Vol. 65, 2024 Spring issue

JSPE Magazine Quarterly

The Japan Society of Professional Engineers

Special Feature

- Takenori Baba PE Receives the Ministry of Economy, Trade and Industry's Industrial Standardization Project Award

— JSPE Magazine Spring Contents —

Cherry blossoms in Hirosaki Castle Park

It is a cherry blossom that represents Japan. It is said that cherry blossoms bloom more densely and densely than in the south, because the annual branch growth is slower in the north of Japan. Hirosaki Castle Park is located in Aomori Prefecture, the northernmost part of Honshu, and is in full bloom around Golden Week. Why don't you stretch your legs once and see for yourself?

Special Feature: Takenori Baba PE Receives the Ministry of Economy, Trade and Industry's Industrial Standardization Project Award

PE-0024 Masahiko Tsuchiya

令 和 5 年 度
産 業 標 準 化 事 業 表 彰 式
経 済 産 業 省
令和5年10月17日

Award ceremony (Baba PE on the right)

On October 17, 2023, PE Takenori Baba, a JSPE member currently stationed in Düsseldorf, Germany, received the International Standardization Encourager Award from the Ministry of Economy, Trade and Industry.

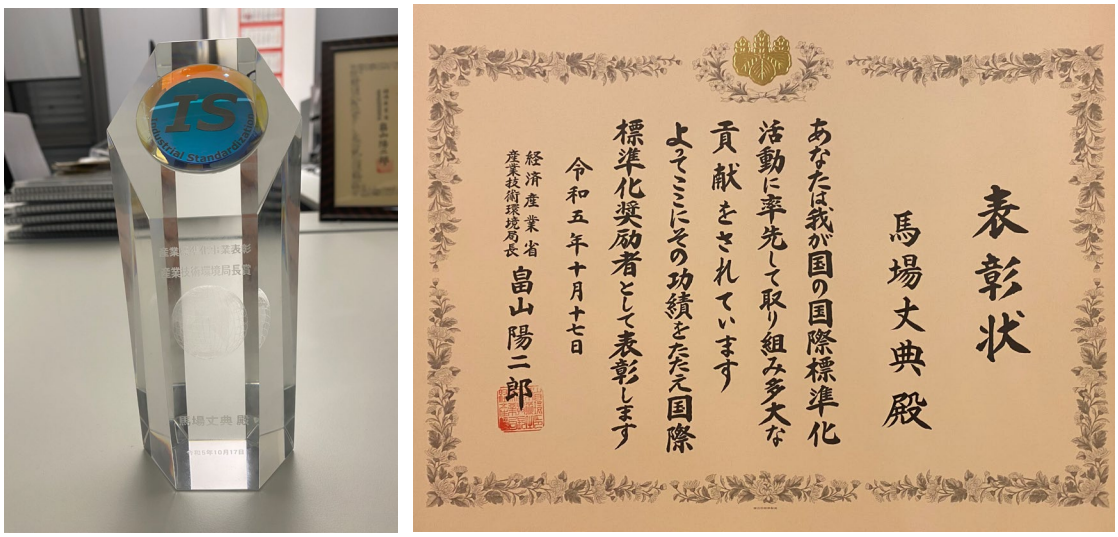
The reason for the award states that he has contributed to improving Japan's voice in ISO and IEC through the personal connections and knowledge he has cultivated, and that he has been instrumental in supporting Japan's standardization proposals and canceling proposals that are detrimental to Japan as the secretary of several national committees.

The area of activity of Baba PE is the international standardization of industrial communication technology, and it is the backbone of the so-called "manufacturing DX" that the Japan and German industries are focusing on. "Industry 4.0" is a group of policy measures announced by the German government and the German Academy of Engineering in 2011 by industry, government, and academia to promote the use of data in industry, and constitutes the design principles of "smart manufacturing" in Germany. Similarly, the Japan government has been advocating "Society 5.0" since 2016 in accordance with the Basic Plan for Science and Technology. Both Japan and Germany

are promoting competition and collaboration in order to gain superiority in the future industrial technology base, with standardization as one of the axes. In the past, there have been many cases where Japan has missed out on market opportunities due to inferiority in standardization and value chain construction, even if it has an advantage in technological capabilities, but it is said that one of the keys to overcoming this is the existence of individuals with high cross-cultural communication skills and specialized competence as engineers.

In addition, international standardization is not only for the protection of corporate interests, but also contributes to the public interest by being "an activity to establish descriptions for common and repeated use with respect to existing or likely problems for the purpose of obtaining optimal order in a given situation" (ISO/IEC Guide2). Therefore, it is also an activity in which the qualifications of a PE are strongly questioned.

Our Values in JSPE's VISION 2030 are described as "Encouraging engineers to acquire PE qualifications that will lead to independent and independent engineers who can collaborate widely around the world, respected engineers who solve social issues, and cross-border initiatives." It is an important value for us and a guidepost that shows us the direction we should take, but when we are buried in our busy daily lives, it is easy to forget. Winning the Baba PE award was a great reminder of this once again.



Trophy and testimonial

2 PE registration/renewal, FE/PE exam passing

Members who have newly registered as PE or passed the FE/PE examination are as follows. Congratulations to all of you!

*Autumn 2018 Issue (Vol. 2018) The text of the experience from 43) is posted on the web.

https://www.jspe.org/member/magazine/magazine-index/

* Some browsers may not be able to open files properly. If there is problem, please try opening the file again in a different browser.

(Compatible browsers: Google Chrome, Microsoft Edge, Internet Explorer)

* The latest exam information and the path to passing and registration are very valuable information, so if you are a member who can provide information, please contact the Public Relations Subcommittee (public.2007@jspe.org).

PE Testing

Membership Number identity	field	Date of examination	Testimonial URL
PEN-0240 Kohei Hamada	Electrical and Computer	2023/11	https://www.jspe.org/member/wp-content/uploads/sites/2/2024/03/2023_PE_Power_Electrical_CBT.pdf
PEN-0241 Takuya Okamoto	Civil	2022/10	https://www.jspe.org/member/wp-content/uploads/sites/2/2024/03/2022_PE_Civil_Structure_CBT.pdf
PEN-0242 Atsuro Yamazaki	Chemical	2023/11	https://www.jspe.org/member/wp-content/uploads/sites/2/2024/03/2023_PE_Chemical_CBT.pdf

3 Ethics

ON ETHICS: YOU BE THE JUDGE
Fall 2023
Good Samaritan Law Protections
On Ethics: You Be the Judge
What are a PE's ethical obligations when volunteering during a natural or man-made disaster?

SITUATION Engineer Martin, a registered professional engineer in State Z, is discussing with colleague Engineer Lee a recently enacted law in their state that provides design professionals with immunity from liability when they volunteer during a natural or man-made disasters. Engineer Lee believes the new law significantly improves the ability of design professionals to assist communities in need during times of trouble; Engineer Martin feels that the new law does not change an engineer's ethical obligations.

NYSSPE STATED: WE KNOW THAT MANY OF OUR MEMBERS WANT TO VOLUNTEER, BUT WHEN DOING SO, PLEASE REMEMBER THAT VOLUNTEERING IS NOT WITHOUT RISK.

What Do You Think?
Is Engineer Martin or Engineer Lee correct?

What the Board of Ethical Review Said
Engineers, like other professionals, have a history of performing pro-bono work. As litigation has become more prevalent in our society, some engineers have become reluctant to lend their time and expertise to volunteer work. When a "Good Samaritan" law was proposed in Ohio's 2015 legislative biennium, NSPE indicated that professional

2023 年秋
グッドサマリタンズ法による保護
あなたが審判
自然災害もしくは人為災害時のボランティア活動を行なっている時の PE の倫理的義務

状況
Z 州に登録している PE Martin は同僚の PE Lee と最近 Z 州で立法化された法律について議論した。その法律では自然災害もしくは人為災難のボランティア活動を行なっている時、設計専門の PE は免責される。

この法律は PE Lee は災害や災難の時に地域を支援する設計専門の PE の能力を大幅に向上させる法であると考えた。
一方 PE Martin は新しい法律が立法化されても技術者倫理の責務は変わらないと考えた。

ニューヨーク PE 協会は以下のように述べている。
多くのメンバーがボランティア活動を希望していることは承知しているがボランティア活動にはリスクを伴うことがあることを念頭に置いてほしい。

あなたはどう考えるか
Martin と Lee どちらが正しいか。

倫理委員会の見解
PE は他の専門家と同様に無報酬の活動の歴史がある。訴訟が社会において一般的になるにつれて、技術者は彼らの時間と専門性をボランティア活動に提供することに慎重になってきた。
サマリタンズ法が Ohio 州の 2015 隔年州議会で提案された際に、NSPE は地域、州、又は国の災害や災難時に適切な政府機関からの依頼によってボランティ

engineers who voluntarily assist their communities, states, and the nation in times of crisis, when requested by the appropriate public official, should be protected from liability exposure when performing these duties.

ア活動に参加する PE は、彼らの業務を遂行する際に法的な責任から保護されるべきであると述べた。

In testimony to the Ohio Legislature regarding this bill, AIA Ohio's immediate past president stated that architects are unable to volunteer in emergencies because of their status as licensed professionals - they risk losing their licenses if they offer opinions on damaged structures if contractual language is not in place.

この法案に関するオハイオ州議会への証言において、AIA Ohio の前会長は、建築家はライセンスを持つ専門家としての地位からくる制約のため、緊急時にボランティア活動ができないと述べた。彼らは、契約文言が整っていない場合、損傷した建造物について意見を述べるとライセンスを失うリスクがあるためである。

Similarly, a February 2013 article about New York's Volunteer Protection Act, the NYSSPE stated: We know that many of our members want to volunteer, but when doing so, please remember that volunteering is not without risk.

同様に 2013 年 2 月のニューヨークボランティア保護法についての記事によれば、ニューヨーク PE 協会は以下のように述べている。
多くのメンバーがボランティア活動を希望していることは承知しているが、ボランティア活動にはリスクを伴うことがあることを念頭に置いてほしい。

The Code of Ethics encourages engineers to contribute to their community; lending skills during a disaster is certainly work for the advancement of the safety, health, and well-being of their community. Note too that an engineer's ethical obligations to their employer allow accepting outside work consistent with employer's policies and prohibit use of the employer's equipment for outside activities without the employer's consent.

NSPE 倫理規範では、公共への貢献を奨励しており、災害や災難が発生した場合、PE が専門の技術を提供する事により、確かに公共の衛生、安全、及び福祉の向上が計られる。
また、PE は雇用主に対し、その方針に沿った外部活動にのみ従事し、またその機材を外部活動に許可なく使用しない、という倫理的義務を負っていることにも留意しなければならない。

Professional obligation III.8 speaks directly to seeking indemnification for professional activities. BER Case 96-12 deals specifically with this section of the code of ethics (as does related BER Case 93-8). Both cases have similar language regarding accepting responsibility for professional services.

PE の責務として NSPE 倫理規範 III.8 では、PE の専門的活動に対する補償を求める事が述べられている。NSPE 倫理審査委員会事例 96－12 は同 93－8 と同様に本事例と同じ倫理規範の項を取り扱っている。
両方の事例でも専門的なサービスに対する責務を受け入れるという点で類似した言葉を使われている。

Quoting from BER Case 93-8: A basic tenet of ethical conduct relates to the obligation of the engineer to accept responsibility for professional services that the engineer renders. This tenet is based upon the view that as a member of a learned profession, an engineer possesses skill, knowledge and expertise and is expected to use those attributes for the betterment of mankind. Engineers, through the enactment of engineering licensing laws and other legal restrictions, are granted the authority to practice their profession to the exclusion of others. As a result of this grant of authority, the law expects licensed engineers as they do other professions to perform professional services in a non-negligent manner. In addition, as with other professions, engineers are also expected to be personally liable for their acts, errors, or omissions in the performance of their professional services.

BER Case 93-8 からの引用。[倫理的行動の基本原則は、PE が提供する専門サービスに対する責任を受け入れる義務に関連する。]

PE のライセンス法やその他の法的制約の制定により、PE は他者を排除して自らの職業を実践する権限を付与されていが、この原則は、学問を身につけた専門的職業者の一員として、PE は技術、知識及び専門性を有しそれらの特質を人類の向上に役立てる事を期待されているという観点に基づいている。

この権限の付与により、法律は PE に対して他の専門職と同様、過失のない専門サービスの提供を期待している。
さらに他の専門職と同様に、PE は専門サービスの提供における行為、誤り又は怠慢について個人的な責任を持つことを期待されている。

BER Case 96-12 notes that "engineers typically address issues of liability through a variety of risk management techniques such as insurance, contract document language and other professional practice considerations. NSPE's website includes an informative section discussing liability of employed engineers, but note that an engineer, volunteering during a disaster is likely not "employed." The Good Samaritan laws provide a crucial risk management tool for practicing engineers when their normal risk management techniques do not apply.

NSPE 倫理審査委員会事例 96－12 によれば PE は責任遂行に対して保険や契約文言や他の専門サービス実践における考慮事項などの種々のリスク管理技術を通じて責任問題に対処している。

NSPE の WEB サイトでは雇用された PE の責任についての情報は含まれているが、災害時にボランティア活動している PE はおそら「雇用されていない」ことに注意が必要である。
グッドサマリタンズ法は通常業務のリスク管理が適用されない場合に、ボランティア活動を行う PE に対して重要なリスク管理ツールを提供する。

With or without indemnification, an engineer's primary obligation is to the public health, safety, and welfare. Further, although an engineer may be held harmless before the law when making decisions during public emergencies, they are

免責の有無に問わず、PE の基本的責務は公共の健康、安全及び福祉にある。
さらに、PE は公共の災害発生時での意思を決定するときに法律上では PE は無罪になるかもしれないが
彼らの専門分野で実践し、誠実に行動することを求められる。

committed to practice only in areas of competence and must conduct themselves honorably. Good Samaritan laws do nothing to change these obligations, and in fact, taken to the extreme, they might lead an engineer without sharp ethical presence of mind to attempt a task they would ordinarily conclude they are not qualified to undertake. In the end, the BER concludes that although these Good Samaritan laws serve a tremendous practical benefit, they do not relieve engineers of ethical obligations.

グッドサマリタンズ法によってもPEの責務は変わらない。むしろ極端な場合、通常は請負う資格がない業務に対しても鋭い倫理的な判断力を持たずに取り組もうとする可能性がある。
結局、倫理委員会はグッドサマリタンズ法は実用的な利益もたらす一方、PE の技術者倫理から解放するものではないと結論づけている。

Conclusion
Both Engineer Martin and Engineer Lee are correct. Although Good Samaritan laws may make it easier to volunteer during natural or man-made disasters, they do not change an engineer's ethical obligations.

PE Martin 及び PE Lee の両者の考えは正しい。
グッドサマリタンズ法は自然災害もしくは人為的災害が発生したときにボランティアに参加しやすくしているが、PE の技術者倫理の責務を変えるものではない。

NSPE Code References
I.6., II.1., II.2., III.2.a., III.6.b., III.6.c., III.8.

NSPE Code References
I.6., II.1., II.2., III.2.a., III.6.b., III.6.c., III.8.

For more information, see Case No.21-8 at www.nspe.org/BER.

更なる情報は Case No.21-8 を参照のこと。

Translate PE0081 H.Kanno
Translation Supervisor PE0145 Y.Suzuki

翻訳：PE0081 神野
監訳：PE0145 鈴木

<Ethics reviewer comments on this NSPE article>
This case is a topic of exemption from liability for volunteers who make use of their expertise. Engineers working for Japan companies rarely compensate individuals in the event of a complaint, but in the United States, PEs are said to be responsible for the work they are responsible for and must also compensate. I thought PE was a risky job. However, this paper explained that various risks such as insurance and contract wording are used for PE compensation, and I was able to understand how to avoid PE risks.

4 Communication from JSPE-1: Introduction to NCEES Topics

Yu Suzuki (PE-0145, Electrical)

This time, we will introduce topics from the October and December 2023 issues of NCEES' web magazine "Licensure Exchange" and the February 2024 issue that may be especially useful for PE and PE examinees in Japan.

October-2023-LEx-flip.pdf (ncees.org)
December-2023-LEx-flip.pdf (ncees.org)
February-2024-LEx-flip.pdf (ncees.org)

After an annual general meeting, NCEES is **launched under the leadership of a new president, Laura Sievers.** In the article, he mentions that "I graduated from university and took the FE exam in 2003." In other words, he is a young chairman who has only been around for 20 years since graduation. That's why he's so ambitious, saying, "I'm sorry to all the past presidents, but I hope that my year as president of NCEES will be the best year for NCEES." She is also a mom to three sons aged 10~15.

"A month-long engineering camp I attended as a kid sparked my interest in engineering," says Laura Sievers, P.E., the new president of NCEES.

Sievers says he **wants to accomplish three things:**

1. Inspire many people
2. Educate a lot of people
3. Create a desire to get a license

When he was a child, he was strongly interested in engineering when he participated in an "engineering camp" held by the university with the support of a company for one month. This is an initiative that is unlikely to be possible in Japan, where the summer vacation period is short. In introducing this article, I would like to pick up and introduce articles from the perspective of "expanding the base of engineering" as much as possible.

This time, I would like to introduce this article.

1. **Promoting the professions by NCEES staff and FE Ambassadors** (October pp.4-5 "NCEES staff and FE Ambassadors promote the professions at local outreach event")
2. **ARPL research illustrates the importance of licensure to businesses** (December issue, pp.1, 3, "ARPL research illustrates the importance of licensure to businesses")

3. Navigating global opportunities: International mobility for professional engineers (December issue, pp. 5, 11 "Navigating global opportunities: International mobility for professional engineers")

4. NCEES moves forward with CEO succession plan (February, pp.1, 3 "NCEES moves forward with CEO succession plan")

1. Professional promotion by NCEES staff and FE Ambassadors

For the second year in a row, NCEES participated in local outreach and **was a Gold Sponsor of the iMAGINE Upstate STEAM Festival in Greenville, South Carolina.** This is an annual South Carolina program at Clemson University that aims to popularize math and science together. It showcases career paths in education and science, technology, engineering, arts, and mathematics (STEAM) through the annual STEAM Festival. I think it's a form of event that is hard to see in Japan.

"FE Ambassadors" who carry out activities to encourage students to take an interest in engineering.

NCEES staff and FE Ambassadors worked to give participants hands-on experience in engineering. **The FE Ambassadors are representatives of students involved in engineering-related activities and are comprised of university students, including those from other states.** They have been training in Greenville beforehand, and they are also participating in the program at the STEAM Festival. With the support of FE Ambassadors, NCEES staff introduced children to the activities of designing earthquake-resistant structures at the festival. Toothpicks, foam plastic balls, and gumdrops were used to build the structure, and an earthquake was simulated and verified on a shaking table. **Staff members explained the field of engineering and surveying and the role of licensing to the audience, including children, and FE Ambassadors talked about why they chose their engineering field.**

NCEES staff and FE Ambassadors were involved in engineering promotion activities

iMAGINE Conducts Engineering Promotion Activities Throughout the U.S.

iMAGINE Upstate was a great opportunity to interact with the local community and provide a STEAM learning experience. NCEES has successfully completed its activities with the help of FE Ambassadors and increased interest in the engineering and surveying professions. STEAM activity ideas and resources are available on the iMAGINE website at

iMAGINE Home - iMAGINE STEAM (imaginesteamsc.org). If you look at this website, you can see that various engineering promotion activities are being carried out in various places. In Japan, the term "engineering promotion" is associated with enlightenment and educational activities for people who have already entered the field, but I think there is much to learn from the efforts of the United States.

2. ARPL Survey Shows the Importance of Licensing to Businesses

In early October, David Cox, CEO of NCEES, attended the CEO briefing of the Alliance for Responsible Professional Licensing (ARPL) in Washington, D.C., and reflected on the work of ARPL with fellow leaders of licensing societies around the world. We **discussed the growing headwinds against licensees**. NCEES supported the establishment of ARPL in 2019.

Reducing or relaxing licensing rights at the expense of public safety

Currently, there **is a movement to take away the authority to manage license holders from state boards and delegate decision-making power to the agents who oversee them.** This includes efforts to address labor shortages, but it must not come at the expense of the public by relaxing licensing requirements. ARPL conducted a survey for companies explaining the importance of licensing, and the results showed concerns about a decrease in trust in the competence of professionals, increased public risk, and rising insurance premiums. There are also indications that licensing preserves and improves business reputation.

Promote activities that protect licensing rights and lead to the benefit of the public.

The ARPL will facilitate discussions about the importance and responsibilities of licensed individuals to companies and will continue to engage in "mini-ARPLs" at the state level in the future. **NCEES and ARPL have created a toolkit to educate local legislators on licensing requirements and processes for engineers and surveyors, demonstrating their willingness to actively address licensing issues to protect the public.** The importance of public safety and hygiene is not easily recognized until a major accident or event occurs. In Japan, where natural disasters are common, the credibility of professionals is more important than in the United States. I would like to work toward a world where these things are even more recognized.

Some of the ARPL's findings. It reflects the opinion that it is important to obtain and exercise

3. Navigating Global Opportunities: International Liquidity for Professional Engineers

For professional engineers, it is becoming increasingly important to travel and play an active role across countries. The recent debate between U.S. President Joe Biden and British Prime Minister Rishi Sunak focused on providing professional engineering services to each other, highlighting the opportunities and challenges engineers face.

PATTY MAMOLA, P.E.
EXECUTIVE DIRECTOR NEVADA STATE BOARD OF PROFESSIONAL ENGINEERS AND LAND SURVEYORS

Patty Mamola, P.E., Executive Director of the Nevada Board of Engineers, advocates for promoting cross-country activities for engineers.

U.S. and U.K. efforts to promote mutual recognition of qualifications.

During the talks, the strengthening **of economic ties between the United States and the United Kingdom was discussed, including facilitating the easier way for engineers to provide services to each other across the Atlantic, and emphasizing mutual recognition of qualifications and standards.** For cross-border travel, NCEES manages licensing standards for U.S. engineering professions and supports international mobility. For engineers, there are many benefits to traveling across countries, including promotion, global networking, cultural enrichment, and economic opportunities.

NCEES' Global Strategy to Promote Recognition of U.S. Qualifications and Standards

However, there are challenges, such as licensing requirements, cultural differences, and language issues. NCEES addresses these issues by promoting standardization and advocating for mutual recognition agreements. Engineers working across borders can help them participate in global projects, grow professionally, and network and collaborate internationally. **NCEES strives to promote international professionalism and support international mobility for engineers, promoting recognition of U.S. engineering qualifications and standards in the international arena.** As we move toward a future where engineers are active, it is hoped that the engineering profession will continue to contribute and advance their skills on a global scale, remembering that the engineering profession acts as an international bridge and a link between ideas and expertise.

On the relationship between politics and engineering

I presume that the discussion between the two leaders took place on the occasion shown in this linked article. Biden, Sunak Announce Partnership on Clean Energy, New Technologies (voanews.com)It may seem like a highly political move to see China as a rival and jointly protect technology, but the result is to promote international cooperation in engineering. I have mixed feelings about the strong influence of politics on engineering, but **I would like to work hard to ensure that Japan is not isolated or neglected in engineering.**

4. NCEES is in the process of succeeding the CEO

In November 2022, current CEO David Cox announced plans to step down in October of this year, and NCEES shared its CEO succession plan. **Effective October 1, 2024, NCEES Chief Operating Officer Davy McDowell (PE) will succeed him as CEO.** Mr. McDowell, who has been with NCEES since 1999 and has served as COO since 2009, has a reputation for having the ability to steer NCEES in the right direction. Mr. Cox asked Mr. McDowell a few questions about himself and his new role. Here's the exchange:

Davy McDowell, P.E.

① **When did you join NCEES?**

I joined NCEES in October 1999 as a Technical Assistant, a position that was later renamed Test Development Engineer.

② **From your point of view, how has NCEES changed over the years?**

As an organization, we don't move at a fast pace. But for 24 years, I've seen exams go from subjectively graded essay questions to multiple-choice questions and now computer-based. During that time, the staff has almost doubled. When we joined NCEES, we felt that we were a reactive organization. Currently, we actively seek involvement from our Membership Board and foreign organizations, and we are constantly looking for ways to realize our vision and mission of developing software tools and improving the licensing of engineers and surveyors.

③ **What is one lesson you've learned from your tenure as COO that you'd like to apply to your new role?**

When we all actively work to make the organization better, it gets better. In other words, I know that surrounding myself with the best people gives me the best chance to succeed and help the organization grow.

④ **What challenges do you need to address as CEO of NCEES?**

One of the challenges is to ensure that the licenses (and exams) for engineers and surveyors remain relevant. It seems that legal issues are happening more often now than before. I would venture to say that if CEO Cox had been asked this question when he took office, he would not have given an answer that would have brought limitations, such as the response to a global pandemic. To answer the question, I will keep in mind the tenet of "be flexible, don't panic, move forward" and face whatever difficulties you face the next time.

⑤ **What are you most excited about about the future of licensing?**

I think there are some untapped opportunities lying dormant there. We want to become a forward-thinking organization and look for ways to strengthen and expand the licensing of engineers and surveyors.

⑥ **If you could name one thing about yourself that others might not know, what would it be?**

I've been active for so long that I feel like most people know everything about me. But while I love to travel and hike in national parks, my wife and I raised three very smart daughters, all of whom were engineers.

5 Member's Communication-1: Trip to the Seto Nai Kai (Part 2)

PE-0083 Hidemi Yanagi

In 2022, I took advantage of the summer vacation to go to the summer session of the Setouchi International Art Festival (hereinafter abbreviated as Seto Gei). (For the 2019 Autumn Session, please refer to my article "Trip to the Seto Nai Kai (Part 1)")

Last time, I went to five islands, Teshima, Inujima, Megijima, Ogijima, and Oshima, based in Takamatsu in Kagawa, but I couldn't enter the Teshima Museum of Art, so this time I really wanted to go to the Teshima Museum of Art, so I decided to narrow it down to two islands, Teshima and Naoshima, based in Uno in Okayama.

I can't write about it in detail because I don't want to spoil it (I don't think you will be discouraged when you go), but I will write it as a personal impression. The harmony with nature on the exterior is also wonderful, but you can't understand the mysterious sensation of stimulating the five senses inside until you actually go to the Teshima Museum of Art. Even though I had been involved in concrete construction for more than 30 years, it felt completely different. I don't see anyone leaving early. Everyone sits, lies down, and changes places as they please, feeling this mysterious space with their whole body.

The designer of this building is Mr. Ryue Nishizawa, who has won the Pritzker Prize, which is said to be the Nobel Prize of the architectural world. I was curious about who made this ultra-flat RC shell structure with a low rise that resembles a water droplet, so I bought the official guidebook. There was a structural analysis by Mr. Mutsuro Sasaki, a well-known architectural structural artist, and it was stated that Kajima Corporation was in charge of the construction by gathering the best of technology. In order to construct an RC frame with a curved structure with no straight lines at all, a temporary embankment was constructed, and concrete with a thickness of 250 mm was poured by placing a leveling concrete on top of it. It is said that it was built by the procedure of scraping the soil of the embankment from the opening and removing it after curing.

The Chichu Art Museum in Naoshima was also amazing. This was designed by Tadao Ando, but in order to harmonize with the surrounding environment, the structure is excavated and backfilled after the structure is constructed so that the structure does not come out of the ground as much as possible. Still, the natural lighting is superbly done, and the space itself becomes an art.

The art exhibition at Seto Gei is not lined up in an air-conditioned museum exhibition room, but the space itself is used as art, and the abandoned house itself is part of the art exhibition on a depopulated island, which is a wonderful point that sets it apart from ordinary museums in urban areas. In Naoshima, the public bath "I-yu♡" is also an art exhibition, and there is also an archive exhibition of island life at "Miyaura Gallery 6th Ward". I think that the indescribable charm of Seto Gei is that art is not something special that is separate from everyday life, but that contemporary art blends into the life of the place. When I come here, I feel that the sea and rivers are not something that divides people, but something that connects them. This is especially true when you consider the land borders that humans have arbitrarily drawn and their futile battles for positions.

It just so happened that my college classmate was back at his parents' house in Uno, so I visited him and had a BBQ with him under the full moon. He said that he never imagined that the islands of the Seto Inland Sea would become a place visited by so many tourists (and before the Corona disaster, mainly foreigners).

After the trip, I bought and read a new book I found at Miyaura Gallery 6th Ward, "Hiraku Bijutsu: Restoring the Connection between Communities and Humans (by Fram Kitagawa)." What may be a matter of course for the people of the area is a fresh and different space and extraordinary for those who come from another place (especially in urban areas), and I think that people have a fundamental desire to encounter such things. If you are in an environment where you know, you may feel less anxious and safer, but you can't eliminate your curiosity to see, know, and feel more things.

"Learning from others," "Learning from books," and "Learning from travel" have now become my mottos.

6 Member's Communication-2: JSPE Education Subcommittee Facility Tour

PE-0079 Yoshiki Yamamura
PEN-0232 Chika Miwada

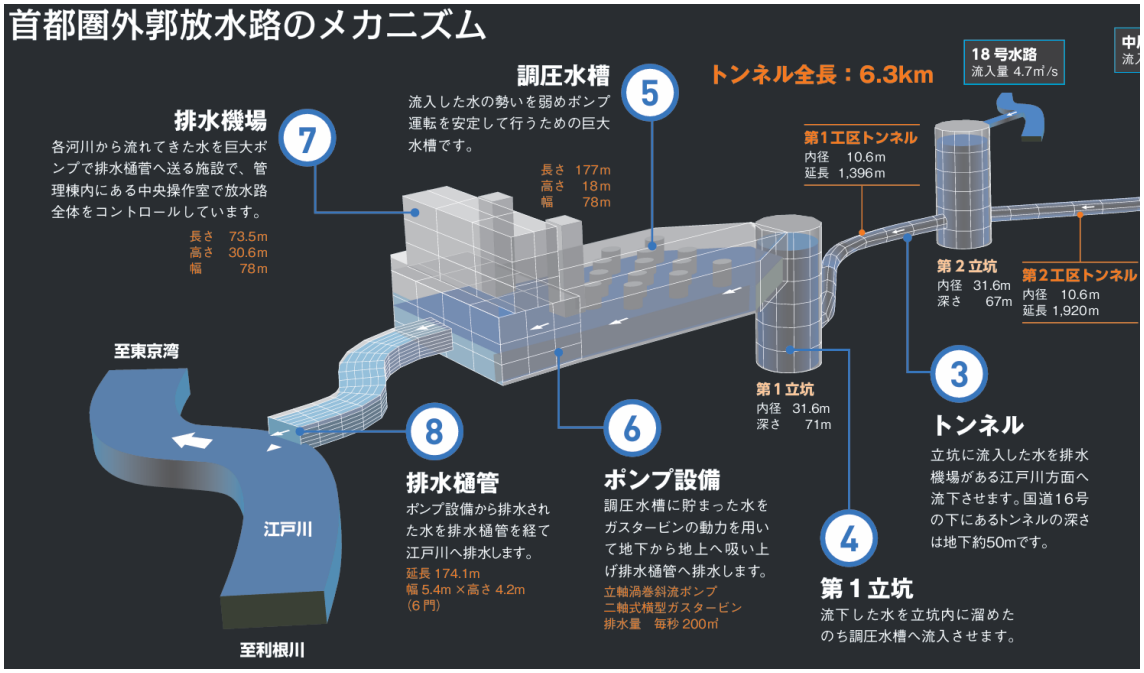
- Destination: Metropolitan Area Outer Spillway Shaft Experience Course
- Location: Kasukabe City, Saitama Prefecture Showa Drainage Station (Ryu Q Building)
- Organizer: Ministry of Land, Infrastructure, Transport and Tourism Kanto Regional Development Bureau Edogawa River Office
- Date of visit: Reiwa 6 (2024) February 10 (Fri) 15:00~17:00
- Participants: Inaba (JSPE Director), Miwada (PEN Member), Yamamura (PE Member) (3 members) in total (In no particular order; alphabetical order)
- Participation fee: 3,000 yen (actual cost, participant to pay)

The Education Subcommittee of the Association announced a tour of the facilities, and three interested people bravely participated. This is because the catchphrase of this spillway is "Japan's world-class disaster prevention underground temple", and as soon as the call for participation was announced, it was so popular that it was filled with applicants. Since it was the New Year's Day of the Lunar New Year, there were participants from China.

However, since the tour location is far from the city center (about 2 hours) and the participation fee is the actual cost, the number of participants from our association was three. A total of about 20 participants were first guided to the exhibition room on the second floor of the main building (commonly known as the Ryu Q Building), which was set up directly above the drainage station, which consists of four huge drainage pump facilities. The building photographs, guide maps, location maps, pressure control water tanks, and connecting shafts are shown below.

Photo of the Ryu Q building guide map

Location map of the Tokyo Metropolitan Area Outer Spillway



Pressure control water tank and connecting (first) shaft

[Central Control Room] (Next to the exhibition room)

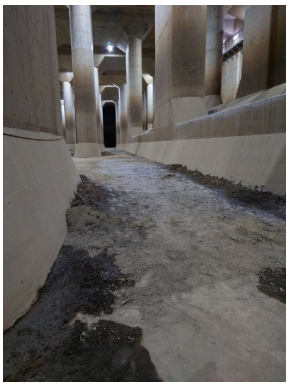
The tour began with the question, "What are the three rivers under the jurisdiction of the Edogawa River Office?" It was easy to understand the explanation using the satellite photo map of the river basin drawn on the floor of the exhibition room, the 1/8 model of the spillway, and the 1/8 model of the pumping equipment. In the model, there were three pumps in parallel, but in fact four pumps are installed. The pump manufacturer is Ebara Corporation, a company that I am familiar with as a supplier of fire extinguishing pumps (Miwada). Although the total head is 14 m, which is about 5~1/10 of a general fire

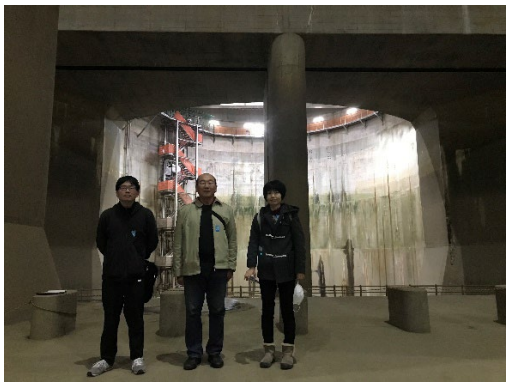
extinguishing pump, the output is 10,300 kW, which is 200~2000 times that of a fire extinguishing pump. Speaking of greed, I would have liked to see the pump performance curve here... If you think back to the fact that this pump is used to slowly drain the stored water into the Edo River after the heavy rain has subsided, you can better understand the size of the Nakagawa and Ayase River basins and the horror of heavy rains.

Central control room: The monitor screen is live video. A TV program filmed here is introduced below. (Inaba)

[Pressure Control Water Tank] (Disaster Prevention Underground Temple)

He explained that there are a total of 59 small-sized pillars with a height of 18 m, a depth of 7 m, and a width of 2 m, and that the reason for the small-sized pillars is to prevent Karman vortices from forming behind the pillars both when sending water toward the Edogawa River and returning it to the tunnel. The composition of the concrete for the aquarium and pillars is not disclosed, but it is said that it is stronger than for ordinary aquariums. The explanation was that the sediment flowing into the tank would be carried out by heavy machinery and manual work, but the sediment remaining in the corner looked beautiful even though it was dry. The air in the tank was refreshing, but it seems that there is no special ventilation and deodorizing device, and it seems that it is well managed on a daily basis.

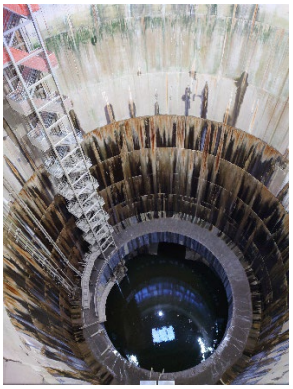
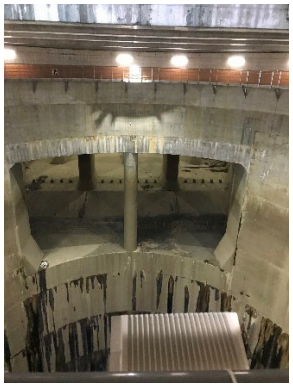




Sediment in the corner of the tank / Small-sized pillar (upper and lower limits of the water level) / At the connection with the first shaft (Inaba, Yamamura, Miwada)

[First Standing Pile]

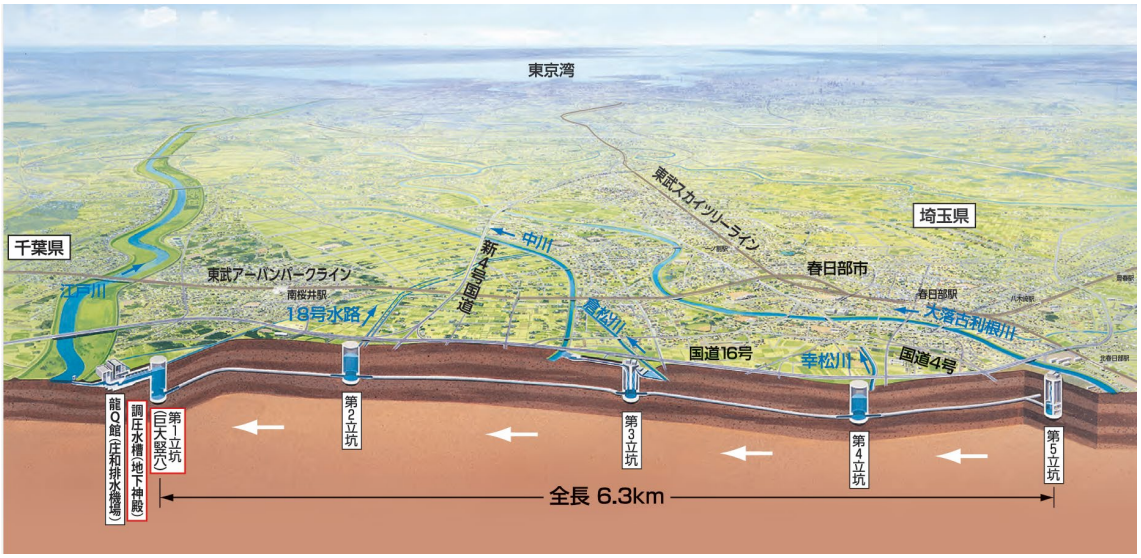
It was a tour course where pulleys connected to the safety belt were passed through the rails installed on the outer perimeter wall of the catwalk, and we walked around while taking pictures. It is said that it is constantly monitored by a camera that can be remotely controlled from the central control room, and even though the harness (safety belt) is connected to the wall, it is safe to look at it on the monitor in the operation room because if you look at the shaft at a depth of 71 m from above, your feet will give up. Halfway around the shaft, I came into view of the connection I mentioned earlier. The connection between the shaft and the pressure control tank is cut off, and by laying a cushioning material, mutual interference in the event of an earthquake is suppressed.


A view of the first shaft from above / The connection between the shaft and the water tank / The cutter face of the shield machine for excavating the water supply tunnel

Although not included in this tour, this spillway consists of five shafts that take in river water from the river when the water rises, and four underground rivers (6.3 km long

tunnels) that connect them and send overflow water to the pressure control tank. The tunnel was excavated by a large-diameter (10.6 m inner diameter) slurry shield machine, and its cutter face is on display next to the Ryu Q Pavilion. The diameter is one size smaller than the tunnel of the Aqua Line and the Kanchi Underground Control Reservoir, but when I saw it up close, I felt that it was powerful enough. The facility, which took about 13 years to construct (March 1993 ~ June 2006), was dismantled after its service and only the cutter face is on display, but such an exhibition is rare, and only a part of the face is displayed in the sea firefly, which was the launch base.



Location map of the water intake shaft

Last but not least, I would like to express my gratitude to the JSPE Education Committee for holding such a valuable tour.

-That's it- (Written by Miwada, Yamamura)

7 Contact from Members-3: Worldwide Engineer Qualifications

(What you need to know as a PE Part 1)

PE-0151 Takeya Kawamura
Past President, NSPE Member

foreword

This year marks 30 years since the NCEES FE test in Tokyo was first conducted in October 1994 by Oregon Bode and the Japan Industrial Technology Promotion Association. At that time, it was the era of "the strongest in the United States" just after the end of the Cold War, and it was expected that mutual recognition of engineering qualifications and education around the world would expand centered on the U.S. PE qualification and ABET certification.

I have been participating in the international committee of JABEE (Japan Accreditation Organization for Engineering Education) since 2016, and I have heard many situations where emerging countries with remarkable economic and industrial growth are competing to enter the mutual certification framework for engineers. Our mission at JSPE is to improve public safety and sanitation standards in Japan by increasing the number of people with U.S. PE qualifications in Japan, but looking back on the past 30 years, I feel that we have spent time reaffirming the differences between Japan and the United States. Since we are not necessarily in an era of "the strongest in the United States," I feel that it is necessary to review once again what the engineering qualification and education systems outside the United States are currently doing.

From the January 2021 issue to the July 22 issue of this magazine, I have made five consecutive posts on the diversity of engineering fields, and from this time on, I would like to post about three posts with the subtitle "What you need to know as a PE".

Scope of the Survey

This is just a desk survey conducted by the author alone, but I tried to highlight some knowledge by re-reading the 1997 survey report (Ref. 2) excavated by the ENAA (Engineering Association) where I work, and the international comparison table (Ref. 3) surveyed and published by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) and the Association of Japan Engineers in 2018. I also consulted English Wikipedia articles and recent publications by NSPE Fellows (Ref. 4, 5, and 6).

It is said that there are 196 countries in the world, but in this article, we will focus on the 21 countries shown in Figure 1.

Why these 21 countries? You may have a question, but I was conscious of covering all the countries that participate in the three frameworks that are considered to be currently functioning in terms of international mutual recognition of engineering qualifications and

education: WA, AFEO, and ENAEE.

IEA / Washington Accord (WA)		Southeast Asia AFEO	Europe ENAEE
Japan	India	Indonesia	Taiwan
Taiwan	Malaysia	Philippines	United Kingdom
Korea	Singapore	Malaysia	France
China	Pakistan	Singapore	Germany
Hong Kong S.A.R	United States		Italy
Australia	Canada		Spain
Indonesia	United Kingdom		

IEA : International Engineering Alliance
AFEO : ASEAN (Association of South East Asia Nations) Federation of Engineering Organization
ENAEE : European Network for Accreditation of Engineering Education

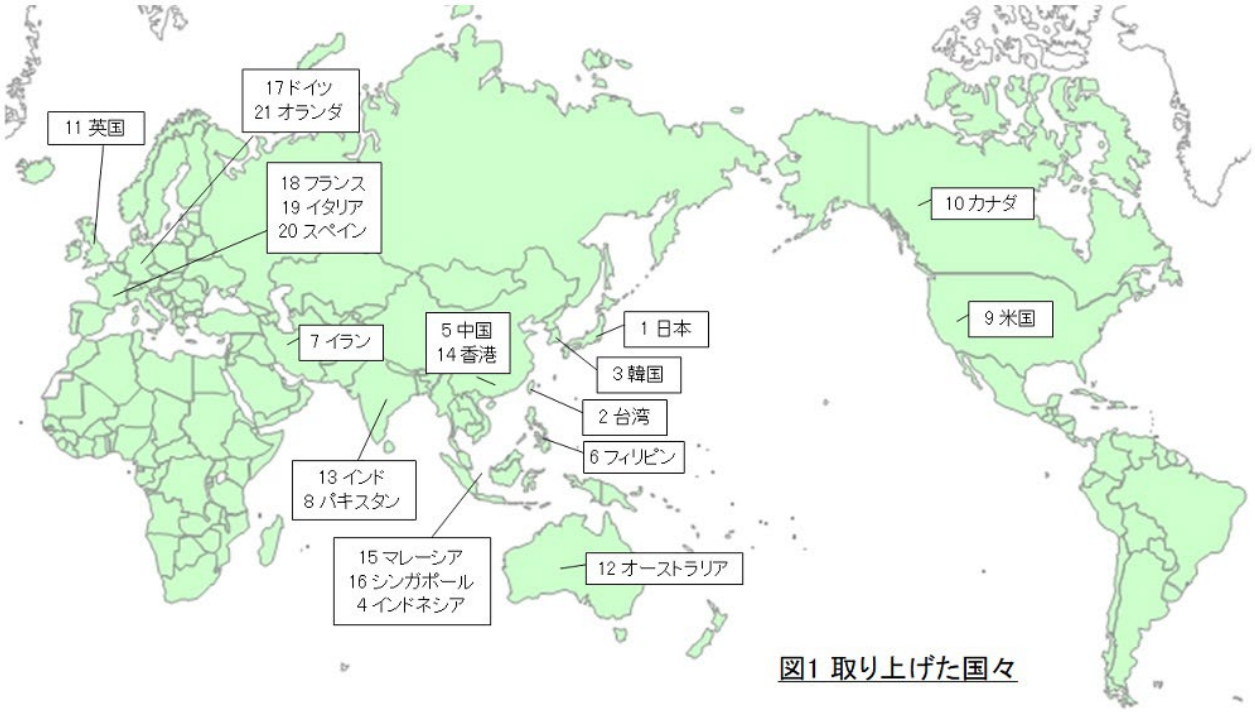


図1 取り上げた国々

Survey Items

There may be countless ways to compare the systems related to engineering qualifications and education in each country, but this time we have summarized the following six items.

1) Country : Country name and population
2) Qualification title: Title, abbreviation, and current number of qualification holders

in the country

3) Outline of the system: The author tentatively set up three types of relationships between the four parties in the country, the government, universities, and industry, and attempted to classify them and outline the system. (Note: This is a typology and classification of attempts, and I would like to ask for reviews from experts in the future.))

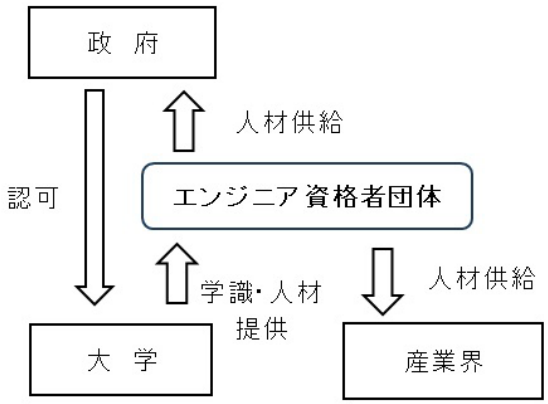
4) Exclusive Administration: In the country concerned Operations monopolized by engineer qualification holders

5) Educational attainment: How is third-party accreditation of university education linked to qualifications in the country?

6) Qualification exams: What kind of qualification tests are conducted in the country and the language used in the exams

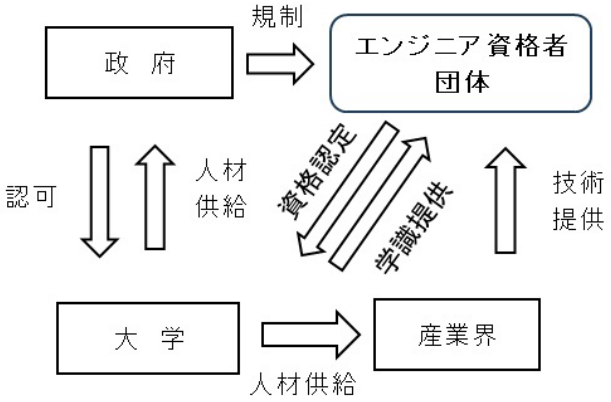
Findings

The following is a list of the results of the survey for the 21 countries covered. The parts that could not be fully examined this time are marked as [confirmation required], so I would like to ask for information from everyone.



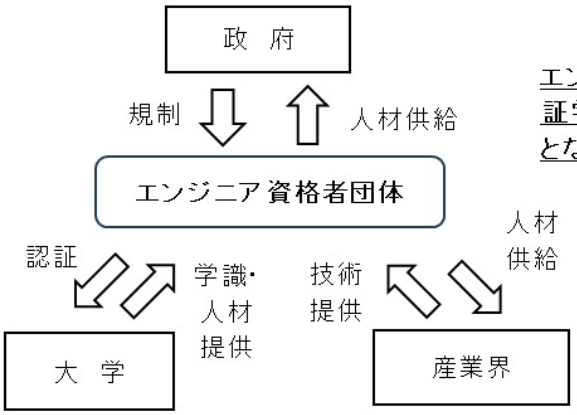
【学学】

政府−大学、産業−エンジニアのつながりがそれぞれ強く、 認可学歴 = エンジニア学位 となる



【実試】

政府−大学、政府−エンジニアのつながりがそれぞれ強く、実務経験+資格試験 = エンジニア資格 となる



【学実試】

エンジニアが政府、大学、産業と等距離を保ち、認証学歴+実務経験+資格試験 = エンジニア資格 となる

図2　エンジニア資格制度の3類型試案

Country	**1. Japan**　120 million
Qualification Titles	Certified Engineer (PE.jp):　Approx. 100,000
Outline of the system	【Actual Examination】or "Academic Practical Examination】Those who pass the primary examination, secondary examination, and oral examination conducted by the Society of Japan Society of Engineers (IPEJ) based on the Engineer Law will be able to call themselves engineers in each field. The Engineers Act was enacted in 1957, and the Association of Japan Engineers was established in 1951.
Exclusive management	The Construction Business Act requires the appointment of a "supervising engineer" for various types of construction work, machine installation work, and electrical work, but engineers in the construction, mechanical, and electrical fields meet the requirements to become supervising engineers.
Educational background	The Certified Engineers Act does not stipulate educational background requirements for registration as engineers. On the other hand, the Japan Accreditation Organization for Engineering

Country	**1. Japan** 120 million
	Education (JABEE), which was established in 1999, joined the IEA / Washington Accord in 2005 and currently grants engineering education accreditation in accordance with IEA/WA standards to about 300 university/technical college programs. Graduates of these certification programs have the privilege of being exempt from the first examination for certified engineers.
Qualification Exams	Technician Primary Examination, Secondary Examination and Oral Examination Japanese
IPEJ Institution of Professional Engineer Japan, JABEE : Japan Accreditation Board for Engineering education	

Country	**2. Taiwan Republic of China** 23,000,000
Qualification Titles	Approximately 25,000 engineers and engineers (PE) qualified personnel
Outline of the system	【Academic Examination】According to the Engineer Law, which is under the jurisdiction of the government's Public Works Commission (PCC), engineer qualifications are granted and registered. Currently, about 4,000 engineers are registered in 22 fields. The top seven fields with the highest number of registrants are civil engineering, structures, environment, electricity, soil quality, refrigeration and air conditioning, and urban planning. Engineers are compulsory members of local organizations such as the Taipei Civil Engineers Association. There is a national organization, the Chinese Society of Engineers (CIE), but engineering engineers are voluntary members. The organization was founded in mainland China in 1912 and moved to Taipei in 1951.
Exclusive management	"Design documents must be signed and stamped by an engineer" (Ref. 3)
Educational background	The Chinese Society for Engineering Education (IEET) was established in 2003 and joined the Washington Accord in 2007. As of 2022, the number of IEET-accredited programs is 470, more than South Korea (357) and Japan (272).
Qualification Exams	A 10-hour written test called the Higher Examination is required. (Ref. 3Taiwanese
PCC : Public Construction Commission, CIE : Chinese Institute of Engineers, IEET : Institute of Engineering Education Taiwan	

Country	**3. Republic of Korea** 51,000,000
Qualification Titles	기술사, 전문 엔지니어 (Engineer, PE) Qualification holders: Approx. 50,000
Outline of	【Academic Examination, Practical Examination】Certified as an engineer based

Country	**3. Republic of Korea** 51,000,000
the system	on the Certified Engineer Act under the jurisdiction of the Ministry of Science, Technology and ICT, and joined the Korea Association of Engineers (KPEA). In 1973, the National Technical Qualification Law was enacted (under the jurisdiction of the Ministry of Labor), which classifies qualifications into five categories: Engineer, Master Craftman, Engineer, Industrial Engineer, and Craftman. The Engineer Law was enacted and the Korea Association of Engineers was established in 1965. The jurisdiction of the Certified Engineers Act has changed to the Ministry of Economy (until 1967), the Ministry of Science and Technology (until 2013), and the Ministry of Science, Technology and Information Communications (since 2013).
Exclusive management	"An engineer qualification is required for consultant registration, and an engineer qualification in a specialized field is required for structural safety confirmation of architectural design documents, firefighting equipment business license, construction management of electrical work, and application for registration of pollution control facility business" (Ref. 2, p. 89).
Educational background	The Korea Accreditation Board for Engineering Education (ABEEK) was established in 1998 and joined the Washington Accord in 2007. As of 2022, there are 357 ABEEK certification programs.
Qualification Exams	A nine-hour multiple-choice exam is imposed. (Ref. 3) Korean
Professional Engineering Act, National Technical Qualification Act KPEA: Korean Professional Engineers Association, ABEEK : Accreditation board of engineering education Korea	

Country	**4. Indonesia** 270 million
Qualification Titles	Approximately 60,000 Insinyur (Engineer) qualification holders
Outline of the system	The Indonesian Engineers Association (PII: established in 1952) is responsible for the certification of qualified personnel and the supervision of operations in Japan by decree of 2014. (From AFEO's PII introduction page)
Exclusive management	"In the capital city of Jakarta, a PE signature is required for applications for approval of public works related to human life, safety, and welfare, while Indonesia as a whole has a diverse culture, customs, and language, and there are many challenges in unifying PE qualifications in countries like Singapore and Malaysia." (Ref. 2, p. 89)
Educational background	The Indonesian Accreditation Board for Engineering Education (IABEE) was established around 2019 under PII, and joined the Washington Accord in 2022. As of 2022, there are 98 IABEE accredited programs. The history of JICA/JABEE in Japan supporting the establishment of IABEE is disclosed. https://jabee.org/doc/202403_A_story_of_struggle_JICA_RIpj.pdf

Country	**4. Indonesia** 270 million
Qualification Exams	Written examinations are imposed in some departments. (Ref. 3) Indonesian
PII : Persatuan Insinyur Indonesia, IABEE : Indonesia Accreditation board of engineering education	

Country	**5. People Republic of China** 1.4 billion
Qualification Titles	Number of Engineering Technician Qualification Holders [Confirmation Required]
Outline of the system	[Practical Examination] and [Academic Practical Examination] There is a juxtaposition between an engineer as a national vocational qualification (under the jurisdiction of the Ministry of Human Resources and Social Security), which is directly related to the position within a state-owned enterprise, and an engineer as a professional who is conscious of securing human mobility with overseas. In the latter case, the qualification system related to building structures has been in place since around 1995, and it seems that strict qualification examinations will be imposed (Ref. 6, 9). Established in 1958, it is overseen by the China Association for Science and Technology (CAST), but in 2021, under the guidance of CAST, an organization called the China Association of Engineers (CSE) has also been organized.
Exclusive management	Vocational qualifications are presumed to be mandatory for work within state-owned enterprises, and professional qualifications are required for architectural structural design.
Educational background	In 2015, CEEAA was established under the umbrella of CAST, and CAST joined the Washington Accord in 2016. As of 2022, there are 1,972 CAST accreditation programs.
Qualification Exams	Tests are conducted by the Technical Review Committee (Ref. 3) Chinese
CAST : China Association for Science and Technology, CSE : Chinese Society of Engineers, CEEAA : China Engineering Education Accreditation Association	

Country	**6. Philippines:** 100 million
Qualification Titles	Number of Engineer qualification holders【Confirmation required】
Outline of the system	The PRB, a board of engineering-related professionals in 12 fields under the umbrella of the Professional Regulatory Commission PRC (established in 1950), certifies qualifications.
Exclusive management	【Confirmation required】
Educational background	Established in 1978, the Philippine Council of Technology (PTC) oversees 13 professional engineering associations in the country and is responsible for

Country	**6. Philippines:** 100 million
	accrediting technical universities. In 2016, he joined the Washington Accord as a provisional member.
Qualification Exams	Multiple-choice exams are given (Ref. 3) English
PRC : Professional Regulation Commission, PRB : Professional Regulatory Board, PTC : Philippine Technological Council	

Country	**7. Islamic Republic of Iran** 82,000,000
Qualification Titles	【Confirmation required】 Number of qualification holders【Confirmation required】
Outline of the system	【Confirmation required】
Exclusive management	【Confirmation required】
Educational background	【Confirmation required】
Qualification Exams	NOET, an organization under the jurisdiction of the Ministry of Science and Technology (MSRT), conducts FE and PE examinations similar to those in the United States, and grants and registers PE qualifications (Ref. 6)
National Organization for Examination and Training (NOET)	

Country	**8. Pakistan** 210 million
Qualification Titles	【Confirmation required】 Number of qualification holders【Confirmation required】
Outline of the system	Established in 1976, PEC administers engineering education and qualifications, and graduates of PEC-accredited technical colleges can be registered with PEC as engineers (Ref. 6)
Exclusive management	【Confirmation required】
Educational background	【Confirmation required】
Qualification Exams	【Confirmation required】
PEC : Pakistan Engineering Council	

Country	**9. United States of America** 330 million
Qualification Titles	Professional Engineer (PE) qualification holders: Approx. 40 (actual number) - 800,000 (including interstate overlap)
Outline of	【Academic Examination】 A graduate of an ABET-accredited technical

Country	**9. United States of America** 330 million
the system	university must pass the FE and PE examinations conducted by NCEES and submit at least four years of advanced engineering work experience to the State PE Board to be registered as a State PE. State PE laws spread to all 50 states from 1907 to 1947. NCEES was established in 1920 and ABET in 1932. Apart from these, there is the State PE Association (Society) and the NSPE (established in 1934), which bundles them, and registered PEs in each state voluntarily join and develop activities. ABET's predecessor organization, ECPD, has a long history of being established in tandem with NSPE.
Exclusive management	While each state's PE law stipulates that all engineering work should be done by a PE, there is often a clause embedded that PE is not required for in-house engineering work (this is called an industrial exemption), and the scope of requiring a PE signature varies depending on the state, county, or city.
Educational background	As a general rule, each state PE registration requires an educational background to complete the ABET accredited program. On the other hand, in order to accept PE registrants from overseas, NCEES provides a syllabus evaluation service (Credential Evaluation) for non-ABET students.
Qualification Exams	All-choice FE exam (8 hours) and PE exam (8 hours) At the time of each state PE registration, a simple test on state PE laws and ethics is also imposed. English
ABET : Accreditation Board for Engineering and Technology, NCEES : National Council of Examiners for Engineering and Surveying, FE : Fundamental Engineering, PE : Principle and Practice of engineering, NSPE : National Society of Professional Engineers, ECPD : Engineering Council for Professional Development	

Country	**10. Canada** 37,000,000
Qualification Titles	Professional Engineer (P.Eng.)Approximately 200,000 qualified personnel
Outline of the system	In cooperation with the engineering associations of each state based on the Professional Engineer Act enacted by each state and the national organization Engineers Canada, graduates of technical colleges are required to have a prescribed four-year work experience, and P.Eng (Professional Engineer) in each state. It is supposed to be registered as.
Exclusive management	Looking at the Ref. 5 published by the Province of British Columbia, it can be inferred that PE signatures are required for all documents, from project/construction estimates to specifications for procured goods, construction drawings, and completion drawings.
Educational background	CEAB is run by Engineer Canada, which accredits the course process for all engineering colleges in the country. In order to register for P.Eng, in principle, it is required that the student has completed an education accredited by CEAB.

Country	**10.** **Canada** 37,000,000
	Engineers Canada was a founding member of the Washington Accord in 1989.
Qualification Exams	There is no written test for technical competence when registering for P.Eng, but a written test on PE law and ethics is imposed in each state. English
CEAB : Canadain Engineering Accreditation Board	

Country	**11.** **United Kingdom** 67,000,000
Qualification Titles	Approximately 170,000 Chartered Engineer (CEng) and Incorporated Engineer (IEng) qualification holders
Outline of the system	Thirty-nine Professional Engineering Institutions (PEI), including the Institute of Civil Engineers (ICE), certify technical universities and grant qualifications to graduates. The qualification is one of EngTech, IEng, CEng, or ICTTech. IEng is equivalent to a technologist as defined by the International Federation of Engineering (IEA). The Council of British Engineers (ECUK), which oversees the 39 PEIs, has been operating since 1964 with several changes.
Exclusive management	"There seems to be no particular work other than dam engineers and electrical safety" (Ref. 2, p. 46)
Educational background	In principle, in order to obtain each of the above qualifications, it is necessary to graduate from a technical university accredited by each PEI. As of 2022, there are 2155 ECUK accredited programmes. (Note: In the UK, fields and departments are subdivided.There is also the aspect that the number of certifications is large. ECUK was a founding member of the Washington Accord in 1989. In addition, British universities have historically established a 3-year bachelor's degree + 1 year master's course, but it is sometimes pointed out from other countries that the number of years is too small compared to other countries. (Ref. 10)
Qualification Exams	There is only an oral examination and no written examination. English
ICE : Institution of Civil Engineers, EngTech : Engineering Technician, Ieng : Incorporated Engineer, CEng : Chartered Engineer, ICTTech : Information and Communications Technology Technician, ECUK : Engineering Council United Kingdom	

Country	**12.** **Australia** 25,000,000
Qualification Titles	Approximately 20,000 Chartered Professional Engineer (CPEng) qualification holders
Outline of the system	The Institution of Engineers, Australia (now Engineers Canada: EA), established in the 1920s, is responsible for accrediting the course process at engineering universities in Japan, and graduates of the accreditation program join EA and pass an oral examination to become Chartered Professionals Earn the qualification title of Engineer (CPEng).

Country	**12.** **Australia** 25,000,000
Exclusive management	"Exclusive work is a sign of construction" (Ref. 2, p. 76).
Educational background	In order to be able to claim each CPEng qualification, in principle, you must have graduated from an engineering university accredited by EA. As of 2022, there are 482 EA Certified programs. Engineers Australia was a founding member of the Washington Accord in 1989.
Qualification Exams	There will be an oral examination for CPEng registration, but no written examination will be imposed. English

Country	**13.** **India** 1.4 billion
Qualification Titles	Number of Chartered Engineer (CE), Professional Engineer (PE) qualification holders: Approx. 200,000
Outline of the system	Established in 1920, the Institute of Indian Engineers (IEI) is both an engineering fraternity and a qualification body. IEI corporate members are allowed to call themselves Chartered Engineers. If you belong to an appropriate engineering society other than IEI and have at least 5 years of work experience, you can apply to IEI for Professional Engineer registration.
Exclusive management	【Confirmation required】
Educational background	The Indian Accreditation Board (NBA) was established in 1994 and joined the Washington Accord in 2014. As of 2022, there are 842 NBA-sanctioned programs.
Qualification Exams	Optional examinations are required for general subjects and specialized subjects. (Ref. 3) English
IEI : Institution of Engineers, India, NBA : National Board of Accreditation	

Country	**14.** **Hong Kong** 7.4 million
Qualification Titles	Approximately 6,000 engineers and IR qualification holders
Outline of the system	The HKIE is responsible for accreditation of technical universities in Japan, granting engineering qualifications to graduates, and providing CPD education to continue the qualifications. Those who have graduated from an accredited university and passed the HKIE prescribed examination may call themselves "Ir" or "Engineer".
Exclusive management	HKIE was established in 1947 as the Engineering Society of Hong Kong and has had its current name since 1975.
Educational background	HKIE joined the Washington Accord in 1995 and the Int PE Agreement in 1997. As of 2022, there are 105 HKIE accredited programs.

Country	**14.** **Hong Kong** 7.4 million
Qualification Exams	A descriptive test is imposed. (Ref. 3) English [confirmation required]
HKIE : Hong Kong Institution of Engineers	

Country	**15.** **Malaysia** 32,000,000
Qualification Titles	Approximately 10,000 Professional Engineer (PE), PE with Practicing Competency (PEPC) qualification holders
system summary	Based on the Registration of Engineers Act, BEM certifies and registers PEs. In 2015, the law was amended with an awareness of international trade in services, and the qualification structure of Graduate Engineer, PE, and PEPC is made up of three tiers. The Registration of Engineers Act was enacted in 1967. BEM was established in 1972.
Exclusive management	"We are in charge of almost all upstream processes of technical work, both private and public, for example, all technical procedures with government offices require the signature of a Professional Engineer. (Ref. 2, p. 84)
Educational background	Founded in 1972, BEM joined the Washington Accord in 2009. As of 2022, there are 269 IABEE accredited programs.
Qualification Exams	Written tests on specialization and ethics are imposed (Ref. 3) Malay [confirmation required]
BEM : Board of Engineers Malaysia, PE : Professional Engineer, PEPC : Professional Engineer with Practicing Certificate	

Country	**16.** **Singapore** 5.8 million
Qualification Titles	Approximately 2,000 Professional Engineer (PE) qualification holders
Outline of the system	Based on the Professional Engineers Act, PEB certifies and registers PEs. The PE Act was enacted and the PEB was established in 1971.
Exclusive management	"In Singapore, all work that needs to be applied to the government must be approved by a PE, and the planning, design, and drawing of advanced engineering must be done by a PE or, if done by an engineer without a PE qualification, under the supervision of a PE" (Ref. 2, p. 80)
Educational background	Established in 1966, the Institution of Engineers, Singapore joined the Washington Accord in 2006. As of 2022, there are 43 IES accredited programs.
Qualification Exams	A written exam called the Practice of Professional exam is imposed. English
PEB : Professional Engineers Board Singapore	

Country	**17.** **Germany** 83,000,000
Qualification Titles	Approximately 210,000 Diplom.-Ing, Dr-Ing, and Techniker qualification holders (Engineer Europe Annual Report)
Outline of the system	German universities have a historical tradition of granting vocational qualifications rather than degrees, and technical universities in each state have long traditioned granting engineering qualifications called Diplom-Ingenieur (Dipl.-Ing) to graduates who have completed five years of study, based on state law. Graduates who have completed doctoral programs in engineering are granted a qualification called Dr.-ing, and graduates of engineering universities who mainly work in the field are granted a qualification called Techniker (engineering technologist). Since 1999, there has been a movement within the EU to align with the degree system of the United States and the United Kingdom (Bologna Process), but Germany seems to be still following the above tradition. There is an authoritative engineering organization called VDI, which has more than 100,000 members, but it is not involved in engineering qualifications. ENAEE is joined by an educational accreditation body called ASIIN.
Exclusive management	"Exclusive work is only for building structures" (Ref. 2, p. 48)
Educational background	ASIIN, an engineering education accreditation organization, was a provisional member of the Washington Accord in 2003, but withdrew in 2013. (Ref. 8)
Qualification Exams	Qualification is linked to university education and graduation exams. German
VDI : Verein Deutscher Ingenieure, ASIIN : Specialist accreditation agency for degree programs in engineering, computer science, natural sciences and mathematics	

Country	**18.** **France** 65,000,000
Qualification Titles	Number of Diplome-d'Ingenieur qualification holders: Approx. 1 million (Engineer Europe Annual Report)
Outline of the system	There is a tradition of granting the qualification title Diplome-d'Ingenieur to graduates of the technical university (grandes ecoles) and to find employment in government agencies and companies. There is an alumni organization called IESF (French Engineers and Scientists) and is a member of Engineers Europe.
Exclusive management	"In France, there is almost no dedicated work in the Quantity Surveyor and Civil Service, but there is a social recognition that the engineering qualification is limited to a limited number of people" (Ref. 2, p. 47).
Educational background	There is an organization established in 1934 called CTI that accredits the course process of each technical university.
Qualification Exams	Qualification is linked to university education and graduation exams. French
CTI : The Commission des titres d'ingénieur (engineering accreditation institution), IESF :	

Country	**18.** **France** 65,000,000
Ingenieurs et Scientifiques de France	

Country	**19.** **Italy Italia** 60 million
Qualification Titles	Ingegnere (Professional Engineer) qualification holders: Approx. 200,000
Outline of the system	Graduates of technical universities who have completed five years of study are granted qualifications such as Laurea Magistrale in Ingegneria, but as a system not found in other European countries, graduates are also granted the qualification of Ingegnere (Professional Engineer) if they pass the national unified examination。
Exclusive management	"A wide range of work, from design to supervision and assessment of materials, transportation and communications, structures, and industrial machinery, is prescribed by the law as the exclusive jurisdiction of qualified personnel" (Ref. 2, p. 49).
Educational background	There is an educational accreditation body called QUACING, which is a member of ENAEE.
Qualification Exams	CNI was established in 1944 and is responsible for the administration of the trials. Italian
CNI : Consiglio Nazionale Ingegneri (National Council of Italian Engineers), QUACING : Agenzia per la Certificazione di Qualità e l'Accreditamento EUR-ACE dei Corsi di Studio in Ingegneria	

Country	**20.** **Spain** 47,000,000
Qualification Titles	Approximately 250,000 Ingegniero qualification holders (Engineer Europe Annual Report)
Outline of the system	【Academics】Graduates of technical universities are granted the qualification of Ingeniero. Two associations are members of Engineers Europe: the Spanish Institute of Engineers (IIES) and the Spanish Association of Engineering and Science Graduates (INGITE).
Exclusive management	【Confirmation required】
Educational background	Under ENAEE, a European framework for accreditation of engineering education established in 2006, the university is promoting the accreditation of the course process at each engineering university.
Qualification Exams	Qualification is linked to university education and graduation exams. Spanish
IIES : Instituto de la Ingenieria de Espana, INGITE : El Instituto de Graduados en Ingenieria e Ingenieras Tecnicos de Espana, ENAEE : European Network for Accreditation of Engineering Education	

Country	**21.** **Netherlands, Netherlands** 17,000,000
Qualification Titles	Number of CEng, IEng, Ir qualification holders [confirmation required]
Outline of the system	【Practical Examination】Graduates who have completed their studies at a technical university will be given the qualification title of "IR" or "ING". In addition, in 2023, KIVI has partnered with ECUK in the UK to start granting CEng and IEng qualifications similar to those in the UK. Established in 1847, KIVI oversees the country's technical industry and academic societies in general.
Exclusive management	【Confirmation required】
Educational background	KIVI is promoting a lifelong engineering education system called "Engineering Competence Structure", but it does not accredit the program of technical universities. It is not a member of the Washington Accord.
Qualification Exams	A website called https://charteredengineer.nl/ has been launched.
KIVI : Koninklijk Nederlands Instituut Van Ingenieurs (Royal Netherlands Institute of Engineers)	

Summary

While it is said that the movement toward international mutual recognition of engineering qualifications and education in Japan has cooled down in recent years, we conducted a desk survey of the systems of each country to help revitalize it. This is just a personal desk survey, and I would like to explore opportunities such as in-depth research by recruiting JSPE volunteers in the future.

Although not included in this study, what is the relationship between engineers/technologists/architects in each country, as shown below? I am also interested in it.

In the next article, I would like to take up the various issues faced by U.S. PE in terms of "exclusive operations," which was also covered in this survey.

英語	Technologist テクノロジスト	Engineer エンジニア	Architect アーキテクト
	自然の原理やエンジニアリングの手順を応用して、実利をもたらす人。	自然原理の応用や数学を駆使して、社会が抱える問題を(天才的に)解決する人。物事を前進させる人(エンジン)を意味することもある。	建物の計画や監理を行う人。建物にとどまらず、物事の枠組みを計画する人を意味することもある。
日本語	技術者	工学者	建築家/建築士
	自然原理や、伝来の「わざ」や「すべ」を駆使して、物の設計やサービスの提供ができる人	自然原理の応用や数学を駆使して、社会問題を解決できる学者。	建物の計画や監理を行う人。建物にとどまらず、都市の枠組みを計画する人を意味することもある。

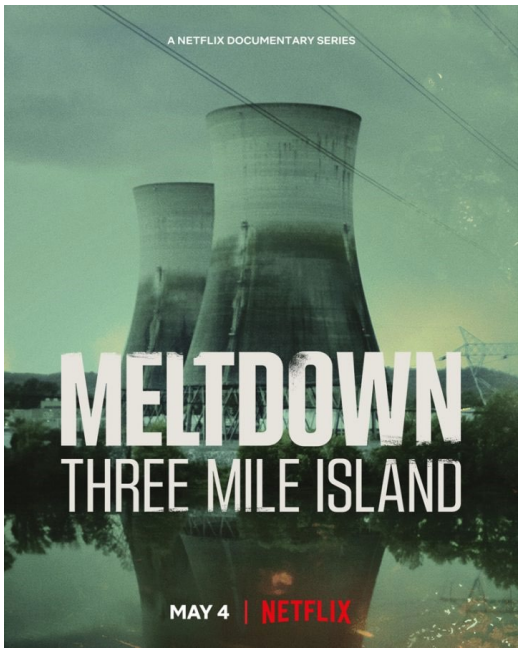
Figure 3 Definitions of engineer, technologist, and architect

8 Variables from PEople

8.1 Books

This is a corner where JSPE members introduce books in their fields of deep relevance. We look forward to your contributions.

Meltdown: Three Mile Island (Netflix Original, 2022)
https://www.netflix.com/sg/title/81198239



It's not an introduction to the book, but there was an interesting documentary on Netflix, so I'd like to introduce it. It is based on the worst nuclear accident in U.S. history that occurred at the Three Mile Island Nuclear Power Plant in Pennsylvania in 1979, which many people are familiar with.

I'm sure there are many ways to look at it, but for me, it was very thought-provoking about the ethics of "public welfare" in PE. It is about the cover-up of the accident by the corporation and the life of one engineer who accused the cover-up and spread the fraud. The whistleblower himself appeared and gave an interview.

In an era when there is no whistleblowing system in place, it is quite conceivable that you will be disadvantaged by whistleblowing. It made me wonder if I would have been able to leave my family and sacrifice my work to make the accusations, and how far I would have sacrificed myself for the sake of social ethics. It is 45 minutes x 4 videos, so you can watch it relatively easily. Why don't you watch it once?

(PE-0193 Hisakazu Sato)

8.2 Engineering close to

This is a corner where we introduce each other the excitement of discovering engineering in something casual, and the encounter with engineering equipment and methods that make us groan.

8.3 Between the senses

As an Ikoi no Plaza, it is a corner where things that are captured as "beauty" by the five senses are posted, and sketches, drawings, pictures, photographs, anything is fine. Regardless of whether it is engineered or not, please provide us with something that you feel is "beautiful", such as a carefully designed and manufactured device that

9 Board of Directors Topics, HP and SNS News

JSPE Secretariat

Board Topics

The following items were discussed at the Extraordinary Board of Directors meeting in January and the Ordinary Board Meeting in March. Details of each matter are posted on the member site – JSPE Board of Directors Meeting Minutes.
https://www.jspe.org/member/report/

The May Board of Directors meeting will be held on Sunday, May 12, 2024. If you are a member who would like to participate as an observer in the Board of Directors, please contact the Secretariat managers@jspe.org.

[January Board of Directors]

Agenda items

◇ Number of members

◇Next Year's Seminar PlanNext Year's Seminar Plan

◇Admission to the Japan Engineering Society as a group memberMembership as a group member to the Japan Engineering Society

◇ Examination registration consultation

Matters to be reported

◇ Seminar Secretariat Business Agency (Education)Seminar Secretariat Business Agency

◇ Start of HP revision

◇ Annual membership fee payment status

[March Board of Directors]

Agenda items

◇ Number of members

◇FY2024 Budget Proposal

◇ Preparation of business reports

◇ NSPE Membership Fee Subsidy Application

Matters to be reported

◇ Status of payment of annual membership feeStatus of payment of annual membership fee

◇ Termination of Mentoring Mentoring Promotion Activities

◇@jspe.org@jspe.org Measures against phishing emailsAbout measures against outgoing

phishing emails
◇NSPE President's Visit to JapanPresident's Visit to Japan

Homepage, SNS, member mail

Thank you for using the JSPE website and SNS. The Public Relations Subcommittee strives to provide you with the latest information that is useful to you, such as the renewal of your PE examination registration, through the website, but if you have any comments or impressions that it would be useful if this was posted on the JSPE website, or if the information posted on it was useful, please contact the Public Relations Subcommittee public.2007@jspe.org Thank you.

10 Report on CPD Seminar and ES by the Education

JSPE Education Subcommittee

FY2023 4th Onikin Seminar

Date & Time: Saturday, January 20, 2024 9:30~11:30
Lecturer: Mitsuaki Inaba
CPD&PDU: Provides 2.0 PDH&PDU
Format: Web (Zoom)
Number of participants: 10 (10 PEs, including instructors)

Theme:
Application of Failure Studies in Lesson Learnt
Application of failure studies in lesson learned

Gist:
Risk management in the PMBOK Guide and Lessons Learned, which is a method in it, will be touched upon. On top of that, the lecturer will introduce the failure science of Tetsuya Hamaguchi, which he recently learned, and explain its application to risk management. During the lecture, there will be individual work and its presentation.

Implementation Report:
Many of you are new to hearing about the "Failure Studies," which explains the "lessons" of risk management in the PMBOK Guide, and we hope that it will lead to some kind of awareness. He also recalled a case where a half-hearted recurrence prevention measure was taken in response to a defective event at the participant's workplace, and I hope that the contents of today's meeting, including high-level concepts, will be utilized in more effective responses in the future.

FY2023 5th Onikin Seminar

Date & Time: Saturday, February 17, 2024 9:00~12:00
Lecturer: Hiroshi Suzuki
CPD&PDU: Provides 3.0 PDH&PDU
Format: Web (Zoom)
Number of participants: 12 (including 12 PEs and instructors)

Theme:
Corporate Culture & Project Management

Corporate Culture and Project Management

Gist:
Since Corona, the nature of projects has diversified. While virtual project teams are becoming more common, the value of physically coming together to deliver projects as in the past is also being reassessed. This kind of diversification depends on the nature of the project, but I feel that it also has a great influence on the corporate culture. In this article, I would like to introduce how corporate culture is treated in the PMBOK Guide, and then discuss the impact of corporate culture on project management.

Implementation Report:
This time, a total of three group discussions were held during the lecture, and among them, the discussion on the issue of Japan corporate fraud was the most interesting. There was an opinion that if a high mobility of people could prevent fraud, it would be better not to have a half-hearted corporate culture like a village code. In addition, when it comes to corporate philosophy and culture, regardless of the form, it must have been shared by all managers and employees in Japan companies in the past, and it should have been used as a driving force for the company. In today's world of diversified values, some people felt that the best practices of global companies with employees from diverse backgrounds could be helpful.

The 363rd Technical CPD Seminar

Date & Time: Sunday, February 18, 2024 14:00~16:00
Number of participants: 31 (27 PE members, 2 PEN members, 2 non-members, including lecturers)
Format: On-site participation + web streaming
Title: Common Guidelines for Global Engineering Ethics Respecting Cultural Differences
Lecturer: Kanazawa Institute of Technology, Faculty of Basic Education, Basic Education Course, Professor Kenichi Natsume

Starting with an explanation of the basic understanding for analyzing ethical issues, he explained in a very easy-to-understand manner the relationship between engineering ethics and globalization, the common guidelines for global engineering ethics, and ethical issues that tend to be faced in global business and their analysis. In particular, according to the trends of each country using Hofstede's six-dimensional model, it was easy to imagine that the cultural values of each country were very different, and that ethical problems would arise due to this.
In Japan, the institutionalization of engineer ethics seems to have progressed since the

1990s as a response to global standards, but even if there is something like a code of ethics as some kind of common guideline, there are a wide variety of ethical issues faced when undertaking projects overseas, and there seems to be no uniform solution that says what to do when you fall into a dilemma. In such a case, I recognized that it would be very difficult for me to develop my business smoothly while complying with relevant laws and regulations and treaties. In addition, I believe that today's seminar was very meaningful in the sense that I was able to find a clue to the solution.

FY2023 Spring FE/PE Examination Registration Consultation Meeting

Date & Time: Saturday, March 16, 2024 14:00~16:30
Number of participants: 18 (9 PE members, 4 PEN members, 5 non-members)
Format: On-site participation + web streaming

On March 16th, we held a PE / FE exam registration consultation meeting in a hybrid format of Takinogawa Kaikan in Kita-ku, Tokyo, and Zoom distribution. A total of 18 people participated, including 4 PEN members, 5 non-PEN members, 2 PE members who shared their experiences with state registration, and 7 other PE members, including board members.

After an overview of the PE system from the organizers, and an introduction from Chairman Nishikubo on the significance of obtaining PE and the support received from JSPE, PE members who achieved state registration this year gave lectures on their registration experiences and recent state registration status. Consultation sessions were held in which speakers and PE members answered questions from on-site and online participants.

JSPE holds such consultation meetings twice a year to provide support for examinations and registration. The next meeting is scheduled for October 2024.

11 Coming Events

JSPE Education Subcommittee

For the latest information on this year's events, please check the following URL. https://www.jspe.org/events/

The events of the last three months are as follows.

< General Assembly>
June 8, 2024

< Technology CPD Seminar>
June 16, 2024

< Technical Facility Tour>
April 16, 2024

< Engineer's Salon>
May 15, 2024

<Board of Directors>
May 12, 2024

12 Introduction of new members

○Name: Takuya Okamoto
○Membership number :PN-0241
○Qualification : FE Civil
○Field of Specialization: Civil Engineering and Building Structures
○ Motivation for joining: Application for assistance in PE state registration, interaction with PE holders

○Self-introduction: I work for a domestic engineering company and belong to the Civil Engineering and Architectural Design Department. Since I wanted to be involved in overseas projects, I was interested in having a PE because I heard that it was a qualification that was internationally respected in the engineering industry. We are currently preparing the application documents with the aim of completing the PE state registration.

○What we want JSPE to do:
・ Supporting study and interaction among members after holding PE
・Holding and communicating with various events
After joining, there are many events that I am interested in among the tours and seminars that I receive from the Education Committee. We look forward to holding various events in the future and would like to participate in them at the right time.

○ Name: Atsuro Yamazaki
○Membership number :P N-0242
○ Qualifications: High Pressure Gas Production Safety Officer (Class A Chemical),
Dangerous Goods Handler (Class A), Nissho Bookkeeping Level 2, Statistical Test Pre-1st Grade, etc.
○Field of Specialization: Polymer Science, Film Molding, Chemical Engineering
○Motivation for joining:

① In order to obtain the information necessary for registration because there are no PE holders in the acquaintance at the time of PE registration.
② I want to expand my knowledge through interaction with engineers in various fields who are active in Japan and overseas.

○Self-introduction:

I work at a material manufacturer in the development of plastic film coating technology and product development. I majored in chemical engineering at university and materials science in the master's program at graduate school. My hobby is cycling, and I like to go out alone from time to time, but recently I have been holding my two children (3 years old and 0 years old) exclusively at home. I have now passed the Chemical Division of the PE exam, completed the CE for university credits, and am preparing for state registration.

○What we want JSPE to do:

Dissemination and support of PEs and their examinations, registrations, and renewals. It should be a place where engineers can interact with each other and study each other's work and ways of thinking. It is a place for young engineers and students to interact with engineers from various fields and backgrounds and think about their careers as engineers.

13 Postface

In November last year, Auditor Tsuchiya informed the Board of Directors that Baba PE, a JSPE member, had received an award from the Ministry of Economy, Trade and Industry. It is very good news for our association that an active member receives such a big award, and I am impressed that Baba PE is representing Japan in society, especially in the world. I would like everyone to know the achievements of Baba PE, so I decided to take the form of a special feature this time.

Well, the 2023 fiscal year has come to an end and the new fiscal year has begun. The General Assembly of JSPE is scheduled for June 8. Since this is an important general meeting that will decide the activities of JSPE, I would like to ask as many people as possible to participate and exercise their right to vote in advance, even if they are unable to participate. The Board of Directors has started to move to send the agenda in May, so thank you for your understanding.

April 1, 2024

Hisakazu Sato (Magazine Editor)

If you have any questions, suggestions, questions, or contributions, please contact the

Public Relations Subcommittee public.2007@jspe.org.

[Editorial Committee]

Nishikubo (Planning Editor)

Sato (Board of Directors Topics, CPD Seminar Report of the Education Subcommittee, Coming Events, Ikoi no Plaza, FE/PE Passing and PE Registration Experience, Introduction of New Members)

Kanno (Ethics), Suzuki (Ethics Reviewer),

◇ Handling of personal information in this magazine

The personal information posted is published only in this magazine with the consent of the individual.

It is strictly prohibited for third parties to use them for other purposes or to post them without permission, but if you are thinking of using them for educational purposes, please contact the Public Relations Subcommittee.