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Students and Young Professionals News

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IEEE Industrial Electronics Society Students and Young Professionals Just After the Pandemic Time

The year 2022 is special. We are returning to normal operation just after the pandemic time. In the following pages, you will find a brief description of selected IEEE Industrial Electronics Society (IES) science promotions by the IES Students and Young Professionals (SYPs) Activity Committee (SYP-AC) members.

The main highlight was during the scientific part of the Women + SYP event at ISIE 2022 in Figure 1. It was challenging to organize it after the pandemic in a hybrid mode in a place where nobody from the committee lives. It was not easy, but it was worth doing again. It was a fantastic experience because people who came and attended the conference in person and/or in hybrid mode organized details on the side.

FIGURE 1 — An Women + SYP common event in Anchorage, AK, USA, at ISIE 2022.

Our efforts paid off, although most of us, after the pandemic, were not well prepared for so long a trip. Even the airlines were not prepared—the IES president (Prof. Mariusz Malinowski, Warsaw University of Technology, Poland—sixth from the left in Figure 1) was almost late for the conference because of a flight delay. Thanks to Prof. Seta Bogosyan (general chair) and Prof. Milos Manic (IES president-elect and AdCom general chair), we had an excellent time in a place where you can meet friendly local people, such as electrical engineer Robert L. Seitz, IEEE R6 Alaska past chair (in the middle of Figure 1), and wild virgin nature!

The IES Student and Young Professionals Paper Assistance Program (SYPA) speakers (Figure 2) were fantastic. The diploma is shown in Figure 3. The IES SYPA-assisted papers were “A Novel Single-Event-Upset Injection Setup for Automotive Systems-on- Chip” and “Impedance Identification Based on Foreign Object Detection for Wireless Power Transfer Systems.”

Our invited keynote speakers, Ayda Akbelen (in the middle in Figure 1) and Hady Habib Fayek (virtually by the Internet), presented an excellent talk about their careers, activity in IEEE, and more. Ayda Akbelen (Figure 4) is the founder of Life Works Solutions, LLC, a consulting firm dedicated to helping professionals build satisfying careers. She has an in-depth understanding of issues impacting

technology professionals in career management and advancement. She provides tools and a framework for her clients to chart a successful career path and achieve their goals.

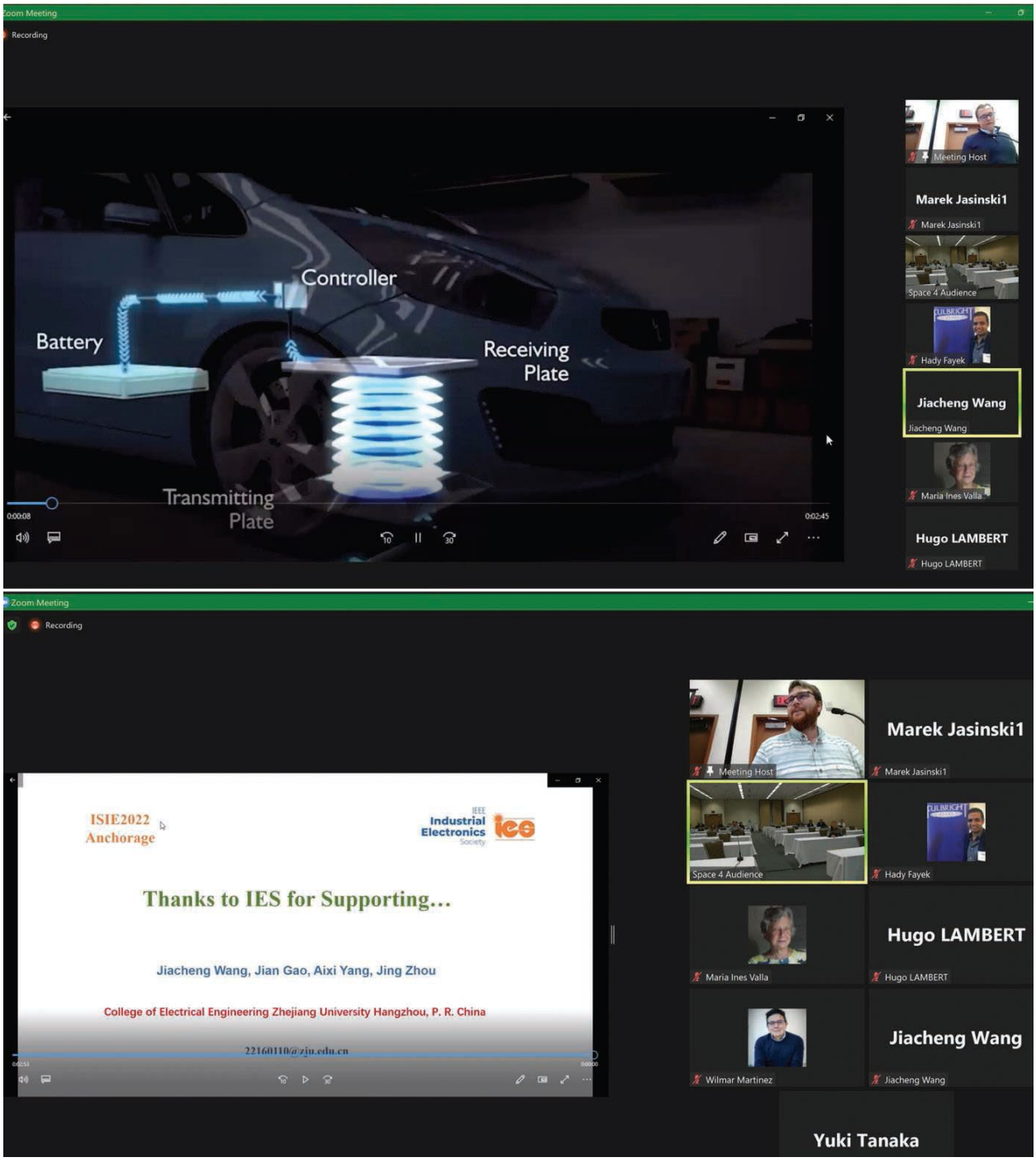

FIGURE 2 — Jiacheng Wang's presentation, assisted by the IES SYPA program.

FIGURE 3 — The IES SYPA diplomas.

She presented “Tools for Advancing Your Career—For Young Professionals.” To develop professionally, you need exposure to various people and challenging work. One of the obstacles to career development is not being known within your professional community. As a result, you will be overlooked for growth opportunities. Increasing visibility and self-promotion are usually not top of mind for those working in science, technology, engineering, and mathematics careers. To get recognition in your field, you need to take charge of your career and actively manage your reputation, promoting your effort and commitment to your work. In this interactive exchange, you will learn two essential tools for career management: developing your Personal Brand and Effective networking.

Hady Habib Fayek (Figure 4) received his Ph.D. in electrical power engineering in 2019 at age 29 from Helwan University, Egypt, including associated research with Texas A&M University, United States. He got his B.Sc. degree in 2011 and M.Sc. in 2014 from Helwan University. He is currently a lecturer in the Energy Engineering Program, Faculty of Engineering, Heliopolis University. He is the chair of the IEEE Industrial Electronics Egypt Chapter; he was the main organizer of many international conferences about smart cities and sustainable electrical engineering. He has published more than 30 research papers about recent advances in the electrical power and energy sector in many international conferences and journals. He is a guest editor and reviewer in many IEEE, technology–science, Multidisciplinary Digital Publishing Institute, Elsevier, and Institution of Engineering and Technology transactions, journals, and conferences. He is also a keynote speaker at many conferences and webinars.

He presented “Student-Based Sustainable, Innovative Solutions in Egypt.” Egypt is turning its communities to be sustainable and intelligent. The students of engineering in different fields have bigger chances to involve renewable energy as a sustainable step and to apply the Internet of Things (IoT) and artificial intelligence as thoughtful steps in their projects. Those projects are turning out to be start-ups and products used by Egyptian citizens from different educational and financial levels. Examples of these projects are simple wind turbines to feed homes with electricity, 100% on-grid photovoltaic solutions, IoT electric vehicles, the conversion of gasoline cars to electric vehicles, and others that undergraduate students at Heliopolis University have turned into start-ups.

Thanks to our Women in Engineering (WiE) (Prof. Lucia Lo Bello and Prof. Morgan Kiani), we also listened to an excellent presentation by Mercy Chelangat K. from Kenya (Figure 5). At the end of this year, Prof. Yousef Ibrahim and Prof. Marek Jasinski are going to visit Kenya to support electrical engineers there.

It is difficult to tell how many fantastic people attended this conference in person or online. As Prof. Marian Kazmierkowski always says to his Ph.D. students, “A good figure is worth 1,000 words.” Therefore, we are adding some photos. The figures are not only from ISIE 2022 in Anchorage, AK, USA, but from a longer period because we feel that IEEE and especially the IES construct a big international engineering family that would like to grow in scientific excellence, in peace, without borders and artificial distance between different cultures, genders, nationalities etc.

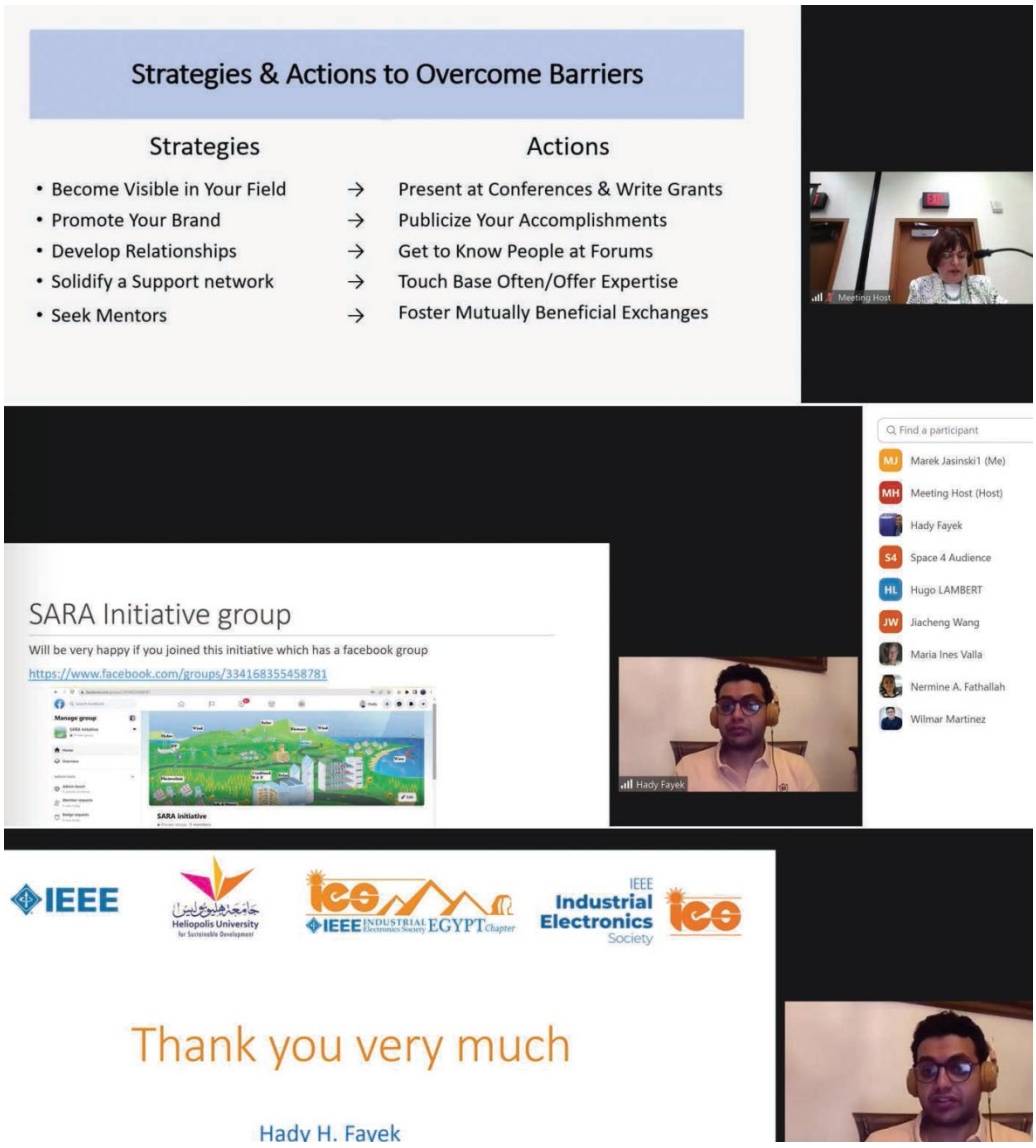

FIGURE 4 — The SYP invited keynote speakers: stationary and virtual presentations.

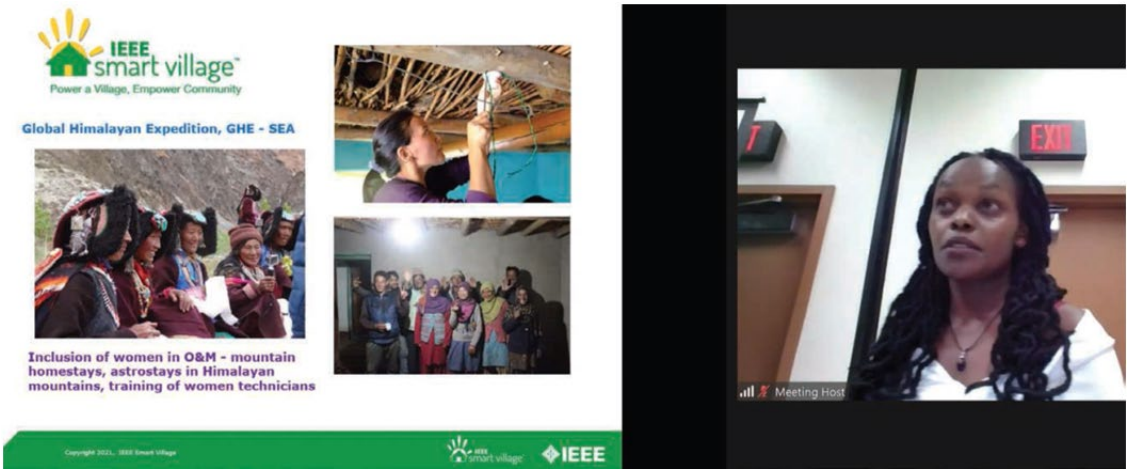

FIGURE 5 — Mercy Chelangat K., a WiE invited keynote speaker.

When we helped organize the R8 winter meeting in Warsaw, Poland, in April, we were shocked by the war in Ukraine. You should know that some of us are from Poland (a neighbor of Ukraine, Russia, Germany, and other countries in Central Europe).

Why is this conflict so shocking for the community? In my opinion, it is because of history—World War II in this region was a huge tragedy, and now there is a similar situation … why!? How can we solve this problem? Maybe with our community it would be possible. IEEE is working on several solutions to help its members in need. (Figure 6 shows some possible actions. However, if you have more ideas, please do not hesitate, and contact marek.jasinski@ieee.org). We trust that, all together, we will do more. However, in life, as usual, we are going up and down, "taking the bitter with the sweet."

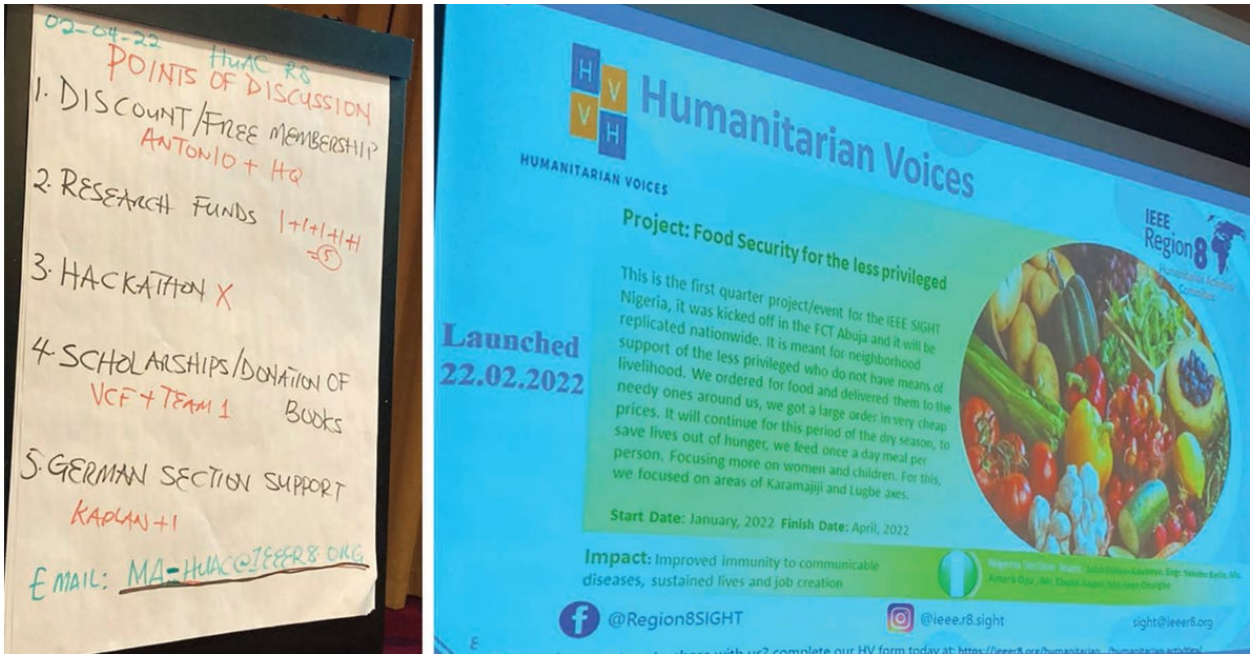

FIGURE 6 — A proposition about how to help people in need at the IEEE R8 meeting in Warsaw.

Some very good news for you is that Prof. K. Gopakumar (Fellow of IEEE and mentor from our Society) received his doctorate honoris causa from the Politechnika Lubelska, Poland (which is close to the border with Ukraine—about 90 km) (Figure 7). He met with IES Ph.D. students in Lublin and Warsaw, and, as for mentor fits, he also met with Prof. Maria Skłodowska-Curie in the Warsaw University of Technology Main Building (Figure 8) for an Indian, Poland, and French scientific meeting.

In the meantime, Dr. Adam Milczarek, Prof. Dmitri Vinnikov, and Dr. Andrii Chub (all cochairs of the IES SYP-AC) organized a joint Poland–Estonia IES Inter-Chapter meetings in Warsaw and Gdansk (Figure 9). The Estonia and Poland Joint Chapters are excellent examples of cooperation and synergy effects. Especially active in the IES promotion are Prof. Vinnikov and Dr. Chub with the research team.

Estonia IES Joint Chapter Actively Promotes the Development of SYP

In this article, we would like to introduce the IEEE Estonia IES/IEEE Power Electronics Society/IEEE Industry Applications Society/IEEE Power & Energy Society Joint Chapter [1] to the readers of IEEE Industrial Electronics Magazine and share our activities targeting the development of SYP IES members in the last several years. We entertain the hope that some of you will find our experience of some value or will provide some feedback. We are grateful to our active members, as we grew the

Chapter and improved our member retention rate. Starting with fewer than 20 members a few years back, we have 42 members as this article is being written. This number may not strike you as a big one, but we want to remind you that Estonia has only 1.33 million people. Also, we are a young Chapter, and all but one of our members have fewer than 15 years of IEEE service, out of which more than half have fewer than six years. Hence, we are in the process of building an IES community in Estonia.

FIGURE 7 — IES Fellow Prof. K. Gopakumar receiving a doctorate honoris causa from the Lublin University of Technology, Poland.

FIGURE 8 — Prof. K. Gopakumar with the Maira Skłodowska-Curie monument at the Warsaw University of Technology, Poland.

FIGURE 9 — Prof. Andrii Chub during his presentation about ac and dc energy conversion methods in renewable energy applications.

Service to Members

We pay special attention to SYP, as they are the future of the IES. Targeting their training, we have organized five webinars on power electronics and control between January 2021 and February 2022. These activities allowed the most active of our members to reach out and introduce their findings internationally while providing educational opportunities to the SYP Chapter members by inviting world-renowned experts to the webinars. Our webinars typically had three or four presenters, with one or two being from Estonia. They presented to 50 to 200 simultaneous online participants, including Chapter members. We saw a clear correlation between having world-renowned experts in the corresponding topics among the webinar presenters and the number of attendees, both local and international, as could be expected. More importantly, those webinars allowed our members to stay in touch. Also, the webinars were recorded to support the educational aims of IEEE. We are proud that some webinars available on YouTube collected up to 2,300 views [2]. All of them can be accessed by IES members at no cost from the IES Resource Center [3].

Establishing Stronger Links Between Academia and Industry

Since early 2021, our Chapter has been actively involved in the organization of seminars of the DC: Inspire, Inform and Innovate—an Estonian nongovernmental organization linking Estonian researchers and practitioners in residential dc systems with European Union enterprises and leading research groups in that field. These events have received great interest from our Chapter members, as they provide the industrial perspective on the hot topic of residential dc power distribution.

Having numerous technical events, we always try to involve industry representatives. Our experience shows that solid technical programs and vibrant social events ensure the stable participation of industry representatives. As a result, our SYP members are always at the forefront of industrial applications and have shown very fast employment in industry after their graduation.

IES Support to Chapters Local Activities Grant

Even though our Chapter was very active in acquiring external funding and finding cofunding for IEEE IES events in Estonia, additional support can make events even better. Thankfully, the IES provides an instrument for this—the Support to Chapters Local Activities (SCLA) grant. Every Chapter is eligible to submit an application that will be evaluated by a special committee led by IES Membership Champion Prof. Kim Fung Tsang.

Our first experience with the SCLA grant was in 2021, when we obtained cofunding for the Summer Seminar co-organized by our Chapter for the fifth time (Figure 10). The obtained funds allowed to provide two-day accommodations and full board to all seminar attendees and brought several social activities with prizes, a mentoring session for SYP, and fireworks to commemorate the IES development. It is important to mention that, apart from industrial IEEE members, this event included representatives of the IES Joint Chapter from Latvia to strengthen cross-border collaboration inside the IES.

FIGURE 10 — The attendees of the Summer Seminar 2021.

Apart from that, some of the most active members of our Chapter organize the Doctoral School of Energy and Geotechnology every year. Since 2019, the social program of these doctoral schools includes the “IES Night” social events in collaboration with the IES SYP-AC. At these events, a new generation of IES members learns about the IES and all of the benefits that come with membership, the exchange of cultural traditions, and participation in ice-breaking social events. We are proud to say that this event is regularly attended by IES and PELS presidents, vice presidents, AdCom members, and chairs of IESassociated Chapters from other countries, etc. At these events, more than 200 SYP from more than 20 countries have been introduced to the IES family, and many of them stayed as faithful members.

In 2022, our Chapter received an SCLA grant for the IES Nights events organized in June 2022 during the doctoral school. This support allowed us to organize cultural exchange activities, where every country or ethnicity had an opportunity to present a piece of its cultural heritage, including but not limited to art, dances, drinks, food, etc. (Figure 11). The IES support enabled us to provide valuable prizes to the teams that presented the best performance, best food, and best drink based on anonymous online voting among the doctoral school attendees. The prizes were handed out during a festive gala dinner, which allowed us to disseminate the IES brand even further. You can see some of the memorable moments in Figure 12, but do not let yourself get confused, as summer nights in Estonia are as bright as days.

FIGURE 11 — Cultural exchange activities during IES Nights 2022.

SBC Activities

Another reason for our Chapter to be proud is the active IES Student Branch Chapter (SBC) of the Tallinn University of Technology. We support technically and cherish all of our young members to ensure their long-term commitment. We provide regular mentoring and technical training sessions during IES events that specifically target the SYP group. From one side, we do our best to ensure that our SYP are well trained for both industrial and academic careers, and, from the other side, we actively develop their networks in both of those fields during social sessions at our events. With our paper-writing mentoring and career development guidance, many of our SYP members have been recipients of the IES SYPA.

One of the activities technically cosponsored by our Chapter was 3-min video competition co-organized with the Power Electronics Group of the Tallinn University of Technology, where most of the SBC members work. Those videos attract a good amount of attention on the YouTube platform [4].

We were especially pleased to see that all of our efforts resulted in a strong new leadership team of the IES SBC, which was among the main cosponsors of the sixth International Summer Seminar "Intelligent and Efficient Energy Management for Zero-Energy and Resource-Efficient Smart Buildings and Districts." The IES SBC leaders—Vadim Sidorov and Pietro Emiliani—successfully applied for IES support for the SBC. Even though it is smaller than the SCLA grant, this allowed SYP members to participate at the technical seminar at no cost, including two-day accommodations and full board. Also,

they organized team-building social activities and a barbeque/cocktail party that finished with fireworks to commemorate this activity. Some memorable moments are shown in Figure 13.

FIGURE 12 — The gala dinner and award ceremony during IES Nights 2022 under the IES SYPA Committee.

The chapter has set several goals for the future. We would like to gain more Women in Engineering (WiE) Members. We will encourage, support, and guide them to rebuild and develop this affinity group in Estonia. Also, next year the Chapter members will organize the 17th International Conference on Compatibility, Power Electronics and Power Engineering [X]— flagship IES even in Europe. We encourage you to support this event as IES SYP-AC will allocate several Student Paper Travel Assistances (https://cpepowereng2023.com/).

To learn more about the Estonian IES Chapter, please refer to [1], [2], [3], and [4]. In the meantime, the IES SYP-AC chair (Prof. Marek Jasinski) invited Prof. Grzegorz Benysek, a visioner and expert in renewable energy and the e-mobility business. He is joining science with business and has several successes in the field of electrical energy processing sustainability and intelligence (Figure 14).

Moreover, thanks to the activity of Prof. Marek Turzynski (SYP IES cochair), the IES is promoted in Slovakia. He will coordinate of the IES SBC being opened by Slovakian students. The research team there is strong, as you will see in the next section.

FIGURE 13 — Attendees of the Summer Seminar 2022 enjoy technical and social activities.

FIGURE 14 — Prof. Grzegorz Benysek at Warsaw University of Technology presents a lecture for students on e-mobility, industry, and trends.

Central and Eastern Europe Brand Student Chapter Best University– Business Cooperation of the Year

About the Central and Eastern Europe Business Summit and Awards

Each year, the Central and Eastern Europe (CEE) Business Summit and Awards are organized to assess the importance of developing business and technical opportunities and regional cooperation. On 23 and 24 March 2022, the 10th anniversary of this ceremony was held in Warsaw, Poland. This is the leading annual awards event for the CEE Business Services across the CEE area. The event was attended by executives from 129 companies based in Lithuania, Latvia, Poland, Hungary, the Czech Republic,

Slovakia, Romania, Bulgaria, Georgia, and Moldova, including Brand Student Chapter (BSC) directors, site directors, and senior managers from across the CEE region.

More than 20 categories were evaluated in the framework of various company projects, business models, or prominent persons responsible for high sustainability and technical innovations. One of the regularly introduced categories is “Best University–Business Cooperation of the Year.”

Background of the Category Competitor

In Slovakia, onsemi has actively engaged with several top Slovak universities, creating strong cooperation programs and relationships. It also has close cooperation with the Faculty of Electrical Engineering and Information Technology at the University of Zilina (FEIT UNIZA). In connection with this fact, it is worth recalling an article that was published in IEEE Industrial Electronics Magazine [5], which reports on the successful implementation of the Technical Support Center of onsemi on the premises of the UNIZA. This close cooperation between UNIZA and onsemi, coordinated by project directors Jan Grauzel (onsemi) and Michal Frivaldsky (IES Member, University of Zilina), created a strong interconnection between academic research and practice (Figure 15).

FIGURE 15 — The technical support center members.

The innovative cooperation model enabled the intense support of electrotechnical education and related skill development in central Slovakia. In return, onsemi benefited from direct access to the most talented students and university employees to support real-world designs. Since 2017, when the center was founded with two employees (Boris Kozacek and Viliam Jaros, who are currently team leaders), it has developed to its current state, where 13 Ph.D.s and engineers work on worldwide project tasks. Preserving the idea of inter connection of the activities within the group of students, five students (internship positions) from different degrees of study are involved in project tasks.

This continuously growing engagement resulted in today’s state-of-the-art Center of Excellence employing application engineers with second- and third-level university degrees and long-term interns. This team, led by former UNIZA graduates Kozacek and Jaros, works on cooperation projects for top technology brands. The activity results in the identification of significant annual business opportunities for the company.

onsemi is also actively involved in cooperation with other Slovak universities and secondary schools, and they create active and strong cooperation. This includes the Faculty of Electrical Engineering and Informatics of the Slovak Technical University in Bratislava (FEI STU), the Faculty of Informatics and Information Technologies of the Slovak Technical University in Bratislava and several

secondary schools. We actively create space for students' professional work through paid professional internships.

Quantifiable metrics of the cooperation and the expected impact of cooperation are covered by activities focused on the following:

- application block diagrams, which support several hundred application projects through a block diagram service while identifying significant annual business opportunities and a multimillion dollar annual design revenue forecast
    - ❖ The supported market segments include industrial, automotive, computing, consumer, medical, military, and telecommunications segments.
    - ❖ The service is applied for top technology brands in the end markets, such as industrial drive, robotics, machine vision, asset management, electric vehicle (EV) charging, solar power solutions, uninterruptible power systems, energy storage, clinical point of care, medical devices, drones, traction inverters, Advanced Driver Assistance Systems (ADAS), auto body electronics and LED Lighting, IoT subsolutions, and more.
    - ❖ Examples of specific projects include EV charger levels one, two, and three; e-scooters; smart ebikes; an imaging system for the agile mobile robot, Spot; smart watches; a fingerprint scanner; railroad crossing control; CO2 monitoring systems; intercoms for smart homes; wearables for fall detection and emergency contact; a dc–dc converter for a locomotive tender; ADAS for electric motorcycles; and a car door module.
- co-organization and sponsorship of the "onsemi Design Challenge 2021/2022".
- regular sponsorship of a competition for high school students, the "Technicka Myslienka Roka".
- regular sponsorship of the ELEKTRO Conference organized by FEIT UNIZA as a Golden Partner of FEIT UNIZA.

Results

A total of 10 companies, including onsemi, IBM, and Western Union, were shortlisted for the "Best University– Business Cooperation of the Year" category. onsemi was named the eventual winner of this category, reflecting its importance in collaboration with the academic sector. ON Semiconductor Slovakia, a.s., received the award for the best cooperation with universities in CEE—the "Best University–Business Cooperation for CEE Business Services Award." The award was given during the 10th CEE BSC Summit and Awards 2022 in Warsaw, Poland, for the mentioned framework project cooperation on the Technical Support Center (Figure 16).

The award is a great honor and underlines the cooperation that brings results—the cooperation of onsemi's Technical Support Center, a.s., and the Department of Mechatronics and Electronics of the Faculty of Electrical Engineering and Information Technology at the University of Žilina. It is a recognition of five years of hard teamwork, technical and managerial skills, development, investment, and the achievement of synergy between the education sector and practice.

FIGURE 16 — ON Semiconductor Slovakia, a.s., received the award for the best cooperation with universities in CEE.

Going back to ISIE 2022, we were well prepared with ideas and propositions for the growth of our Society. To see how it was there, please see more in Figures 17–24.

FIGURE 17— A lake in Anchorage, AK, USA.

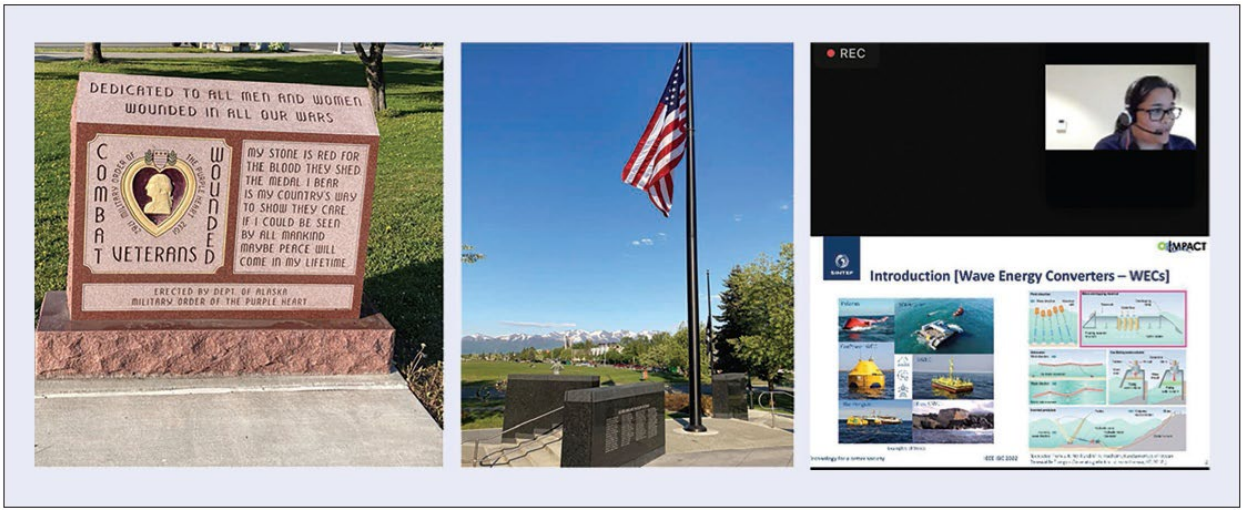

FIGURE 18— Monuments for all women and men who wounded in wars and a scientific session at ISIE 2022—in this case, remotely.

FIGURE 19— A boat trip to a glacier in Alaska.

FIGURE 20— Women in Industrial Electronics and SYP—now with an auditorium view (not via Zoom or Teams!).

FIGURE 21— Past, Present and Elect IES Presidents – 3 IES Musketeers.

FIGURE 22— The hybrid IES AdCom meeting in Anchorage, AK, USA.

FIGURE 23— Please be careful in your life—reduce the speed.

FIGURE 24— How patience and persistence could change the world—exploring is like a science. Is it?.

FIGURE 25— A moose at the Anchorage Airport. This is the true end of this short message. See you soon—somehow, somewhere.

We were impressed how Americans from Alaska were proud of their veterans and soldiers. Figure 18 is an example of a positive impact of the pandemic. You can learn history of a place and attend the conference at the same time (on the way to the conference session).

Alaska is a place where people have time for thinking and enjoying the wild and virgin nature with friends form the IES (Figure 19). After a social event, a scientific event has been organized (you know this from the beginning of this letter)—the Women in Industrial Electronics and SYP, now in auditorium view (Figure 20).

Then again, we move back to the social part, with three IES Musketeers in Figure 21 (past, present, and elect IES presidents). If you are a student guess, “who is who,” and write me an e-mail (marek.jasinski@ieee.org). If you are IES member, too, I will draw some winners and announce them during IECON 2022.

Back to work—there was administrative and strategic planning regarding how to help students to join IES. Figure 22 was taken during the AdCom meeting.

Thank God we can meet again personally—we hope, now that we understand the differences between virtual-only and personal meetings. This is not just business, science, and work—this is a matter of friendship and fellowship, which are the steam for our engine. Therefore, we were advised by the local administrators to reduce the speed due to too much steam in our engine (Figure 23).

However, the steam in our engines could be used slowly and wisely. If we are patient, work systematically, and cooperate with others, we can change the world into a better place (Figure 24). This is not easy because the life has a several dimensions; therefore, take care and thank you that you are here! Hope to see you soon!

With kind regards,
—Marek Jasinski
Chair of the IES SYP-AC
On behalf of the IES-SYP-AC

This is not end. … The end is coming:

We were not able to meet any moose—only the one in Figure 25 (at the airport when we were on the way back to Poland)—but, fortunately, we have a quite similar moose in the Slupecka Wilderness close to Warsaw.

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