

conference reports

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PAC conferences around the world

Protection, Automation and Control conferences around the world provide forums for discussions and exchanges of ideas that help the participants in resolving the challenges that our industry faces today.

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CIRED 2007 held in Vienna, Austria

The Biennial CIRED conference in Vienna brought together delegates from all over the world. Many papers were discussed at the conference.



THE 19TH INTERNATIONAL CONFERENCE AND EXHIBITION ON ELECTRICITY DISTRIBUTION was held in Vienna, Austria 21 – 24 May 2007. Vienna is the capital of Austria with a population of 1.7 million people. Founded around 500 BC, Vienna was originally a Celtic settlement. It later becomes Roman frontier city and after a rich medieval history making it a cultural center for arts and science. In 1805 Vienna becomes capital of the Austrian Empire and continues to play a major role in European and World history and politics.

The conference is organized

by CIRED (Congrès International des Réseaux Electriques de Distribution or in English International Conference on Electricity Distribution) CIRED is set up as an international 'non-for-profit' association. The first CIRED Conference was in May 1971 organized as the result of growing interest on electricity distribution. The increased interest for the conference through the years has led the organizers to the decision to have the conference at different locations around Europe, while still keeping the two years cycle. CIRED (<http://www.cired.be/>)

The exhibition plays an important role for information exchange

“works for the purpose of increasing the business relevant competencies, skills and knowledge of those who see themselves as a part of the electricity distribution community, whether they are from the utility, product, consultancy, service, business or Academic sector.

CIRED is dedicated to the design, construction and operation of public distribution systems and of large installations using electrical energy in industry, services and transport.

CIRED covers:

- The whole field of Electricity Distribution Systems and associated services, including dispersed and embedded generation issues
- The technical aspects of Electricity Supply
- Related aspects such as cost reduction, environment, organization and skills

To support its objectives CIRED's Technical Committee provides technical structure and content including papers and speakers to a biennial conference on developments and best practices in technology and management of electricity distribution. These conferences are open to participation by and contributions from experts from all over the world. The conferences which include an exhibition by manufacturing and



other companies supplying the electricity distribution industry are organized alternately by AIM (Belgium) and IEE (UK) who also bear the financial responsibility of the conferences."

The conference and exhibition were held in the Reed Centre which is located on the edge of the inner city. It was inaugurated at the start of 2004. This state-of-the-art modular congress centre offers a number of partitionable halls and numerous meeting facilities that create a perfect environment for such an event.

The goal of the conference is to provide an opportunity for the participants to learn and discuss the issues of importance to the industry, as well as to become familiar with the advancements of technology related to distribution systems. This goal is achieved through a combination of presentations, discussions, tutorials and an large industry exhibition showing the latest developments

Pre-conference tutorial sessions to update your knowledge on the industry's latest developments,

The three full days of technical presentations and discussions covering the very latest challenges and issues facing electricity distribution today and in the future including, divided in six sessions, one of which was focused on Operation Control and Protection. The large number of papers presented by authors from all over the world covered a wide range of subjects with impact to the protection and control of distribution systems.

During the breaks and after the sessions the participants had a chance to discuss and see demonstrations of the latest distribution equipment, including protection, control and testing devices.

Technical visits and a social program that allowed the attendees to become familiar and enjoy everything that Vienna can offer completed the program. ■



IEEE 2007 held in Acapulco, Mexico

RVP-AI is considered the most important forum in the Mexican electricity sector for discussion of a wide variety of topics

AT THE 85TH ANNIVERSARY of the Mexican Section of the IEEE it organized the 20th Power and Industrial Applications and Industrial Exhibition Summer Meeting – RVP-AI/2007 from 8 to 14 July 2007 in Acapulco, Mexico. The meeting was held at the Acapulco Convention Center and was attended by electric power system professionals from Mexico, North America and many other countries. The RVP-AI is considered the most important forum in the Mexican electricity sector for discussion of a wide variety of topics related to generation, transmission, distribution, protection, automation and control.

Acapulco de Juarez is a city and a major sea port on the Pacific coast of Mexico, about 300 km southwest from Mexico City. The first inhabitants of the area were the Nahuas, a tribe of people that preceded the Aztecs. In 1521 the Spaniard Francisco Chico arrived

and named it Santa Lucía. The city became a key trading port between Asia and America. Acapulco became a popular tourist destination for Europeans after 1920 and a vacation destination for the rich and famous of Hollywood and across the world in the 1950s.

The venue of the conference and exhibition – the Acapulco Cultural and Convention Center – was built after 1972 as a complex of five buildings, designed with the goal to provide excellent conditions for different kinds of events.

The program of the conference included technical sessions, tutorials, panel sessions, lectures and master lectures. Mexican and international authors presented more than 250 papers selected by the conference technical committee. A significant number of papers covered different protection, automation and control issues, including generator and distribution protection, synchrophasor applications, breaker failure and adaptive protection. IEC 61850 and its applications was subject of papers, as well as one of the conference tutorials.

The attendees of the conference also had the opportunity to discuss the latest technology presented by industry leading manufacturers both inside the exhibition hall, but also in an outside area. ■

APAP 2007 Jeju, South Korea



THE SECOND INTERNATIONAL CONFERENCE on Advanced Power System Automation and Protection 2007 was held from 24 to 27 April 2007 in Jeju, Korea. Located in a southern island where the weather is mild even in winter, the city is a famous resort that welcomes over 4 million visitors per year from mainland Korea, Japan and China. Jeju was an independent country called Tamna in 662 AD. It was renamed to Jeju in the 12th century by the king of Goryeo. The island has been part of the Republic of Korea since the end of World War II. The conference venue was the Island Ramada Plaza Jeju Hotel modeled after a cruise ship that floats on the waterfront of Jeju Island.

Prof. Lee, Chairman of the conference said that "...The purpose of APAP2007 is to invite the researchers, engineers, and experts of worldwide who work in power system automation and protection

field, and provide an opportunity to share their experiences and knowledge. APAP2007 is specially devoted to the advanced protection and automation technology in power systems, but not limited to. I believe that this seminar will establish a clear goal and direction of the researches in this field and make a contribution to develop the protection and automation technology for next-generation power systems..."

Numerous papers from all over the world were presented in Intensive Oral Session, Oral, Interactive and Industry Special Sessions.

The papers and discussions of the conference focused on some key, advanced and developing technologies for power system automation and protection, such as wide area protection, distributed generation, power system operation, analysis, modeling and simulation, experience and perspectives of the application of IEC 61850. ■



Panel session at the APAP conference

Western Power Delivery Automation Conference

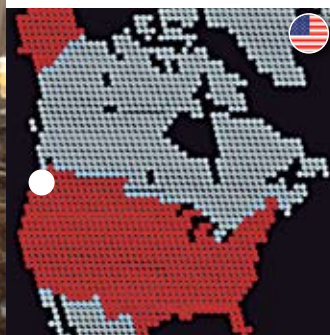
The 2007 Western Power Delivery Automation Conference was held 3-5 April 2007 in Spokane, Washington, USA. Spokane is located in the northeastern corner of Washington state and was first established in 1810 as a small trading post in the lands inhabited by the Spokane (meaning Children of the Sun) native Americans. The Spokane River runs through it, with spectacular falls on the western end of the city center.

The conference venue was the Davenport Hotel of Spokane that originally opened its doors on September 1, 1914, and was soon acclaimed as one of the world's grand hotels. It reopened in September 2002. Restored to its former elegance, the grand hotel again attracts a worldwide clientele, serves as Spokane's business and social hub, and is a major factor in the revitalization of the downtown area.

The conference is hosted by Washington State University and offers the opportunity to discuss the latest developments in the field of substation and power system automation



The papers are presented by industry leaders in system automation



The conference is held at the historical Davenport Hotel in Spokane

The conference is hosted by Washington State University and offers the attendees the opportunity to discuss the latest developments in the field of substation and power system automation. Papers about the application of communications protocols and equipment, network topology and security, substation automation and wide area monitoring and how they can be used in utility and industrial facilities were presented. The conference relies on papers from utilities, manufacturers, industry, educators, and consultants to offer a well-rounded, informative program. This conference focuses on the fast-growing issues of automation and control of power system substations. It is very helpful to power system specialists that are trying to find answers to their questions, such as:

- Why should we automate and at what level?
- How do we convince our colleagues and management to accept automation?
- What are the tools that will help us configure, commission and operate the best system?

■ How can we make accurate decisions to improve the efficiency of substation and power system automation?

The papers and discussions at the conference addressed the concerns regarding the selection of the right communications topology and mechanisms, refurbishment strategies or retrofitting substations, improving the engineering process or finding solutions to their networking problems

This was the 9th conference on power delivery automation in Spokane that is intended to complement the protection relaying conference in the autumn, thus providing participants from the US and around the world to discuss the complete range of issues related to the control of electric power systems under different conditions.

The conference program included 16 carefully selected by the committee papers that were presented by industry leaders over the two and a half days. One of the main differences between this and many other conferences is that papers are presented at single sessions which allows all attendees

to be present at the presentation and participate in the discussions of all conference papers.

During the breaks or after the end of the paper presentations leading manufacturers of intelligent electronic devices for substation protection and automation, as well as communications equipment and software tools were exhibiting in the beautiful halls of the Davenport hotel the latest power delivery automation technology and discussing with the participants their application. ■



IEEE PES General Meeting Tampa, Florida, USA



Super Sessions were a new concept introduced for the first time at this PES General Meeting

THE IEEE POWER ENGINEERING SOCIETY (PES) General Meeting was held at the Tampa Convention Center in Tampa, Florida, USA 24 – 28 June 2007. This is an annual event that combines plenary session, technical and poster sessions, committee meetings, tutorials and other activities. Industry experts from all over the world attend the meeting to present their papers and discuss topics of interest with their colleagues.

The Tampa Convention Center is located directly on the waterfront in the heart of downtown Tampa and hosts a variety of conventions, tradeshows, and other special events year-round. It is built on the original site of Fort Brooke, the original American settlement on Tampa Bay from which Tampa grew. The land belonged to the Calusa tribe in the 16th century when Spanish expeditions reached the west coast of Florida. Today the city has population of about

350 thousand people. Tampa is a part of the Tampa-St. Petersburg - Clearwater metropolitan area, referred to as the Tampa Bay with a total of 2.7 million residents.

PES President John McDonald was the moderator of the Plenary session that followed the General Membership Meeting. The topic of the session was “Keeping the US Transmission System Reliable – National, Regional and State Perspectives”.

Technical paper and panel sessions were scheduled Monday through Thursday and were grouped in several tracks covering:

- Understanding and responding to system events
- Securing new sources of energy
- Improving reliability and power quality
- Using innovative measurement and control techniques
- Surviving new markets and new structures



The Convention Center is located directly on the waterfront of downtown Tampa

John McDonalds, President of the IEEE PES

Many papers of interest to the protection, automation and control community were presented during the sessions included in the above tracks. Some examples are blackouts and restoration, analysis of faults and events using intelligent techniques, wind integration studies, performance characteristics and evaluation of PMUs.

Two sessions were dedicated to electric power systems protection. A total of 17 papers were included in both, with topics covering a wide range of protection related issues, such as protection testing, advanced methods for fault location, setting considerations and cyber security. New current differential schemes and other protection techniques were also discussed.

Super Sessions were a new concept introduced for the first time at this PES General Meeting. The idea is to allow experts from different domains to discuss subjects of common interest. They consist of a series of presentations that cover several aspects of the selected topic delivered by experts from different PES committees. “Working Closer to the Edge” was the first Super Session addressing issues related to the impact of increased load demand on existing

transmission systems. “Vision 2020” was the second Super Session that was divided in three parts, with the last two being of more specific interest to the PAC community:

- Transmission and distribution
- Digital communications, cyber security and grounding
- Wide area systems

Six tutorials complemented the rich technical program of the conference. One on “Distribution automation” covered the impact of the latest technologies on distribution automation. “Power systems blackouts – causes and mitigation” provided a comprehensive review of power system stability problems leading to blackouts, as well as measures that can improve the security of the system and reduce the probability for wide area disturbances.

Many PES committees held their own meetings in parallel to the technical sessions. Different working groups also met as part of their committee meetings.

The Awards Luncheon was another important event held in the Frida Ballroom of the Marriott hotel near the convention center. IEEE and PES award winners were honored at this event presided by John McDonald. Two IEEE PES Power System Relaying working groups received awards for:

Outstanding Technical Report “*Application considerations of IEC 61850/UCA2 for substation Ethernet local area network communication for protection and control*” (chaired by John Burger)
 Outstanding Standard or Guide “*IEEE Standard C37.119 Breaker Failure Protection*” (chaired by Rogger Hedding)

The 2007 class of PES members elected as IEEE Fellows was also honored at the luncheon. John Tengdin, who is a member of both the Power System Relaying and the Substation committees was one of the new Fellows. ■



Power Tech 2007, Lausanne, Switzerland

The papers presented at the conference were predominantly from representatives of many universities from all continents

PowerTech 2007 was held 1-5 July 2007 in Lausanne, Switzerland. This was the seventh edition of the European anchor conference of the IEEE Power Engineering Society and was built on the tradition of excellence of the preceding conferences in Athens, Stockholm, Budapest, Porto, Bologna and St. Petersburg.

Lausanne, with its 250,000 inhabitants, is well placed in the center of continental Europe. It has a long history, starting as settlements in Neolithic times and following development through different periods of European history, becoming the vibrant city it is today. It is also the home of the International Olympic Committee. The PowerTech Conference is sponsored by the IEEE Power Engineering Society and was organized by the Energy Center of the Swiss Federal Institute of Technology in Lausanne (EPFL), a leading European technological research university which brings together over 10'000 academics, researchers and students from 110



EPFL is located on the shores of Lake Geneva



nationalities. It has a rich history starting from 1853 with the founding of the Ecole Spéciale de Lausanne, which later became the Ecole Polytechnique de l'Université de Lausanne (EPUL). In 1969, EPUL became EPFL, a federal institution and one of only two Swiss institutes of technology.

The EPFL campus was the conference venue that with its idyllic location on the shores of Lake Geneva, created a perfect environment for discussions on the present and future of electric power systems technology.

The papers presented at the conference were predominantly from representatives of many universities from countries from all continents and covered a wide range of topics such as:

- Power systems analysis, design, construction, control and operation
- Monitoring and diagnostics

- Information technologies, as they are implemented in electric energy systems

- Electric energy economic considerations

- Public policy implications on the planning and operation of modern power system

- Of more specific interest to the protection, automation and control community were:

- Integration of distributed generation in the main grids

- Power system dynamics and controls

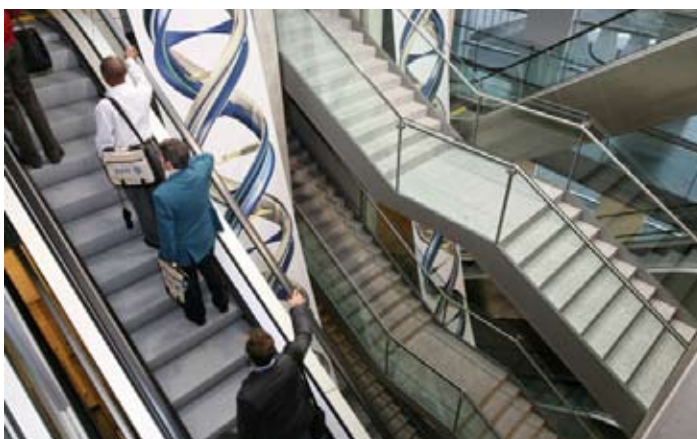
- Cascading emergencies and blackouts

- Power system protection

- Power system instrumentation, measurements and automation

- Power system communication

Four sessions were dedicated to power system protection and control and a session on information technology concentrated on the impact of IEC 61850 on substation automation systems. ■



Inside the EPFL campus

Georgia Tech 2007 Disturbance Analysis and Protection Conferences

The two conferences are

focused on solving real life

problems and addressing the

practical aspects of protection

THE 61ST ANNUAL Georgia Tech Protective Relaying Conference was held 2–4 May at the Georgia Tech Global Learning Center located in Midtown Atlanta. This is the oldest running annual conference in North America (and maybe in the world) dedicated to the issues of electric power systems protection and control. It is attended by specialists in the field predominantly from the Eastern and Central parts of the United States. Due to the high quality of the papers and good balance between utilities and vendors representation, the international participation is steadily increasing.

Atlanta is a young city, even by American standards. The land belonged to the Creek and Cherokee Indians. The first white settlement, Fort Peachtree, was established on the banks of the Chattahoochee River was founded as a rail terminus and through the years has grown into a modern city with a beautiful mixture detailed old buildings and glass and concrete skyscrapers. Atlanta is the Capitol city not only of Georgia, but also of the southeast, a city of the future with strong ties to its past. It hosted the 1996 Olympic

This is the oldest protection conference in North America



The conference is held at the Georgia Tech Global Learning Center

games and is also home of the world headquarters of Coca-Cola.

The Protective Relaying Conference is hosted by Georgia Tech which was founded on October 13, 1885 as the Georgia School of Technology. It opened its doors in October 1888 to 84 students. In 1948, the name was changed to the Georgia Institute of Technology to reflect a growing focus on advanced research.

Throughout its long history, Georgia Tech has always focused its efforts on preparing students to use their innovative skills and strong work ethic to solve real-world problems and improve the lives of people around the globe. The same ideas are reflected in the

relay conference and its focus on the practical aspects of protection and control of electric power systems under abnormal conditions.

41 papers covering a wide range of topics were presented by protection experts in 10 sessions. While some papers were of tutorial nature, others discussed IEC 61850 and its applications, advancements in transmission, substation and generator protection, testing and cyber security. Most of the time two sessions ran in parallel, thus allowing sufficient time for presentations and discussions, while at the same time offering a choice of topics to the attendees.

After the closing of the sessions the participants had the

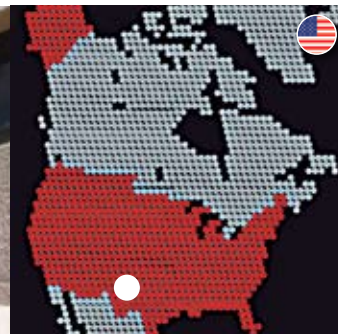
opportunity to visit the hospitality suits of leading manufacturers and become familiar with the latest developments in power system protection and control technology.

Terry Boston, Executive VP of Tennessee Valley Authority was the Keynote Speaker at the conference luncheon and talked about "Blackouts – Whose 'Fault' Is It?" At the end of the luncheon Walt Elmore presented the 2006 Best Paper award (carrying his name) to Dr. Alexander Apostolov for his paper "Zone 3 distance protection – Yes or No?"

The relay conference was preceded at the same venue by the 10th Georgia Tech Fault and Disturbance Analysis conference. ■



Texas A&M Conference for Protective Relay Engineers



Utility presentations give application information that represents a valuable supplement to manufacturer's specifications

THE 2007 TEXAS A&M CONFERENCE was held in College Station, Texas, USA 27-29 March 2007. The City of College Station is a young municipality, with its beginnings in the founding of Texas A&M College - the first state institution of higher education in Texas, inaugurated in 1876.

After the end of the paper sessions the participants visited the hospitality suites at the College Station Hilton hotel.

In the words of Prof. B. Don Russel, the Chairman of the Conference: "...For 60 years the Annual Conference for Protective Relay Engineers has provided the best available information on protective relay applications and technology. With the changes that have occurred in the electric power industry and with the business emphasis on efficiency and cost savings, the relay conference is even more important than ever. Engineers tell me that they have far less time

today to familiarize themselves with available equipment and systems and must rely more than ever on manufacturers and outside contractors. This means that the networking and concentrated information that is provided by our relay conference is critical to helping protection engineers understand new protection concepts, advances in equipment, and problems that have occurred in the application of systems and devices. Engineers interested in the design, application, and operation of protective relay systems and equipment will be challenged by a wide range of papers, panels, and discussion forums that will help them do their jobs better!

The planning committee of the conference works closely with representatives from manufacturing companies and operating utilities to select papers and presentations that are both

The Texas A&M campus at College Station

practical and educational. Special tutorials are presented that provide new engineers with the basics and fundamentals. Utility presentations give application information that represents a valuable supplement to manufacturer's specifications. At every level the planning committee seeks to strike a balance between innovative concepts and practical solutions to current problems."

The conference program reflects these intentions and the papers divided in several tracks that are focused on power engineering and industrial applications and cover a wide range of issues related to power system protection. Most of the papers are presented in single sessions, while the breakout sessions run in parallel.

The papers discussed challenges to protection caused by different line configurations, CT performance or transformer energization. Another group of papers covered arc-flash protection and operation in industrial environment. IEC 61850 and its impact on protection applications, experience with standardized protection and lessons learned from relay operations analysis, as well as data integration and wind farm protection added to the variety of topics presented and discussed at the conference. ■



Panel session at Texas A&M