery operators in the Press-in piling industry. It introduced the importance of having systematic training on the operators to ensure the installation quality of press-in piles. The audience deliberated on the potential replacement of manual operators with AI technology.

Session C-1

Disaster Prevention and Mitigation

Chair: Yoshiaki Kikuchi

Councilor

Coastal Development Institute of Technology

There were following six presentations in this session. Most of them were related to disaster prevention and mitigation.

C01: Kakuta Fujiwara (Tokai University): Experimental and analytical study on liquefied sand behavior under an embankment with PFS Method

C01 was research on clarifying effect of PFS Method (Partially Floating Sheet-piles Method) by modeling experiment and analysis. The PFS Method involves a combination of short and long sheet piles arranged at specific intervals within a sheet pile wall. This design allows for the movement of soils from the loading side to the unloading side through gaps between the long sheet piles. Effects of the intervals of long sheet piles to ground deformation, excess pore pressure generation, settlement of embankment side were checked by simplified two-dimensional conditions. The author concluded that actual three-dimensional problem can be estimated from the simplified two-dimensional research results. In the discussion, accuracy of the estimation of the actual case was discussed.

C02: Yuki Yamakuri (Chuo University): Bearing capacity analysis of a shallow foundation with sheet piles under inclined loads by rigid-plastic finite element method

C02 was research on the foundation improved by sheet pile in both sides. Especially, the changes of ground deformation mode and resistance of the improved foundation under inclined load were discussed by numerical analysis. The author found that the horizontal resistance improvement ratio was greater than vertical resistance improvement ratio. In the discussion, several questions on analysis conditions such as effects of mesh size or coefficient of friction on the sheet piles were raised and answered.

C03: Siriwan Waichita (Altemtech Co., Ltd.): Case history: Press-in sheet pile on the collapsed riverbank

C03 was a report on the example of press-in piling method to the renewal of the canals surrounding the historical buildings. In the previous canal, shortly embedded pile walls were used for supporting the level distance of the canal and it was difficult to support the level distance. In the new canal, long sheet piles were constructed by silent piler and concrete beams were constructed in the base of the canal. In the discussion, the reason of the silent piler selection for the sheet pile construction and the answer was easiness of the temporary construction.

C04: Siavash Manafi Khajeh Pasha (GIKEN LTD.): Field reconnaissance insights from the 2024 Noto Earthquake

C04 was a report of the disaster of 2024 Noto earthquake. The contents of the report included earthquake mechanism, slope failure, liquefaction, and structural damages of several facilities. In the discussion, there was a comment that important point should be the engineers should have their opinions how to manage the problems clarified by the investigation.

C05: Kojiro Okabayashi (National Institute of Technology, Kochi College): Fundamental research on liquefaction countermeasures for double steel sheet pile quay walls using permeable sandbags

The research conducted in C05 focused on enhancing the seismic resistance of double sheet pile structures. In this study, the liquefaction resistance of infilling soil was improved through the utilization of permeable sandbags and permeable sheet piles on the shore side. During the discussion, an inquiry arose regarding the slight variation in deformation between sheet piles with or without the use of permeable sheet piles when employing permeable sandbags. The author responded by affirming that utilizing sandbags alone proved to be sufficiently effective in improving liquefaction resistance.

C06: Sayuri Tasaki (GIKEN SEKO CO., LTD.): Development and Future Prospects of Waterproof Wall Method between Tubular Piles Based on the Gyropress Method

The report C06 focused on the utilization of the Gyropress Method for repairing damaged revetment in a fishing harbor, with particular emphasis on ensuring waterproofing of the steel wall constructed using this method. To achieve waterproofing, two small diameter steel piles were installed between the main steel piles, and the resulting space was filled with mortar enclosed in an impermeable bag. The discussion addressed the impact of deflection on waterproof performance at specific points. In response to this concern, it was clarified by the author that in the presented case,

where deflection of the steel wall remained minimal, any reduction in waterproof performance was effectively minimized.

Session C-2

Disaster Prevention and Mitigation

Chair: Katsutoshi Ueno

Associate Professor
Tokushima University

Session C-2 covered six presentations regarding disaster prevention and mitigation measures which utilized sheet piling and the press-in piling method. Various protective and remedial countermeasures were introduced in these papers, such as liquefaction prevention, seismic protections and scour protections etc. The efficiency of the press-in method for disaster prevention and mitigation was highlighted in each paper in relation to these fields. The title and presenter for each paper are summarized in the following table:

No.	Paper Title	Presenter and Organization
C07	Deformation suppression effect of double steel sheet pile method for river levee on soft ground against mega earthquake	Kentaro Nakai Nagoya University
C08	Press-in technology to recover capacity of bridge pile foundation and application prospect in Vietnam	Vu Anh Tuan Le Quy Don Technical University
C09	Analytical approach to analysis of piles in liquefied sand using design geotechnical parameters predicted from field pile load tests	Siavash Manafi Khajeh Pasha GIKEN LTD.
C10	Investigation of horizontal performance of levee consisting of double sheet pile walls and partition walls by 1-g model tests	Kazunori Toda GIKEN LTD.
C11	Investigation into geotechnical parameters of liquefied sand by static pile load tests, cone penetration tests, and pressuremeter tests	Kazunori Toda GIKEN LTD.
C12	Investigation into the performance of levees and embankments reinforced with sheet pile walls	Joel N'Dah Koffi GIKEN LTD.

C07 is an award-winning paper. It introduced the effectiveness of the double steel sheet pile method (twin sheet pile walls supported with tie-rods) as a seismic countermeasure for river levees and embankments against earthquakes. The presentation showing the analysis results in animation was very impressive.

C08 first introduced a case study on exposure and deterioration of bridge foundations due to riverbed subsidence in Vietnam, then it discussed the use of sheet piles and the press-in piling method to remediate deteriorated bridge foundations by regaining their bearing capacities. The effectiveness of the proposed method was demonstrated through model experiments. Prospects of the press-in piling technology in Vietnam was also introduced.

C09 focused on the research on horizontal pile behavior predictions in liquefied soils. The analysis was conducted using test models and large-scale pile tests. Prediction method of p-y curves based on CPT results were proposed and evaluated by comparing with existing p-y backbone curves under lateral loading. The method was well received from the floor.

C10 discussed the effectiveness of a reinforcement method for river levees using double sheet pile walls joined with partition walls. The effectiveness was actually demonstrated by load tests on reduced models, especially concentrated in the effect of horizontal restraint by partition wall between the sheet piles that make up the double sheet pile wall. It was shown that the stronger the restraint, the more consistent the behavior of the two sheet piles became, and the higher the horizontal resistance became.

C11 showed an approach to obtain geotechnical parameters of liquefied soils using a unique “Liquefaction Test Apparatus”. In order to examine the parameters from a different perspective, static vertical and horizontal load tests, cone penetration tests and borehole pressuremeter tests were carried out. This also is a valuable study, as it is a full-scale model experiment and provides useful experimental data.

C12 introduced a resiliency of earthen levees and embankments which were reinforced by embedded pile walls, against

water-related natural disasters. Actual examples of the protection method utilizing the press-in piling method were also introduced.

Session D-1

Project Case Histories/Piling Mechanism

Chair: Mark Albert H. Zarco

Professor, Institute of Civil Engineering
University of the Philippines, Diliman

Session D-1 consisted of seven presentations focused on the performance and mechanisms of pile foundations using press-in engineering. These included three papers (D01, D02, and D07) discussing pile testing methodologies; two papers (D04 and D06) examining the use of SPT/CPT test results to estimate pile capacity; one paper (D03) on estimating the angle of friction; and one paper (D05) discussing the application of a Double Hat-type sheet pile wall in Thailand. The title and presenter for each paper are summarized in the following table:

No.	Paper Title	Presenter and Organization
D01	Rapid load test on a press-in steel pipe pile with Gyropress Method for confirmation of design bearing capacity	Ram Krishna Mandal Jibanshikenjo Co. Ltd.
D02	Applicability on optical fiber sensors for stress evaluation of piles	Akihito Nakazato System Measure Co. Ltd.
D03	Fundamental study of the effect of particle size distribution and shape of sand on the angle of repose test results	Eri Kamegaya Chuo University
D04	Comparison of CPT averaging methods for estimating the pile base resistance	Chai Fei UNSW Canberra
D05	The first application of double hat-type sheet pile revetment installed by press-in method in Thailand: Pasak River Bank Protection Project	Somma Chavalitjiraphan Geo-Technology Consultants Co., Ltd.
D06	Assessment of an SPT-based approach for predicting the axial bearing capacity of concrete pile foundations installed by the driving and press-in methods	Sotheara Kong Institute of Technology of Cambodia
D07	Vertical load tests on zero sheet pile pressed-in into alluvial soft ground	Yukinori Toda GIKEN LTD.

D01 proposed a new and more reliable method for obtaining load-displacement relationships for steel pipe piles installed using the Gyropress Method.

D02 discussed the use of Fiber Bragg Grating (FBG) optical fiber sensors for measuring stresses in piles during static load testing.

D03 demonstrated that, for dry sands, the angle of internal friction can be estimated from the angle of repose which are experimentally easier to obtain.

D04 highlighted the different subsurface conditions under which each of the CPT averaging methods for estimate pile base resistance performed best.

D05 demonstrated that the use of double hat-type sheet pile wall was strong and capable of withstanding impacts from ships. It also allowed for a simple construction method, minimized disturbance to the surrounding soil, and reduced environmental impact.

D06 discussed the validation of Decourt's method for estimating the axial capacity of driven and press-in piles installed in Cambodia and the Philippines using SPT results.

D07 showed that vertical resistance to compressive loads applied to zero sheet piles is predominantly frictional. It also showed that the second-limit-resistance per pile was greater for interlocking piles compared to single piles.

Session D-2

Project Case Histories/Quality Assurance

Chair: Shinji Taenaka

Head of Dept., Infrastructure& Construction Products Dept.
Nippon Steel Corporation

Session D-2 contained 6 interesting papers covering a wide range of topics from laboratory and numerical tests, field tests and material investigation to project report in actual applications, as listed below. The novel development is introduced in D08 and D09, while the detailed investigation is carried out in D10. The other three are pure case history reports in D11 to D12. This session was particularly noteworthy in that several presentations were made with an awareness of their contribution to reducing environmental impact. We hope to see more reports from this perspective in the future.

D08 Simultaneous pull-out filling method of retaining piles that contributes to the SDGs (GEOTETS method)

In the first presentation, Mr. Yasuhiko Nishi (Civil Assist Co., Ltd.) introduced the GEOTETS methods solving the subsidence of the surrounding ground at the time of pile removal. The GEOTETS method fill the void immediately after the extraction of steel sheet piles and solidify in about 1 minutes. This filler material is one of the permanent cementitious pouring materials developed for this method. The presentation covered the features of filler materials, construction process of this method, field tests in collaboration with Miyazaki Univ., and the potential applications. Examples of the application in the actual projects have been introduced from a railway project, proximity construction to private houses and so on.

D09 Potential of implementing cathode-ray tube (CRT) glass concrete piles in press-in engineering

The second presentation by Dr. Kwong Soon Wong (Curtin University) focused on the cathode-ray tube (CRT) glass as the alternative materials of the concrete. Over the years, the consumption of concrete keeps increasing so that alternative materials need be prepared to replace especially the natural aggregates. This is the CRT glass waste (e-waste). The size, mechanical strength and Alkali-Silica reaction of CRT glass have been discussed in the presentation, suggesting the potential to be used in producing reinforced concrete pile and the implemented in press-in engineering.

D10 Observation of soil behavior during pressing pile: considering the effect of multiple layer and particle size

The paper by Mr. Naoki Suzuki and co-author from GIKEN LTD. and Hokkaido University reported laboratory observation of the behavior of soil deformation during pile diameter, due especially to particle size effect. In order to measure the soil deformation for large size specimens, the inclinometer systems successfully gathered data during pile installation into multi-layered soil. In multi-layered case, earth pressure increases with penetration but the peak appears shallower rather than single layered soil. It was reported that particle size effects appeared with the relationship to the pile diameter. These findings have been verified by a numerical studies using the rigid body spring model (RBSM).

D11 Construction example of a retaining wall by Combi-Gyro Method

The actual project of the press-in piling was reported by Mr. Kazuyuki Matsuzawa and co-author from ENFIVE PTE. LTD. and SATO JUKI Corporation. The development of the new road has led to the formation of a network in Japan. The construction of a retaining wall has been applied for cutting the slope of the hill, in which the Combi-Gyro method was adopted. The Steel wall by Combi-gyro method is built by single press-in machine both the tubular piles and Hat sheet piles, leading to the highly stiff combination wall. In this project, a total of 159 Hat-type steel sheet piles 10H (L=7.0 to 9.5 m) and 82 steel pipe piles with a diameter of 800 mm (L=13.5 to 16.0 m) were completed within a 45-day construction period.

D12 Construction of retaining walls on a steep slope by Gyopress Method

Mr. Kazuyuki Matsuzawa (ENFIVE PTE. LTD.) also presented Road widening project in Japan, where the region is characterized by mountains, with the existing road flanked by steep slopes on both sides. To address difficulties to secure construction yards and access roads, the press-in piling method, especially in conjunction with the GRB system, was

considered highly advantageous. For this particular site, the construction of two rows of steel pipe retaining walls was planned and constructed using the Gyropress method with a total of 274 steel tubular piles was completed in approximately 6 months. In addition, this paper reported the efficiency of the Inplant Navi system for quality control and conformance management of piles at the site.

D13 Design aspects of hat type steel sheet pile for Pa Sak River Improvement Project in Thailand

The presentation by Woraphon Wiriyatharakij (ATT Consultants Co.,Ltd) introduced the project located in the city area of Ayutthaya province, a historical city of Thailand. The project is to construct a riverbank protection wall to prevent erosion on the Pa Sak River. The design analysis using PLAXIS was mainly reported to model construction process of the double wall sheet pile system using 45H and 25H hat type sheet piles with a concrete capping beam and slab with tie beam. To reduce risk factors for the stability of the current riverbank, Press-in technology was introduced in this project. The presentation covered the project information, structural design, sheet pile properties and piling method with water-jetting.

Session E Infrastructure Development

Chair: Michael Doubrovsky

Professor, Department of Ports and Waterways
Odessa National Maritime University

The following six interesting and useful presentations were made. These are four analyses of the implemented press-in projects (E01—E04) and two laboratory model tests (E05, E06). Implemented press-in projects related to the tubular piles' application in various conditions (E01, E02) as well as to the sheet piling peculiarities and effectiveness (E03, E04). Experimental studies dealt with sheet pile foundations behavior and results of the model tests.

No.	Paper Titles	Presenters and Organizations
E01	Opportunities and challenges of press-in piling for sustainable inner city quay wall development in Amsterdam	Kevin Duffy Delft University of Technology
E02	Short- and long-term behaviours of cantilever-type large-diameter steel tubular pile wall embedded in soft rock against various loadings	S M Shafi Tokyo Institute of Technology
E03	Protection of a tsunami refuge building with pressed-in sheet pile flood walls	Takefumi Takuma Giken America Corporation
E04	Press-in piling applications: Social infrastructure development using the Implant Method®	Masafumi Yamaguchi GIKEN LTD.
E05	Model tests on the effects of head fixation and separation distances for double sheet pile earth retaining wall method	Akihiro Kikuchi Chuo University
E06	Experimental study on the effect of penetration length and eccentricity of sheet pile foundation on bearing capacity	Ryuto Shikakura Chuo University

E01. With the growth of press-in piling in the Netherlands, this paper presents some of the opportunities and challenges facing press-in piling, with a particular focus on how the CPT can be used to improve pile design and installation forecasting.

E02. Centrifuge model tests were carried out to study the stability of the retaining wall. The resilience effect developed during dynamic loading plays a critical role in determining the wall's behavior under dynamic and static loading.

E03. Steel sheet pile walls with concrete cover were built on the perimeter of a high school campus to isolate the school buildings from future flooding in the regional city of Naruto in southwestern Japan. The press-in piling method was utilized so as not to disturb students or nearby residents with noise or vibration.

E04. This paper describes the usefulness and applications of the press-in piling in the renovation of social infrastructure

in Japan, where a diversified society and preparation for natural disasters are required.

E05. In this study, authors conducted model tests focusing on the effects of head fixation and separation distances. They explored the relationship between excavation depth and horizontal displacement. Head fixation significantly influenced the front retaining wall, resulting in a notable reduction in horizontal displacement.

E06. Authors discussed vertical loading experiments using a 2D ground model composed of aluminum rods, and varying the sheet pile penetration length and eccentricity from the center of gravity. Image analysis was employed to track the movement of the model's ground particles and to visualize slip lines. As a result, the bearing capacity is improved by penetrating the sheet pile.

Award Report ICPE 2024 Award Ceremony Report

IPA Awards Committee

The Award Ceremony was held on 3 July 2024, the first day of the International Conference on Press-in Engineering (ICPE2024). The IPA has a total of five award categories, with awards presented for the year 2024. The award categories are:

- ICPE Best Paper
- Outstanding Project
- Distinguished Research
- Life-long Contribution
- Early Career Engineer (New Program)

ICPE2024 Best paper Award

The ICPE Scientific Committee, chaired by Dr. Tiong Guan Ng, divided all the papers into two categories: Research Papers and Project Papers. Then, the Committee reviewed and rated each paper based on the evaluation criteria listed below and nominated 4 research papers and 3 project papers. Nominated papers were evaluated by the Awards Committee with the collaboration of the Scientific Committee, resulting in 4 best research papers and 3 best project papers.

● ICPE2024 Best Research Papers

The winners for the best research papers were selected based on the five viewpoints: (1) Reliability, (2) Practicality, (3) Novelty/Originality, (4) Impact on development and promotion of press-in technology, (5) Quality of text, perfection

- **R. Shikakura, H. Nishioka, Y. Yamakuri, Y. Arai and M. Hirano:** *Experimental study on the effect of penetration length and eccentricity of sheet pile foundation on bearing capacity*
- **S M Shafi and J. Takemura:** *Short- and long-term behaviours of cantilever-type large-diameter steel tubular pile wall embedded in soft rock against various loadings*
- **K. Nakai, T. Noda, T. Yoshikawa and T. Takaine:** *Deformation suppression effect of double steel sheet pile method for river levee on soft ground against mega earthquake*
- **K. Toda, A. Mori, Y. Ishihara, M. Eguchi, H. H. Tamboura, S. M. K. Pasha, S. K. Haigh and A. Burakowski:** *Investigation into geotechnical parameters of liquefied sand by static pile load tests, cone penetration tests, and pressuremeter tests*

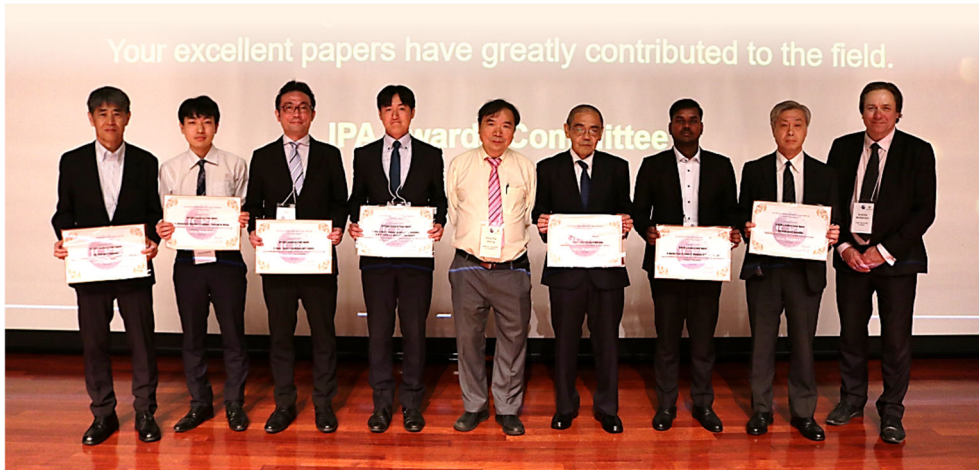
● ICPE2024 Best Project Papers

The winners for the best project papers were selected based on the five viewpoints: (1) Innovativeness of the project, (2) Difficulty of the project, (3) Economic advantage of the project, (4) Impact on development and promotion of press-in technology, (5) Quality of text, perfection and readability

- **K. Matsuzawa, T. Hayashi and K. Shirasaki:** *Construction of retaining walls on a steep slope by Gyropress Method*
- **K. Mandal, S. Lin, S. Kamei, K. Watanabe and T. Matsumoto:** *Rapid load test on a press-in steel pipe pile with Gyropress Method for confirmation of design bearing capacity*
- **T. Yamazaki and O. Kusakabe:** *Reuse of removed electric PC pole to ground reinforcing member*



Certificate of ICPE2024 Best Paper Award



ICPE2024 Best papers Award Winners

Outstanding Project Award

Title	AI 2018-0423 Amsterdam Quay Walls Innovation Partnership
Winners	City of Amsterdam
	G-Kracht

Distinguished Research Award

* The titles and affiliations of the winners are based on their status at the time of submission.

Title	Use of press-in piling data for estimating subsurface information and pile performance	
Winner	Yukihiro Ishihara	GIKEN LTD.
Source	Doctoral Thesis, University of Tokyo, 421p, 2023.	

Title	Bearing characteristics of model piled raft foundations supported by sheet piles	
Winners	Xi Xiong	Kanazawa University
	Wentao Guo	Datang Carera Investment Co., Ltd
	Tatsunori Matsumoto	Kanazawa University
	Yukihiro Ishihara	GIKEN LTD.
Source	International Journal of Physical Modelling in Geotechnics, Volume 24 Issue 1, pp. 38-53, January, 2024	

Title	Deflection and failure of high-stiffness cantilever retaining wall embedded in soft rock	
Winners	Vijayakanthan Kunasegaram	The University of Western Australia
	Jiro Takemura	Tokyo Institute of Technology
Source	International Journal of Physical Modelling in Geotechnics Vol.21, No.3, P.114–134, 2021	

Life-long Contribution Award

- **Dr. Osamu Kusakabe**, Professor Emeritus, Tokyo Institute of Technology

Dr. Osamu Kusakabe has significantly impacted the internationalization of geotechnical engineering in Japan and Asia. As a key member of the IPA since its foundation in 2007, he served as President from 2016 to 2019 and currently serves as the Executive Director. During his tenure as President, he reorganized the association’s structure by establishing the Steering Committee and five Standing Committees, and by enhancing the frameworks of Technical Committees. He also organized the First International Conference on Press-in Engineering in 2018, systematized IPA award programs, and expanded membership. His work has also fostered young geotechnical engineers through his leadership in various organizations and teaching roles at several prestigious institutions, greatly contributing to the field’s development.

- **Prof. Tatsunori Matsumoto**, Emeritus Professor, Kanazawa University

Professor Tatsunori Matsumoto has made significant contributions to pile foundation engineering and geotechnical research. He joined IPA in 2012, serving on the Board of Directors and served as Vice President from 2019 to 2023. He chaired the Research Committee from 2017 to 2018 and, as Chair of the Organizing Committee, led the Second International Conference on Press-in Engineering in 2021, which attracted 59 papers and 430 participants. He also published Case History Volume I in 2019, showcasing global press-in piling projects. Through his lectures and mentorship, Professor Matsumoto has disseminated Press-in Piling Technology and nurtured young geotechnical engineers, significantly advanced the field and contributed to the growth and influence of the IPA.

Early Career Engineer Award

Title	Case Studies of Ultimate Compressive Capacity Prediction for Precast Jacked Piles Installed in the Philippines	
Winner	Benjamin Bautista Buensuceso III	BRB Solution Inc. University of the Philippines Diliman – Institute of Civil Engineering

Title	Challenge to clarify Effectiveness and Failure Mode of Levee Reinforced with Steel Sheet Piles against Overtopping and Scouring	
Winner	Yusuke Mochida	NIPPON STEEL CORPORATION



Winners of IPA Awards Other Than the ICPE Best Paper

ICPE 2024 Best Presentation Award

The Best Presentation Award at ICPE 2024 was given to the top presenter in each session, based on evaluations by the session chairs. With 55 general and video presentations delivered over two days, the following presenters were recognized for their outstanding contributions.

➤ **Session A-1 Pile Performance/Piling Mechanism**

Xi Xiong:

Experimental study on bearing behavior of a single model pile in unsaturated sandy ground with various groundwater levels

➤ **Session B Climate Change/Infrastructure Development**

Abdulaleem Omar Abdulaleem Dawood:

Influence of sheet pile on stress distribution in non-invert tunnel: A centrifuge model study

➤ **Session C-1 Disaster Prevention and Mitigation/Case Histories**

Yuki Yamakuri:

Bearing capacity analysis of a shallow foundation with sheet piles under inclined loads by rigid-plastic finite element method

➤ **Session D-1 Project Case Histories/Piling Mechanism**

Akihito Nakazato:

Applicability on optical fiber sensors for stress evaluation of piles

➤ **Session E Infrastructure Development**

Takefumi Takuma:

Protection of a tsunami refuge building with pressed-in sheet pile flood walls

➤ **Session A-3 Pile Performance/Piling Mechanism**

Yukihiro Ishihara:

Use of Press-in Piling Data for Construction on the Moon: Estimating Subsurface Information and Pile Capacity

➤ **Session A-2 Pile Performance/Piling Mechanism**

Lao Yilun:

Physical modeling on large diameter piles subjected to one-way cyclic loading in dense sand focusing on generalized scaling law

➤ **Session C-2 Disaster Prevention and Mitigation**

Vu Anh Tuan:

Press-in technology to recover capacity of bridge pile foundation and application prospect in Vietnam

➤ **Session D-2 Project Case Histories/Quality Assurance**

Woraphon Wiriyatharakij:

Design aspects of hat type steel sheet pile for Pa Sak River Improvement Project in Thailand



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Editorial Remark

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Director of IPA

Welcome to the IPA Newsletter, Volume 9, Issue 4!

This special issue highlights the 3rd International Conference on Press-in Engineering (ICPE2024), held in Singapore from July 3rd to 5th, 2024. The conference focuses on the theme: "Superiority of Press-in Piling Towards Sustainable Construction in Tackling Climate Change for Infrastructure Development."

Through the articles featured in this issue, we aim to provide valuable insights and key takeaways from ICPE2024 to our IPA members.

We extend our sincere appreciation to the authors and the secretariat for their significant contributions to this publication.

Thank you for reading, and we wish you continued success.

