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Messages
From the Director

Jiro Takemura
Associate professor, Tokyo Institute of Technology

Ten years before in 2014, I started a research, which eventually attracted me to the field of press-in technology. I was consulted about a possible use of centrifuge modeling on cantilever steel tubular pile retaining walls embedded in soft rock from engineers of Nippon Steel Corp. The aim of the centrifuge tests was very clear, i.e., demonstrating the performance of the wall with large flexural rigidity equivalent to 2.5m diameter steel tubular pile wall retaining 12m height backfill soil covering from an allowable limit state under an ordinary design load to an ultimate limit by an extraordinary load. Thanks to rotary press-in method, like GYRO PILER, large diameter steel tubular piles can be installed into a hard ground, enabling a large height embedded cantilever retaining wall as a permanent structure (see Fugure below). But limited records on the behaviour were available about this type of structure, especially for the effects of embedment depth on the performance. In the beginning of the research, I just enjoyed in making the physical models and doing the experiments for the given mission as a centrifuge modeler with the collaborators. We were satisfied with the outcome of the research, which was published in 1st ICPE, 2018. However, the more we studied and more we knew about this type wall, the more we found the challenges for the further development of this type of structure. After this research, the first technical Committee TC1 on “Application of cantilever type steel tubular pile wall embedded to stiff ground” was formed in IPA Research Committee, and I served as the chair of TC1. Again, I enjoyed the research activity of TC1 with the members and we were happy to produce many technical papers and a summary (SOA) report in 2nd ICPE, 2021) from the TC1 activity.

Figure. Baba Interchange, Yokohama Ring Righway. Reft: retaining wall construction by Gyropiper, right: completed wall with Dr. Takemura

Beside the research activities, I have joined several IPA Seminars on Press-in Technology in various places around the worlds, such as, Bangkok in Thailand, Manila in the Philippines, Sao Paulo and Rio de Janeiro in Brazil, and Taipei in Taiwan, giving a promotional presentation including the TC1 research activity. Though this promotional talk of IPA seminar is one of my duties as a chair of Development Committee, an IPA Standing Committees, I could confirm the value of seminar from the strong interests of the audience on press-in technology and the demands especially from construction industries. As for the application of the press-in technology, we can know its huge potential for various types of construction under very severe working conditions from Press-in Piling Case History volumes published by IPA. In Japan not only from these publications, but also we can see the applications of the press-in piling in our daily activities, e.g., when driving a car or walking along a road or river under upgrading works. The photos attached were taken by myself near my home. I'm very happy to witness these applications and consider about main reasons and challenges of the application assuming unseen conditions, such as the subsoil condition, which may give me a confidence about the application and hints for the further development.

As mentioned above, I have been delighted in doing researches and promoting the press-in technology with IPA members and friends from around the world. I very much look forward to more chances to collaborate with my current friends and new friends for the further development of press-in pining technology.

◆ A brief CV of Dr. Jiro Takemura

Dr. Takemura is Associate Professor, Dept of Civil and Environment Engineering, School of Environment and Society, Tokyo Institute of Technology (Tokyo Tech). After getting master degree in Tokyo Tech in 1983, he worked at Japan Sewage Works Agency for two years and joined Geoech lab in Tokyo Tech as a research associate in 1985. He received his Doctor of Engineering from Tokyo Tech in 1991 and became an assosiate professor. Since 1981 at his master student time, he has been involved in various centrifuge model studies, and also worked for centrifuge communities, such as a member of ISSMGE TC104 (former TC2) on Physical Modelling, and an editorial board member of IJPMG, including Editor-in-Chief from 2006-2009. From May 2001 to June 2003, he taught in Asian Institute of Technology as a JICA Seconded Associate Professor. His research interests are covering Foundation Engineering, Underground Construction, Geo-disaster Prevention, Soil Characterrization
, and Geo-environmental Engineering. He has published more than 200 technical papers in international journals and conferences with several awards such as Best Paper Awards, Japan Geotechnical Society, 1st ICPE Best Paper Award, and Telford Premium (International Journal of Physical Modelling in Geotechnics) Award.

Upcoming ICPE2024, Singapore

Chun Fai Leung

President
International Press-in Association

Call for participation

The Third International Conference on Press-in Engineering (ICPE2024) will be held in Singapore from 3 to 5 July 2024. Press-in piling and engineering works are now commonly employed in many countries. These kind of works are expected to grow further to achieve sustainability and resilience of infrastructure against climate change. As an example, strong coastal and river protection works become necessary in many countries to tackle rising sea level and erratic climate conditions such as flooding and stronger wave forces. In view of the above, the theme of ICPE2024 is 'The Superiority of Press-in Piling towards Sustainable Construction in Tackling Climate Change for Infrastructure Development'.

Two keynote speakers will deliver lectures on the conference theme. Professor SY Yamaguchi of the United Nations University Japan will present the 'Progress of United Nation's Sustainabe goals and the Synergy with Climate Change Actions'. Professor Ken Gavin of the Delft University of the Netherlands will present 'The Potential Use of Press-in Methods in the Offshore Renewables Industry'. There will be also be a Singapore Theme Lecture to be delivered by three prominent practicing engineers, Dr TL Goh and Mr David Liaw of Singapore and Mr T Nozaki of Japan. They will share their knowledge on 'Development of Press-in Technology in Southeast Asia with Applications on Coastal Protection'. In addition, there will be a special Southeast Asia session with presentations given by prominent researchers/engineers from the region.

ICPE2024 has received a good number of abstracts covering a variety of topics related to press-in engineering. The tentative conference program below highlights the conference sessions planned for ICPE2024 on 3 and 4 July. There will be a site visit to ongoing press-in engineering project(s) on 5 July.

Day One: Wednesday 3, July

SGT (UTC+8)	Lobby	Main Hall	
8:30	Registration / Exhibition		
9:00		Welcome and Opening	
10:00		Coffee Break	
11:00		Keynote Lecture 1	
12:00		Keynote Lecture 2	
13:00		Lunch	
13:30		Main Hall	Hall 1
14:00		**Session A-1 Pile Performance/Piling Mechanism**	**Session B Climate Change**
15:00		Coffee Break	
16:00		**Session C-1 Disaster Prevention and Mitigation**	**Session D-1 Project Case Histories**
17:00			

Day Two: Thursday 4, July

SGT (UTC+8)	Lobby	Main Hall	
8:30	Registration / Exhibition		
9:00		**IPA Handbook (Design & Construction)**	
10:00		Theme Lecture	
11:00		Coffee Break	
		Main Hall	Hall 1
12:00		**Special Singapore Southeast Asia Session**	**Session E-2 Infrastructure Development**
13:00		Lunch	
14:00		**Early Carrier Presentation**	**Session A-2 Pile Performance/Piling Mechanism**
15:00		Coffee Break	
16:00		**Session C-2 Disaster Prevention and Mitigation**	**Session D-2 Project Case Histories/Miscellaneous**
17:00		Closing Remarks	

Day Three: Friday 5, July

Site Visit: Details to be announced.

To encourage more participation, there will be heavily discounted registration fee for young persons aged below 36 and full time students. Attractive discount will be also be given to members and non-members who register by the early bird deadline of 30 April 2024. Interested persons may refer to the registration fee table below and are strongly encouraged to register early by enjoying the discounted registration fee and enabling the ICPE2024 Organising Committee to plan early for the conference proper. The website for ICPE2024 including conference registration and accommodation details is https://www.press-in.org/en/event/application/input/39.

Registration Fee

Item	Classifications		Early registration by 30 April '24	Normal registration on/after 1 May '24	QR Code
Registration	Members (IPA, NUS, GEoSS, TUCSS)	Over 36	JPY 28,000	JPY 38,000	
		Under 36	JPY 18,000	JPY 28,000	
		Full-time Students	JPY 5,000	JPY 8,000	
	Non-members	Over 36	JPY 38,000	JPY 48,000	
		Under 36	JPY 28,000	JPY 38,000	
		Full-time Students	JPY 5,000	JPY 8,000	

Serial Report

"RED HILL 1967™" Press-in Technology Dissemination Hub -Part 2-

Tsunenobu Nozaki

General Manager
IPA Secretariat

(This is continued from Newsletter Dec 2023.)

Introduction of the facility: Demonstration Area, Approx. 4,600m²

This facility showcases new structures constructed using the "Implant™ Method," employing the "SILENT PILER™" and "GRB™ System." These innovative techniques enable construction without the need for temporary works.

GRB System

The "GRB System" stands out as one of the pioneering innovations within our extensive lineage of inventions. This system is designed to encompass all piling processes, such as pile transportation, pile pitching, and press-in operations, directly on the already installed piles. Through the operation of all mechanical components on the piles themselves, it achieves "temporary-work-less construction," which eliminates the need for temporary construction work.

The "GRB System" comprises the following five integral functions, sequenced from the front in the direction of press-in piling operation:

(1) The "SILENT PILER," responsible for installing piles into the ground.
(2) The "Power Unit," serving as the hydraulic power source.
(3) The "UNIT RUNNER™," carrying the Power Unit.
(4) The "CLAMP CRANE™," used for pitching piles.
(5) The "PILE RUNNER™," engaged in transporting piles from the laydown area.

Conventional construction methodologies necessitate the installation of temporary working platform or berms on water or sloped construction sites to accommodate machinery. In contrast, the GRB System streamlines all procedures directly onto the piles themselves, negating the requirement for temporary platforms. This approach optimizes efficiency, enabling the primary construction works to be executed seamlessly.

Eliminating temporary construction not only shortens the construction period and significantly reduces construction costs, but also eliminates the burden on the environment caused by the installation and dismantling of temporary structures. The GRB System, which reduces wasteful CO2 emission from temporary construction, can be said to be a technology that contributes to a decarbonized society.

Fig. 1 Overview of GRB System

Gyropress Method™

The Gyropress Method, designed for the installation of tubular piles into hard ground, exhibits two distinct characteristics.

The first distinctive feature involves affixing drill bits called "ring bit" to the toe of the tubular pile, which serves to cut through the ground. The second involves the installation of the tubular pile while simultaneously rotating it. Through the rotation of the tubular pile equipped with a ring bit, the method effectively cores through hard ground and promptly constructs the Implant Structure. Notably, this technique can penetrate obstacles such as existing structures, enabling press-in operations without necessitating obstacle removal.

When installing steel tubular piles into hard ground, the conventional construction process involved a two-step construction process, such as

Fig. 2 Overview of Gyropress Method

soil replacement method by utilizing a separate machine, prior to the pile installation. In contrast, the Gyropress Method streamlines this process, eliminating the need for such intricate steps and allowing the entire construction process to be executed using a single unit.
For instance, when addressing rehabilitation of river bulkheads and road retaining walls, the Gyropress Method enables the direct press-in of tubular piles into existing concrete structures, thereby upgrading and reinstating their functionalities without necessitating removal. This approach has gained substantial recognition globally, as seen through its adoption by the Republic of Senegal and Amsterdam in the Netherlands, earning praise not only in Japan but across the international stage.

Combi-Gyro Method™

The Combi-Gyro Method involves a synergistic approach that combines Hat-shaped steel sheet piles and steel tubular piles, both of which are installed and combined to establish cut-off walls and earth retaining walls.
Cut-off walls and earth retaining walls require a certain level of stiffness. However, depending on the site conditions, there are cases where construction with steel sheet piles alone is not strong enough, and construction with steel tubular piles alone could lead to overstrength, increasing costs. The Combi-Gyro Method combines highly economical Hat-shaped steel sheet piles and highly rigid steel tubular piles to construct stiff walls at the optimal cost.
In alternative construction approaches, distinct machines would be necessary for installing steel sheet piles and tubular piles individually to create such a wall. However, the Combi-Gyro Method enables steel sheet piles and tubular piles to be installed by the same press-in piling machine.

Fig. 3 Overview of Combi-Gyro Method

Overhead Clearance Method

The Overhead Clearance Method is a construction technique specifically developed for sites with "limited overhead clearance," where obstacles like bridges and high-voltage cables are present above. Utilizing the specialized Silent Piler known as the "CLEAR PILER™," piles can be installed without necessitating the removal or relocation of overhead obstructions.
Traditional piling equipment is generally large in size and require a relatively large working space. Consequently, executing construction at locations with overhead obstacles has proven challenging. For instance, when operating beneath a bridge, conventional approaches necessitated the removal of the overhead bridge girder or the construction of a temporary bypass road.
In contrast, SILENT PILER boast a notably compact design. Moreover, the CLEAR PILER and the GRB System are particularly developed for operation in "low headroom" environments, enabling construction in challenging settings marked by overhead impediments. This breakthrough capability facilitates the revitalization and reinforcement of aging road bridges without disrupting existing urban functionality.
For example, the machine for tubular piles needs the minimum headroom of 2.5m, the machine next to it for steel sheet piles needs the minimum headroom of 1.7m (Fig. 4), and the special machine for ultra-low headroom needs the minimum headroom of only 1m (Fig. 5).

Fig. 4 CLEAR PILERs for Tubular Piles (left) and Sheet Piles (right)

Fig. 5 CLEAR PILER for ultra-low headroom

Dead Space Utilization Method/Rail Safe Method

The Dead Space Utilization Method is a construction technique that involves constructing a retaining wall with piles along the embankment surrounding railways and highways. This approach effectively generates new usable space.

Embankments are commonly employed for railways and highways; however, the slope embankments often lack utility and remain unutilized spaces.

Particularly, in urban areas where effective use of land is required, this construction method, which can make use of slope space, demonstrates its true value.

The construction procedure unfolds as follows: commencing with the installation of a retaining wall through pile pressing into the slope, the subsequent steps involve excavating soil at the passive side to form a level area, while simultaneously filling soil at the retained side. Following this, the wall is reinforced. The sequence is remarkably straightforward. The upshot is the creation of new roads along railways and the capacity to introduce supplementary tracks as needed.

In traditional construction methods, working in proximity to railways presents challenges due to the potential risk of machinery overturning. However, the SILENT PILER eliminates this concern by securely gripping the previously installed piles, ensuring stability and eliminating the risk of tipping over. This makes it feasible to conduct construction even during railway operational hours. Moreover, harnessing the capabilities of the GRB System permits construction on slopes without the necessity for temporary works.

Fig. 6 Overview of Rail Safe Method

Implant Lock Levee™

The "Implant Lock Levee" refers to a levee that robustly withstands a variety of destabilizing factors. This is achieved by constructing self-supporting walls using steel sheet piles within an earth levee. Within the embankment, two rows of steel sheet piles are installed, and these are connected by a " confining wall" as shown in Fig. 7. This innovative configuration enhances the levee's stability against potential failure.

The primary catalyst behind the frequent floods occurred in various places each year is the "riverbank failures." Most of river embankments are constructed as "earth embankments," comprising soil that is filled and compacted. Consequently, when these embankments absorb water, they become vulnerable and prone to fracturing. It can be asserted that earth levees, due to their lack of water compatibility, possess a structural weakness that renders them unable to endure rupture-inducing elements brought about by heavy rainfall, including overtopping, seepage, and erosion.

Implant Lock Levees, on the contrary, avert collapse by maintaining self-supporting steel sheet pile walls even if the embankment is eroded due to rising water or flooding. Furthermore, in the event of an earthquake, the encircling steel sheet piles confine the movement of the underground liquefaction layer, mitigating ground subsidence. This phenomenon is referred to as the "confined ground seismic damper." The greatest feature of this embankment is that it does not break even in the event of a major earthquake, as well as overtopping and seepage.

Fig. 7 Overview of Implant Lock Levee

Implant Barrier™

The Implant Barrier stands as an innovative coastal defense structure that employs pressed-in piles as structural elements, integrating wall components crafted from diverse materials like fiber, steel, and concrete, strategically engineered to mitigate the impact of tsunamis and minimize damage. Here, from the right, we are exhibiting implant barrier wall materials made of fiber, steel, and concrete materials. In particular, the Implant Barrier made of fiber material not only functions in an emergency, but also contributes to maintaining the landscape by storing it in normal times.

Fig. 8 Various Types of Implant Barriers

General Concrete Retaining Wall and Implant Structure Concrete Retaining Wall

A retaining wall is designed and constructed to prevent a slope from collapsing when there is a need to establish varying elevations on the ground. Presented below are three different types of concrete retaining walls.

The retaining wall seen in on the left is a conventional concrete block retaining wall. This type of wall counters the lateral pressure of the earth through a combination of block weight and base resistance.

The retaining wall in the middle employs an Implant Structure, featuring concrete sheet piles that have been installed into the ground.

The retaining wall on the right is an Implant Structure design incorporating a PC pile wall that has been installed. A PC pile wall, comprising concrete piles containing internal PC steel wire, is recognized for its capacity to effectively withstand substantial lateral earth pressure. Due to the firm embedment into the ground, the Implant Structure retaining wall robustly withstands external forces, ensuring its persistence and functionality over time.

Fig. 9 Comparison of Concrete Retaining Walls

Implant Structure Steel Sheet Pile Retaining Wall (Preloaded Retaining Wall)

The retaining wall in the front is a typical sheet pile retaining wall constructed by installing steel sheet piles vertically. One in the back is the "Preloaded Retaining Wall," which is constructed by pressing steel sheet piles at an angle. A Preloaded Retaining Wall is a wall that is stiffer than a vertical retaining wall by applying lateral loads to the upper parts of the wall toward the passive side. A bent wall tries to return to its original straight shape. This force is used to hold down the embankment on the back more firmly.

Through the collaborative research between GIKEN and the University of Cambridge, it has been substantiated that the lateral deflection in the wall structure when a load is imposed on the embankment is only within the range of 1 to 4%. This variance is notably minimal in comparison to the deformation observed in a conventional vertical retaining wall.

Fig. 10 Comparison of Preload Retaining Wall and Traditional Embedded Retaining Wall

Implant Bell Cap Bridge™

The Implant Bell Cap Bridge is a temporary-work-less bridge that can be constructed in a small space and in a short construction period.

The bridge piers are steel tubular piles with bell cap-shaped members attached and pressed-in, and beams and bridge girders are installed on top of them. This bell cap has the function of increasing the ground contact area and increasing the bearing capacity by broadly compacting the ground. This minimizes the required embedded depth of piles.

When constructing a bridge using conventional construction methods, a foundation is built on the ground to support the bridge, and the piers are installed on top of that. This traditional process necessitates substantial construction works, demanding a significant workspace and extended construction duration.

On the other hand, with the Implant Bell Cap Bridge approach, steel tubular piles with bell caps serve as foundations and piers, so the work process can be minimized. In addition, since the work can be completed on the bridge girder installed on the piles, there is no need for temporary construction or a large working space. It is expected to be applied in various places such as for new construction in a restricted working space such as urban areas and emergency transportation roads in the event of a natural disaster.

Fig. 11 Overview of Implant Bell Cap Bridge

Introduction of the facility: Kochi Factory 3, Approx. 3,500m^2

GIKEN established this facility as the largest plant in Japan in order to accelerate their product development in pursuit of its global expansion. It serves as a hub for the advancement, prototyping, and validation of large-scale products, which have become our primary emphasis in recent times. For the first time in Japan, GIKEN adopted the Gyropress Method for the rotary cutting and press-in installation of steel tubular piles for the building's foundation work, and successfully achieved the installation of 54 steel tubular piles, with pile lengths ranging from 15 to 15.8 meters.

Kochi Factory 3 with Steel Tubular Pile Foundation

Future Prospects of RED HILL 1967

Much like GIKEN group, there are people all over the world who feel frustrated with the irrationalities in the construction industry and are passionately pursuing machinery, methodologies, and structures based on the latest scientific principles. GIKEN hopes that such like-minded individuals will visit RED HILL 1967, resonate with the advantages of the press-in principle, and feel connected to its history. GIKEN looks forward to exploring the future of construction together with those who share the vision.

GIKEN recognizes that comprehending the theoretical advantages of the press-in principle and their distinctive methods might not suffice to foster complete conviction. For this reason, they extend a cordial invitation to those individuals, encouraging them to witness firsthand the tangible impact of GIKEN's efforts. By doing so, visitors can ascertain the validity of GIKEN's endeavors and cultivate unwavering confidence in their pursuits.

Event Report

The 5th International Conference on Geotechnics for Sustainable Infrastructure Development (GEOTEC HANOI 2023), Hanoi, Vietnam

Assoc. Prof. Vu Anh Tuan

Le Quy Don Technical University, Hanoi, Vietnam
Director of IPA

The series of International Conference on Geotechnics for Sustainable Infrastructure Development (GEOTEC HANOI, GH) was organized successfully in 2011, 2013, 2016, 2019 and 2023 in Hanoi and it has become a well-known event not only in Vietnam but also internationally for its excellent quality and organizational scale. Each conference was a great event for scholars and professional engineers from around the world to share and learn the most up-to-date knowledge and technologies in the field of geotechnical engineering. At the conferences, world-class experts delivered keynote lectures: Prof. Sven Hansbo (Sweden), Prof. Kenji Ishihara and Dr. Hiroshi Yoshida (Japan), Prof. Harry G. Poulos (Australia), Prof. Pieter A. Vermeer (Netherlands), and Prof. Alain Guilloux (France) in GH2011; Prof. Rolf Katzenbach (Germany), Prof. Alain Guilloux (France), Prof. Fumio Tatsuoka (Japan), Prof. Kenichi Soga (United Kingdom), Prof. Helmut Schweiger (Austria), and Prof. Sven Hansbo (Sweden) in GH2013; Prof. Bengt H. Fellenius (Canada), Prof. Buddhima Indraratna (Australia), Prof. Chang-Yu Ou (Chinese Taipei), Dr. Jamie Standing (UK), and Prof. Kazuya Yasuhara (Japan) in GH2016; Prof. Harry Poulos (Australia), Prof. Adam Beruijen (Belgium), Prof. Masaki Kitazume (Japan), Prof. Delwyn Fredlund (Canada), Prof. Lidija Zdravkovic (UK), and Prof. Mark Randolph (Australia) in GH2019. Each event was an excellent chance for sponsors and exhibitors to show and promote their services.

The 5th International Conference, GEOTEC HANOI 2023 (GH2023), which was organized by FECON Corporation, Vietnam Society for Soil Mechanics and Geotechnical Engineering (VSSMGE), Japanese Geotechnical Society (JGS), Thuyloi University, and Vietnam Petroleum Institute, took place on December 14-15, 2023 at the National Convention Center, Hanoi, Vietnam. The conference is honorably patronized by the International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE) and Japan International Cooperation Agency (JICA). Six following key themes were included in the conference:

1. Deep foundation
2. Tunneling and underground spaces
3. Ground improvement
4. Landslide and erosion
5. Geotechnical modelling and monitoring
6. Offshore wind power and coastal geotechnics

The conference warmly welcomed nearly 1200 attendees from 40 countries in the world (Fig. 1 and Fig. 2). All the attendees enjoyed more than 150 very interesting technical presentations and especially 8 excellent keynote lectures and specially invited lectures delivered by world-class experts (Fig. 3) as follows:

1. Pile foundations: 80 years of research and practice
   by Prof. Alessandro Mandolini – University of Campania (Italy), Chair of ISSMGE TC212
2. Urban tunnelling – The challenges of creating underground space in historic cities
   by Prof. Giulia M.B. Viggiani – University of Cambridge (UK), Chair of ISSMGE TC204
3. Ground improvement
   by Prof. Rainer Massarsch – Geo Risk & Vibration Scandinavia AB (Sweden)
4. Continuum and discrete modelling of penetration problems
   by Prof. Antonio Gens – Technical University of Catalonia (Spain)
5. Prediction and detection of backward erosion piping of river levees
   by Prof. Mitsu Okamura – Ehime University (Japan), Vice President of Japanese Geotechnical Society
6. The ageing behaviours of offshore piles driven in clays, sands and chalks
   by Prof. Richard Jardine – Imperial College London (UK)
7. Geotechnical philosophy and cases of site reuse
   by Dr. Marc Ballouz (USA)– President of ISSMGE
8. On the landslide susceptibility and resilience with impact of climate change
   by Prof. Keh-Jian Shou – National Chung-Hsing University (Chinese Taipei), Vice President Asia of ISSMGE

Along with participating the conference sections, the attendees also had a chance to participate the technical tour to Metro line 3 construction site, Hanoi (Fig. 4) and the visiting tour to Ha Long Bay, a world heritage of Vietnam (Fig. 5).

Fig. 1. Photo of the conference hall

Fig. 2. Photo of the attendees.

Fig. 3. Keynote and invited speakers receiving presents from the conference organizer

Fig. 4. Technical tour to Metro line 3 construction site, Hanoi

Fig. 5. visiting tour to Ha Long Bay

Event Report

2nd International Conference on Construction Resources for Environmentally Sustainable Technologies (CREST 2023)

Hemanta Hazarika

Professor, Department of Civil Engineering
Kyushu University, Fukuoka, Japan

The 2nd International Conference on Construction Resources for Environmentally Sustainable Technologies (CREST 2023) was successfully held during November 20-22, 2023, at the Fukuoka International Congress Center, Fukuoka, Japan. After the successful online hosting of CREST 2020 in March 2021, this conference marks the second significant milestone in this dedicated series focused on advancing and promoting sustainable construction methodologies. A report on CREST 2020 was published in Volume 6 (Issue 2) of this newsletter.

CREST 2023 was organized by Kyushu University, Fukuoka, Japan, in association with University of Cambridge, International Society for Soil Mechanics and Foundation Engineering (ISSMGE), International Press-in Association (IPA), Japan Society of Civil Engineers (JSCE), Japanese Geotechnical Society (JGS), The Japan Landslide Society, ISSMGE Technical Committee 307 (TC307), ISSMGE Technical Committee 215 (TC215), ISSMGE Asian Regional Technical Committee 1 (AsRTC1), ISSMGE Asian Regional Technical Committee 3 (AsRTC3), and Global Society for Smart Geo-Sustainnovation (GLOSS). This conference received additional support from various other organizations, including Kyushu Regional Development Bureau (Ministry of Land, Infrastructure, Transport and Tourism, Japan), Fukuoka Prefecture, Fukuoka City, Consulate General of India Osaka-Kobe, National Research Institute for Earth Science and Disaster Resilience (NIED), UN-HABITAT Regional Office for Asia and the Pacific, Fukuoka, Kyushu Branch of Japanese Geotechnical Society, The Society of Materials Science Japan (JSMS), Japan Federation of Construction Contractors (JFCC), Japan Civil Engineering Consultants Association (JCCA), Japan Geotechnical Consultants Association (JGCA), Organization of Geowaste Technology for a Recycled Based Society, Applied Slope Engineering Association (ASERG) and Local Resilience Research Institute (LRRI).

The conference kick-started with two pre-conference events, encompassing five parallel workshops and a technical tour. During the technical tour, the participants could visit few areas of Asakura city, Fukuoka Prefecture, which were hugely impacted by the torrential rainfall disasters in 2017. The participants could glean invaluable insights on the ongoing recovery and reconstruction efforts by the local government in these afflicted areas (Photo 1). On the other hand, in the five parallel workshops, more than 160 participants actively took part. A total of 36 presentations were delivered during these workshops, including keynote lectures by Prof. Tatsunori Matsumoto (Vice President, IPA) in Workshop 1 (Sustainability and Innovation in Geotechnical Engineering) and Prof. Noriyuki Yasufuku (Professor, Kyushu University) in Workshop 5 (International Youth Exchange on Interdisciplinary Engagement) (Photos 2 & 3).

Photo 1: A glimpse of the technical tour participants

Photo 2: Prof. Matsumoto delivering his lecture in the workshop on "Sustainability and Innovation in Geotechnical Engineering"

During the opening ceremony (Photos 4, 5, 6 & 7), many esteemed dignitaries graced the occasion and delivered speeches that added distinction to the event. Among these dignitaries were Professor Stuart K. Haigh (University of Cambridge), Mr. Yoshitaka Morito (Director General, Kyushu Regional Development Bureau), Mr. Ryosuke Shojima (Vice Governor, Fukuoka prefecture), Mr. Nikhilesh Giri (Consul General of India Osaka-Kobe), Dr. Marc Ballouz (President, ISSMGE), Professor Keh-Jian Shou (Vice-President, ISSMGE Asia), Professor Junichi Koseki (President, Japanese Geotechnical

Society), Professor Osamu Kusakabe (Executive Director, IPA and Honorary Chairperson of CREST 2023), and Professor Tatsuro Ishibashi (President, Kyushu University). The ceremony concluded with a welcome address by Professor Hemanta Hazarika (Chairperson of the Organizing Committee, CREST 2023).

During this conference, we had the privilege of presenting 2 distinguished plenary lectures, along with 16 engaging keynote addresses, 12 insightful theme lectures, and 6 young researchers special lectures. All the sessions showcased notable contributions from diverse interdisciplinary fields. In addition, a total of 175 papers were presented across 15 parallel sessions and 2 poster sessions.

The two-day main events drew an average participation of 320 people per day from 24 countries. Furthermore, the technical exhibition featured participation from 42 domestic and international corporations, attracting an average of 150 visitors daily (Photo 8). A noteworthy contribution of CREST 2023 is our steadfast commitment to nurturing young researchers. This commitment is exemplified by the announcement of 2 best oral presentation awards and 6 outstanding poster presentation awards. In addition, ISSMGE's prestigious Bright Spark Lecture awards were presented to 3 young researchers (Photo 9). These awards were specifically designed for presenters under the age of 35. In addition, 2 best papers were selected from 175 general papers. All the awards were presented during the closing ceremony.

Photo 3: Workshop on "International Youth Exchange on Interdisciplinary Engagement" at Inamori Center, Kyushu University

Photo 4: Dignitaries in the opening ceremony (from left to right: Prof. Junichi Koseki, Prof. Keh-Jian Shou, Prof. Stuart Haigh, Prof. Tatsuro Ishibashi, Mr. Yoshitaka Morito, Mr. Ryosuke Shojima, Mr. Nikhilesh Giri) with conference chairperson Prof. Hemanta Hazarika

Photo 5: Prof. Stuart Haigh delivering his remarks

Photo 6: Prof. Osamu Kusakabe delivering his remarks Online

Photo 7: Chairperson of CREST 2023 delivering his welcome remarks

Photo 8: A glimpse of the technical exhibition

In the closing ceremony, Professor Kazuya Yasuhara (Honorary Chairperson, CREST 2023), Professor Gopal Santana Phani

Madabhushi (Co-chairperson, CREST 2023), and Professor Keh-Jian Shou (Vice-President, ISSMGE Asia) delivered their remarks, imparting a distinguished touch to the event. The main conference reached its finale with a vote of thanks delivered by Professor Hemanta Hazarika.

We also take immense pleasure in announcing that Springer Nature will publish four volumes of the conference proceedings, encompassing the general papers presented at this event. Additionally, a dedicated volume, also to be published by Springer, will showcase the keynote addresses and special lectures from the conference. Furthermore, selected papers from the conference will be featured in special issues of esteemed journals, including Soils and Foundations (Japanese Geotechnical Society), Journal of Forensic Engineering (Institute of Civil Engineers, UK), Indian Geotechnical Journal (Indian Geotechnical Society), and Journal of Sustainable and Resilient Infrastructure.

In the years ahead, we envision that the dissemination of cutting-edge information and technology facilitated by this conference will enable us to make meaningful contributions to the establishment of a resilient society and the sustainable management of construction resources through innovative practices.

As the Chairperson of the Organizing Committee for CREST 2023, I extend my heartfelt gratitude to Professor Osamu Kusakabe, Executive Director of IPA, for his invaluable advice and unwavering encouragement since the inception of CREST 2023. Professor Tatsunori Matsumoto, Vice President of IPA, has been a steadfast supporter, actively engaging with sponsors to ensure the success of CREST 2023. I extend my sincere appreciation to him for his remarkable contributions. Furthermore, I would like to express my gratitude for the outstanding contributions of the young members of IPA, notably Ms. Nanase Ogawa and Dr. Siavash Manafi K. Pasha (Photo 10), who played crucial roles in overseeing the overall management of the conference.

In conclusion, I would like to convey my sincere appreciation to every member of the organizing committee, steering committee, technical committee, and various other sub-committees of CREST 2023 for their steadfast support. The persistent dedication and invaluable contributions of the dynamic team (Photo 11) have played a crucial role in transforming the organization of this event from a concept into a reality, a fact for which, as the organizing chairperson, I am truly grateful.

Photo 9: ISSMGE's Bright Spark Lecture awardees

Photo 10: Session Chair handing over the certificate of appreciation to the theme speaker

Photo 11: CREST 2023 core team members

Event Report

EIT Tea Talk Seminar on Press-in Method in Thailand

Asasak Wetvimon

Giken Seisakusho Asia Pte., Ltd.
Thailand Representative Office

The EIT Tea Talk Seminar on Press-in Method in Thailand was held on December 20, 2023 at The Engineering Institute of Thailand (EIT). It was organized by Thailand Underground and Tunnelling Group (TUTG), Thai Geotechnical Society (TGS), The Engineering Institute of Thailand Under H.M. The king's Patronage in Collaboration with International Press-in Association (IPA). The seminar is held for haft day was attended by 83 people, including main-contractor, consultant, independent engineer, potential user, official user, government authority, university, developer and trading Company. The seminar covered Press-in Method, case studies and future applications by using Press-in Method in Thailand, and introduced IPA Activity and ICPE2024.

Program

Presentation 1	Opening Speech Prof. Noppadol Phien-Wej	Consultant of Thai Geotechnical Society (TGS)
Presentation 2	Foundation Construction in Urban Area Prof. Suttisak Soralump	Professor at Kasetsart University
Presentation 3	IPA Activity and ICPE2024 Prof. Tatsunori Matsumoto	Vice president of the IPA, an Emeritus Professor at Kanazawa University
Presentation 4	Brief Introduction of Press-in Method Mr. Asasak Wetvimon	Assistant Manager of Giken Seisakusho Asia Pte., Ltd.
Presentation 5	Press-in Method Case Studies about MRT Project in Thailand Dr. Pastsakorn Kitiyodom	Managing Director of ATT Consultants Co.,Ltd.
Presentation 6	Sheet Pile Press-in for the Excavation beside Historical Building Mr. Visanu Vivatanaprasert	Managing Director of Altemtech Co.,Ltd
Presentation 7	Press-in Method Case Studies about River Embankment Work in Thailand Mr. Chayutphon Chanphistsophon	Managing Director of Thai Fullmore Co.,Ltd.
Presentation 8	Future Applications of Press-in Method in Thailand Mr. Asasak Wetvimon	Assistant Manager of Giken Seisakusho Asia Pte., Ltd.

This was second time seminar on Press-in Method in Thailand. Even though second time but still has been receiving attention of those involved in this field. From seminar questionnaire, the most attended participants are engineer with the attend reason is interested in Press-in Method technology and SILENT PILER™ which this knowledge may be will be considered and applied in the future. This seminar was good opportunity to make this method be more well-known and also to update information regarding construction industry in Thailand.

Photo 1. Speakers

Photo 2. Prof. Tatsunori Matsumoto

Photo 3. Participant

Photo 4. Seminar day

Young Members

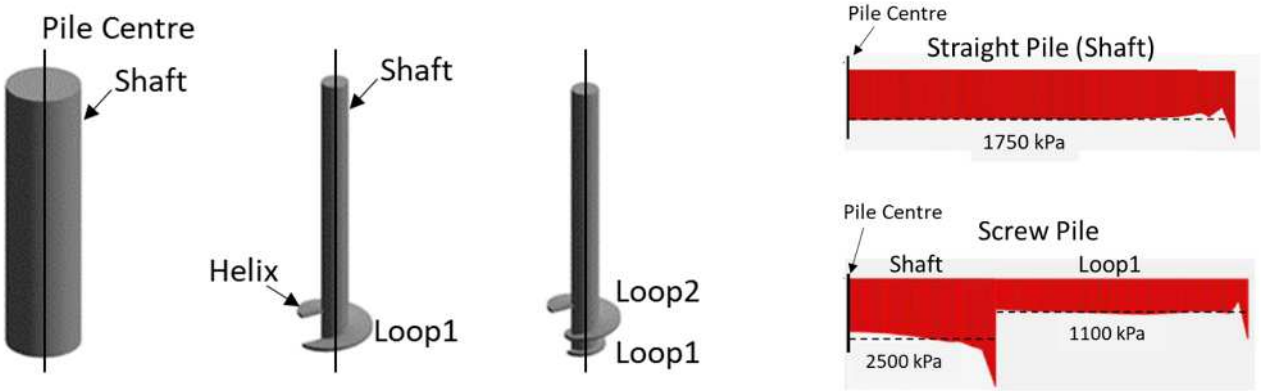
Pressure Distribution under Multiloop Screw Pile: A Numerical Study

Kaung Htet

Bachelor Student, College of Engineering, Science and Environment – Civil Engineering
Newcastle Australia Institute of Higher Education (Singapore)

I am Kaung Htet, from Myanmar. I completed my Diploma in Civil Engineering from the Building and Construction Authority Academy (BCAA) Singapore in 2018. Currently, I am a final year bachelor's student of Civil Engineering at the Newcastle Australia Institute of Higher Education (a wholly owned entity of The University of Newcastle, Australia, in collaboration with BCA Academy). I have fulfilled all course requirements and will finish the industrial attachment shortly. After developing a strong interest in geotechnical engineering throughout my academic career, I ultimately decided to focus my final year project on geotechnical engineering under the supervision and guidance of Dr. Adnan Anwar Malik.

As the final year project of my bachelor's program, I conducted numerical studies on bearing response and pressure distribution under multiloop single helix screw piles. The finite element code PLAXIS 2D models were generated to simulate the various piles (straight pile, single helix screw pile and multiloop single helix screw piles) to gain a deeper comprehension of the load transfer mechanism and pile response under compressive pressures. The created model was validated with published experimental data conducted on a model scale. The pile installation effect was not considered in experimental and numerical studies so that only the effect of the multiloop helix can be investigated. Toyoura sand was used in the experiments to develop the model ground, and its mechanical properties are validated in the numerical model. The linear elastic model was considered for piles, whereas the hardening soil model with small strain was considered for the soil.



(a) (b) (c) (d)

Figure 1. 3D perspective of various piles and pressure distribution (a) Straight pile, (b) Single helix screw pile, (c) Multiloop single helix screw pile, and (d) Pressure distribution under pile tip based on Ho et al., 2022 study, https://doi.org/10.1061/(ASCE)GM.1943-5622.0002520

In terms of bearing response, it is observed that the performance of the straight pile is better than that of the screw piles (single/multiloop helix) under similar pile tip diameter. When comparing the bearing response of screw piles, i.e., single loop and multiloop, no significant difference was observed.

Regarding pressure distribution, the average pressure under the straight pile (Figures 1a, 1d) was uniform. Whereas the pressure distribution under the screw pile (Figures 1b, 1d) was not uniform, i.e., higher under the central shaft than the helix. When comparing the pressure distribution of screw piles, i.e., single loop and multiloop, multiloop screw pile pressure distribution was closer to the straight pile (Shaft ≈ 1750 kPa; Loop1 ≈ 1550 kPa; Loop2 ≈ 1300kPa), which is a more stable condition concerning helix bending. Further studies are required, especially the inclusion of installation effects, to fully investigate the effectiveness of multiloop single helix screw piles.

Announcement

Recent Highlights in the Press-in Piling Industry

IPA Secretariate

Certification as a "DX-Certified Operator" by the Japanese Ministry of Economy, Trade and Industry

News Articles by GIKEN LTD.

On December 1, GIKEN LTD. (Head Office: Kochi, Japan; President and CEO: Atsushi Ohira) was certified as a "DX-certified operator" by the Japanese Ministry of Economy, Trade and Industry due to its active engagement in Digital Transformation (DX). (Read more: https://www.giken.com/en/news-cat/release/22_dec_2023/)

Event Diary

Title	Date	Venue
■ **IPA Events** https://www.press-in.org/en/event		
The Third International Conference on Press-in Engineering (ICPE 2024)	3-5 July 2024	Singapore
■ **International Society for Soil Mechanics and Geotechnical Engineering** http://www.issmge.org/events		
7th International Conference series on Geotechnics, Civil Engineering and Structures (CIGOS)	4-5 April 2024	Ho Chi Minh City, Vietnam
International Conference on Geotechnical Engineering (ICGE'24)	25-27 April 2024	Hammamet, Tunisia
8TH INTERNATIONAL CONFERENCE ON EARTHQUAKE GEOTECHNICAL ENGINEERING (8 ICEGE)	7-10 May 2024	Osaka, Japan
11TH INTERNATIONAL SYMPOSIUM OF GEOTECHNICAL ASPECTS OF UNDERGROUND CONSTRUCTION IN SOFT GROUND (IS-MACAU 2024)	14-17 June 2024	Macao
7Th International Conference on Geotechnical and Geophysical Site Characterization	18-21 June 2024	Barcelona, Spain
■ **Deep Foundations Institute** https://www.dfi.org/events/		
Conference on Foundation Decarbonization and Re-use	28-30 May 2024	Amsterdam, Netherlands
SuperPile 2024	12-14 June 2024	San Francisco, California
DFI 49th Annual Conference on Deep Foundations	7-10 October 2024	Aurora, Colorado

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Japan

Editorial Remarks from persons in charge

A warm welcome to the IPA Newsletter, Volume 9, issue 1. We hope you will find interesting and valuable information in this newsletter issue. On behalf of the persons in charge, I wish to express my appreciation to the authors and the secretariat for their outstanding contributions to this issue.

Following the previous issue, this issue will guide readers to explore the 'RED HILL 1967' architecture in Akaoka-cho, Japan, and introduce new structures constructed using the "Implant Method," employing the "SILENT PILER" and "GRB System." Also included in this issue is a report on recently held international conferences, including the 5th Geotec Hanoi in Vietnam and the 2nd CREST in Japan, together with the seminar on the Press-in method held last December 2023 in Thailand.

I would also like to remind you that the 3rd International Press-in Conference is coming on 3-5 July 2024. The theme of this international conference is 'Superiority of press-in piling towards sustainable construction in tackling climate change for infrastructure development.' We look forward to your participation at the conference (https://2024.icpe-ipa.org).

We wish you all the best, and thank you for reading the newsletter.

Vu Anh Tuan

Adnan Anwar Malik

Daisuke Hirose