

APEC[®]

2020



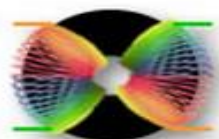
New Orleans

MARCH 15-19, 2020

Happy 35th Anniversary to APEC & PSMA



A forum for discussing common concerns to the power sources industry, for the benefit of manufacturers, suppliers and users alike.



Magnetics



Lead-Free



Safety



Energy Efficiency



Semiconductor



Manufacturing



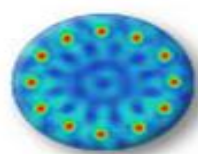
Alternative Energy



Packaging



Education



Nanotechnology



Power Technology
Roadmap



Capacitor



Energy Harvesting



New Orleans
MARCH 15-19, 2020

History Lesson: One Door Closes, Another Opens

The demise of the Power Concepts, Inc. International Power Electronics Conference (1975-1984), better known as POWERCON, leaves the power electronics industry without a conference focused on the working engineer.

The IEEE Power Electronics Specialists Conference (PESC) is in existence but is oriented more towards publishing advanced research rather than solving the problems of the day.



A New Conference is Born

The IEEE Power Electronics Society (PELS), fills the void and creates the Applied Power Electronics Conference and Exposition - thanks to the “Gang of 8.”



The “Gang of Eight”

Bill Hazen (Prime Computer)

Marty Schlecht (MIT)

Don Drinkwater (DEC)

Jack Wright (GE)

Phil Hower (Unitrode)

Trey Burns (Data General)

Jonathan Wood (Data General)

John Kassakian (MIT)

The first APEC is held in April of 1986, only nine months after the concept was first proposed!



New Orleans
MARCH 15-19, 2020

Planning: Six Key Elements of APEC

1. Technical papers in 10-15 sessions
2. An exhibition by vendors
3. Professional advancement seminars
4. Vendors' seminars in evening (no conflict)
5. Special awards luncheon
6. Industry sponsored cocktail party

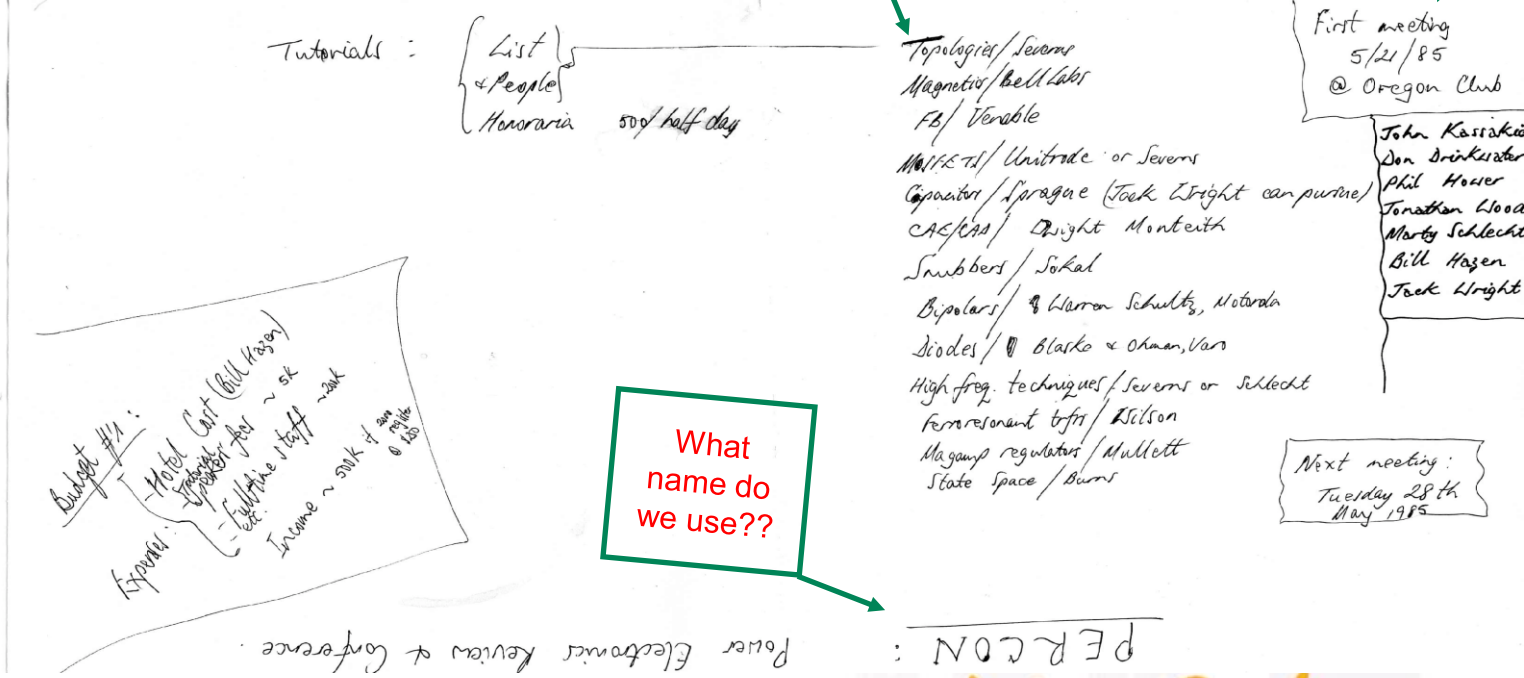
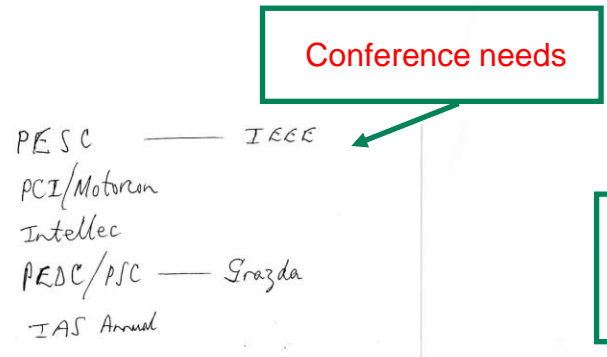
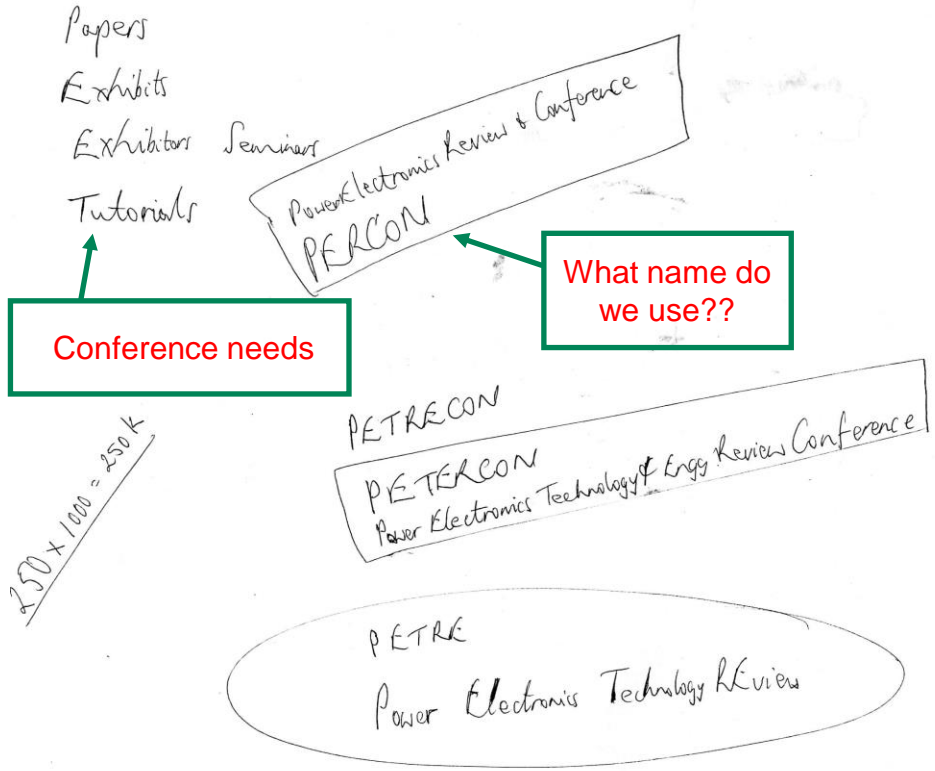
These foundational elements have lasted for 35 years



Site of First APEC Planning Committee Meeting: May 21, 1985



Planning the First APEC



Planning the First Educational Sessions

Sessions tracks

P.S. I will volunteer to chair/organize a session if needed.

Some possible session titles for APEC:

③ * Magnetic Component Design - Harada, Prot. Wilson, Steve Pepper
 * Designing at Higher Operating Frequencies

④ * Devices and Applications - Manno, Rick Blackard, central IC's
 * Reducing Analytical Methods to Practice - Madhulal, Wood, Vally Lee

⑤ * Converter Configurations
 * Circuit Design Techniques
 * Motor Drives
 * Circuit Simulation
 * Optimizing Reliability and Efficiency - Morteith

① * Manufacturing Consideration - Isaac Wilson, Dr.
 * New Developments in control techniques
 - state feedback control - Sokol
 - current sharing techniques - Wood

② * High frequency converters
 VICOR
 O-T
 Fred Lee
 Monty Schlecht
 John Kowicki

* Power System Considerations
 - distributed regulation
 - BBU/power rail strategies
 - line transient specs (IEEE 587?)
 - characteristics of loads (ECL, disk drives, etc)
 - ULI / TFC - u processor control

Manufacturing
 Possible contributors
 Mike Bachler, PG.
 Ask Dr. Wilson for How do you do it?
 PEE mfg. Engr. reliability?
 Wilson known How do you weed
 out in fact matching
 Surface Mount Tech
 Test Strategies

give presentation on VLSI systems



Creating a Lasting Brand

The APEC logo consists of the letters 'APEC' in a bold, black, sans-serif font. The letter 'E' is stylized with a white arrow pointing to the right, passing through the center of the letter.

The logo has lasted 35 years. Big thanks to Dina Goldberg - she got it right!

Jonathan Wood (Data General)

Jonathan,
How do you like this as
the APEC logo? Please show
to Greg & let me know your
reactions.

A handwritten signature in dark ink, appearing to read 'John' with a horizontal line underneath.

John Kassakian (MIT)

The APEC 2020 logo features the word 'APEC' in a bold, green, sans-serif font with a white arrow pointing right through the 'E'. Below it, the year '2020' is written in a smaller, orange, sans-serif font.

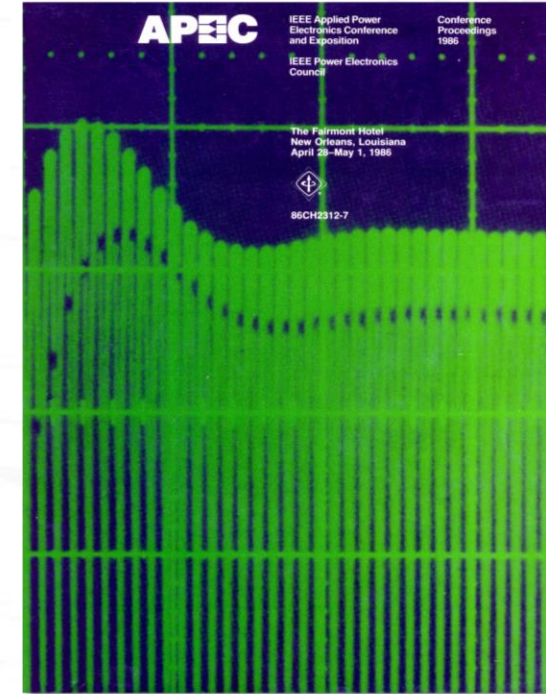
New Orleans
MARCH 15-19, 2020

The First APEC

The first APEC was held in April of 1986, nine months after the concept was first proposed. There were 250 attendees and 20 Exhibitors.

First Exhibitors

- ▷ AMPEREX (PHILLIPS)
- ▷ ANALOG DESIGN TOOLS
- ▷ BLOOM ASSOCIATES
- ▷ CERAMIC MAGNETICS
- ▷ COLLMER SEMICONDUCTORS INC - FUJI ELECTRIC
- ▷ DARNELL RESEARCH INC. (POWER TECHNETICS MAGAZINE)
- ▷ INSTRUMENTS INC.
- ▷ INTEGRATED POWER SEMICONDUCTORS
- ▷ INTUSOFT
- ▷ MAGNETICS INC. (SPANG & COMPANY)
- ▷ MOTOROLA
- ▷ NATIONAL MAGNETICS CORP
- ▷ POWEREX
- ▷ SANREX
- ▷ SIGNETICS
- ▷ SILICON GENERAL
- ▷ TOSHIBA
- ▷ UNITRODE
- ▷ VARO SEMICONDUCTORS
- ▷ VENABLE INDUSTRIES



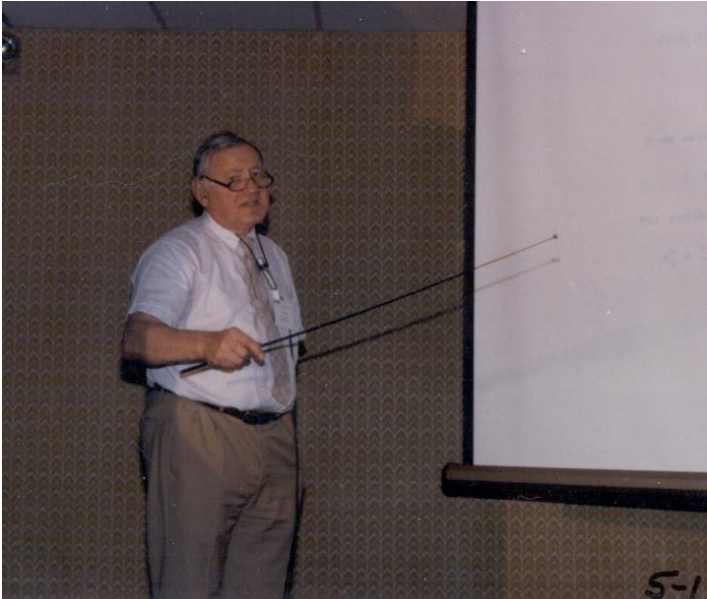
APEC
2020

New Orleans
MARCH 15-19, 2020

First Presenters



Phil Hower



Alex Kusko



Rudy Severns

APEC Pioneers

Dave and Val
Middlebrook



Jonathan Wood

Marty Schlecht
Tom Wilson, Sr.
Harry Owen



John Kassakian
Joe Perkinson
Jeff Shepherd

First Attendee Social (All 250 Attendees)



APEC
2020

New Orleans
MARCH 15-19, 2020

Pioneer Exhibitor



Dean Venable

A Conference Grows

In 1989, the IEEE Industry Applications Society (IAS) Annual Meeting is overwhelmed with paper submissions. IAS approaches PELS about co-sponsoring APEC. Both PELS and IAS agree this is a better idea than starting another conference.

At APEC '90, Power Sources Manufacturers Association (PSMA) approaches APEC. PSMA had been sponsoring its own conference, the Power Electronics Conference (PEC). PSMA proposes that APEC and PEC merge. Since PSMA members are mainly industry companies, it seems like a good fit.



A Conference Grows: Planning Meetings



APEC
2020

New Orleans
MARCH 15-19, 2020

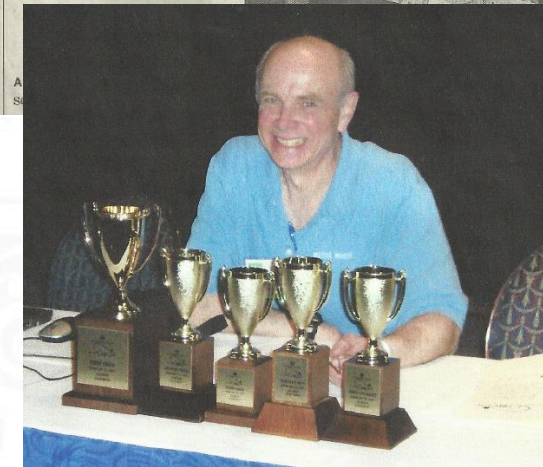
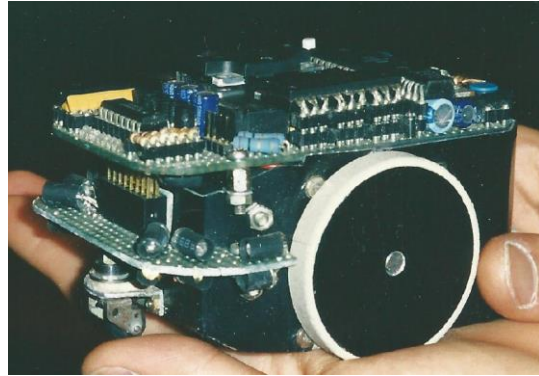
A Conference Grows: Sponsors Dinners



APEC
2020

New Orleans
MARCH 15-19, 2020

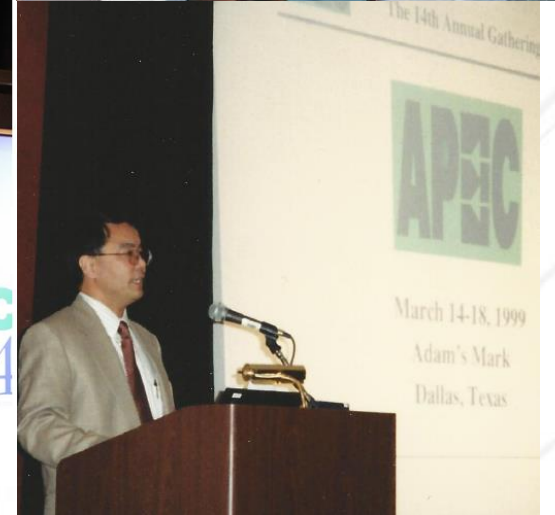
A Conference Grows: Micromouse Races



APEC
2020

New Orleans
MARCH 15-19, 2020

A Conference Grows



APEC
2020

New Orleans
MARCH 15-19, 2020

1985 – 2020: Growing in the Right Direction



Conference Then & Now: APEC 1986 – 1st Conference Committee

Chairman, John Kassakian

Program, Dave Middlebrook & Alex Kusko

Publicity, Tom Wilson, Jr. & Lloyd Dixon

Exhibits, Rudy Severns

Finance, Jonathan Wood

Sponsor Dunning, Bill Hazen



New Orleans
MARCH 15-19, 2020

Conference Then & Now: APEC 2020 - 35th Conference Committee

General Chair	José A. Cobos	Universidad Politécnica de Madrid, PELS
Program Chair	Conor Quinn	Artesyn Embedded Power, an Advanced Energy Company, PSMA
Assistant Program Chair	Omer C. Onar	Oak Ridge National Laboratory
Steering Committee Chair	Ernie Parker	Crane Aerospace & Electronics
Plenary Session Chair, Seminar Co-Chair	Aung Thet Tu	Infineon Technologies, PSMA
Exposition Co-Chair	Kevin Parmenter	Taiwan Semiconductor
Exposition Co-Chair	Van Niemela	Planning Committee
Seminar Co-Chair	Jin Wang	The Ohio State University
Industry Session Co-Chair	Tony O'Gorman	PSEC, Inc.
Industry Session Co-Chair	Tim McDonald	Infineon Technologies
Industry Session Co-Chair	Seana McNeal	AFRL
Finance Co-Chair	Mark Nelms	Auburn University
Finance Co-Chair	John Vigars	Allegro MicroSystems
Rap Sessions Co-Chair	Ali Khajehoddin	University of Alberta
Rap Sessions Co-Chair	Indumini Ranmuthu	Texas Instruments
Publicity Co-Chair	Greg Evans	WelComm, Inc.
Publicity Co-Chair	Kathy Naraghi	WelComm, Inc.
Social Media Chair	Frank Cirolia	Artesyn Embedded Technologies
Web Chair	Adam Pitel	Magna-Power Electronics
Marketing/App Chair	Pradeep Shenoy	Texas Instruments
Grants and Awards Chair	Oliver Trescases	University of Toronto
Publications Chair	Siamak Abedinpour	Dialog Semiconductor, Inc., IAS
MicroMouse Chair	David Otten	Massachusetts Institute of Technology
Spousal Hospitality Chair	Jane Wilson	
Member at Large	Eric Persson	Infineon, PSMA

Many Co-Chairs – To help each other with the growth

More activities like RAP Sessions, Grants, Micro Mouse, etc.



New Orleans
MARCH 15-19, 2020

Conference Then & Now: APEC 2020 - Supporting Groups

Steering Committee Chair	Ernie Parker	Crane Aerospace & Electronics
Steering Committee	Jonathan Kimball	Missouri University of Science & Technology
Steering Committee	José A. Cobos	Universidad Politécnica de Madrid, PELS
Steering Committee	Babak Fahimi	
Steering Committee	Conor Quinn	Artysyn Embedded Technologies
Steering Committee	Siamak Abedinpour	Dialog Semiconductor Inc.
Steering Committee	Eric Persson	Infineon
Steering Committee	Aung Thet Tu	Infineon
Steering Committee	Russell Spyker	United States Air Force

The Steering Committee keeps past Conference Chairs involved

Speaker Management	Julie Ferry	SmithBucklin
Event Director	Francesca Malin	SmithBucklin
Tradeshow Management	Ingrid Qualls	SmithBucklin
IT Director	Rod Stiegman	SmithBucklin
Meeting Logistics	Tara Gray	SmithBucklin
Abstracts Management	Tom Wehner	Epapers LLC

Conference Management has been a great addition to the team and is very involved with APEC's growth

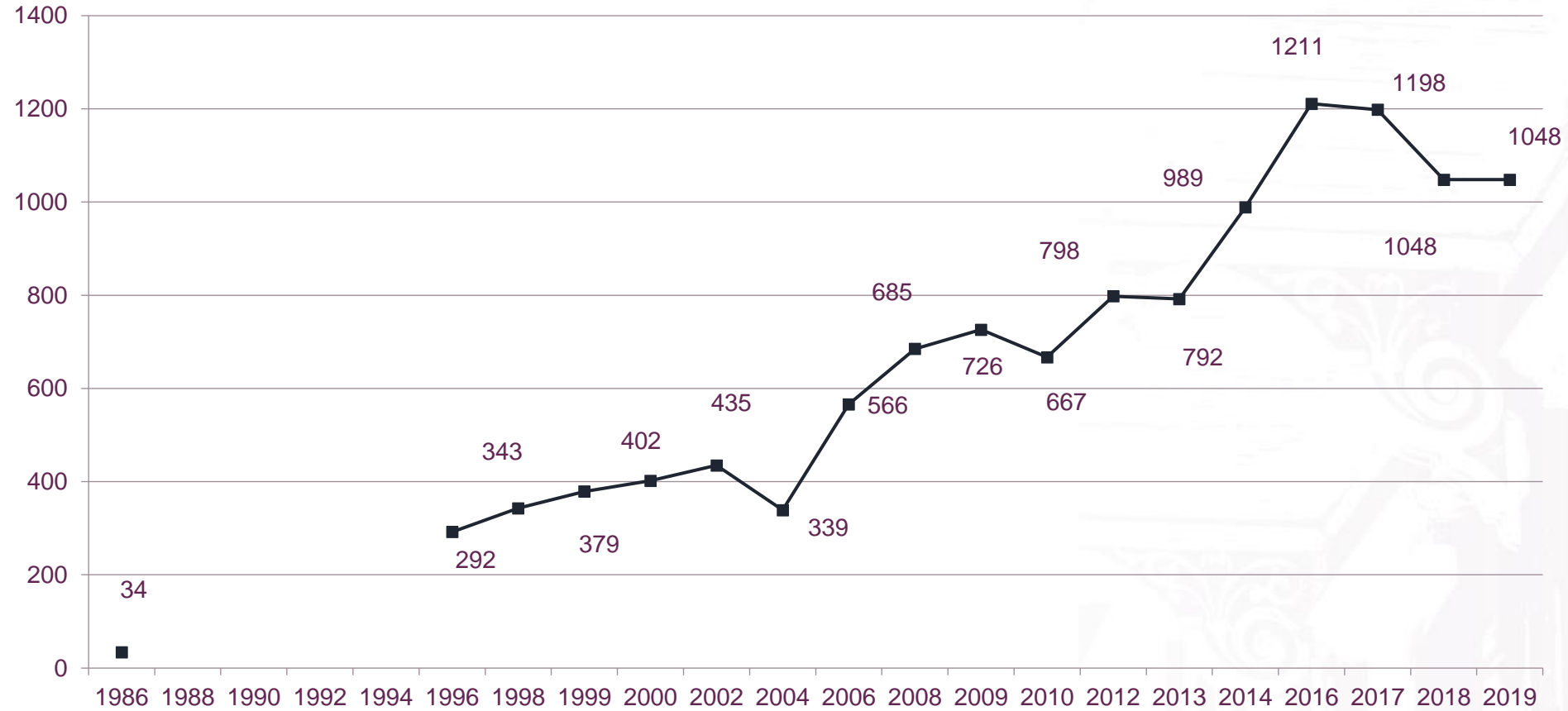
Conference Then & Now: Change Over the Years

CONFERENCE AREA	1986	2019	Increase
PAPERS PRESENTED	34	555	1532%
TECHNICAL SESSIONS	6	81	1250%
PROFESSIONAL SEMINARS	7	18	157%
EXHIBITORS	20	305	1352%
ATTENDEES	250	5932	2272%
PROCEEDINGS WEIGHT	1.5 lbs	0.5 oz - USB	

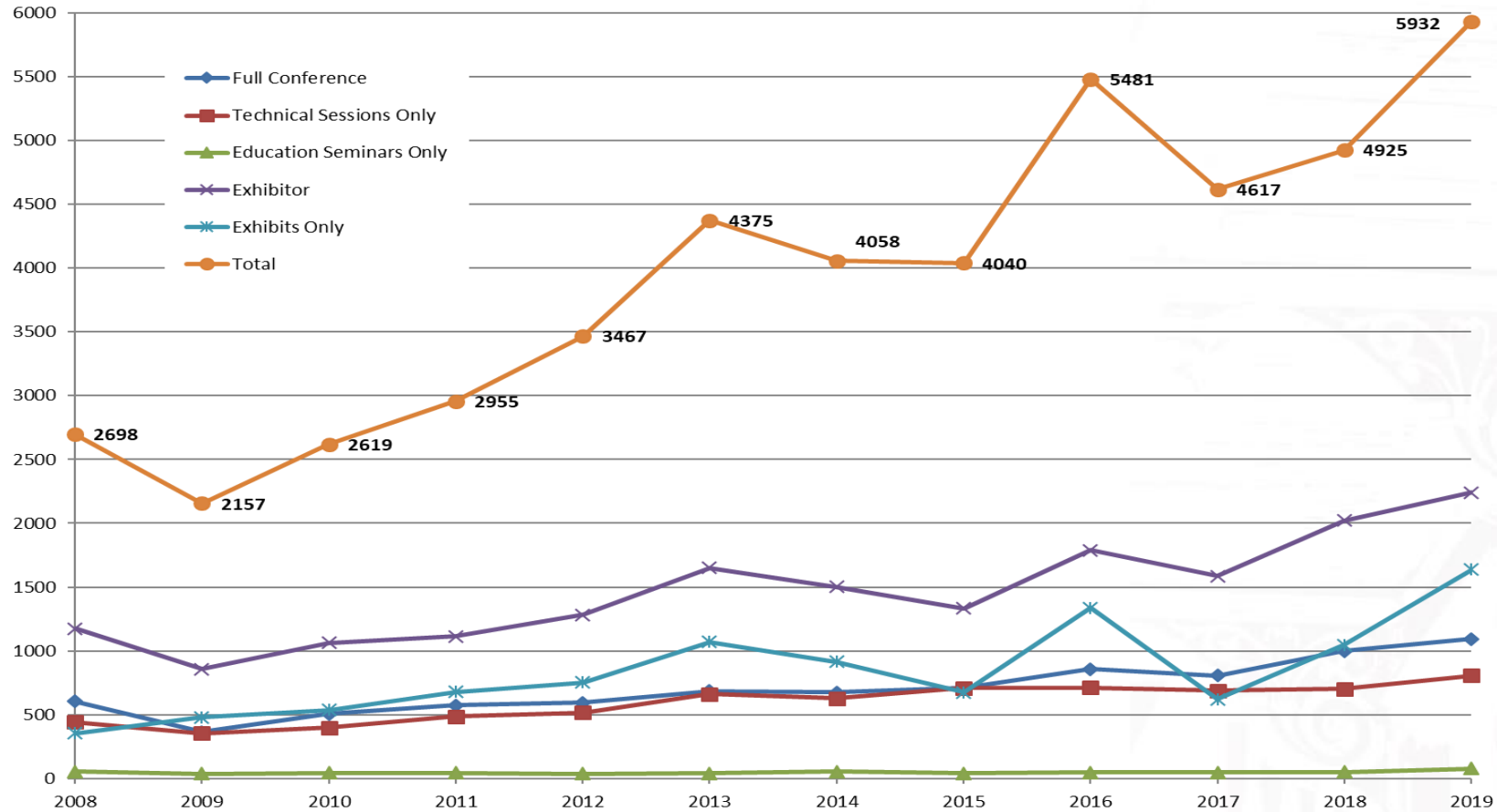
Proceedings weighed about 6 pound before the switch to USB



Conference Then & Now: Submitted Papers 1986–2019



Conference Then & Now: Attendee Registrations 2008–2019



Conference Then & Now: Location and Attendance 2008–2019

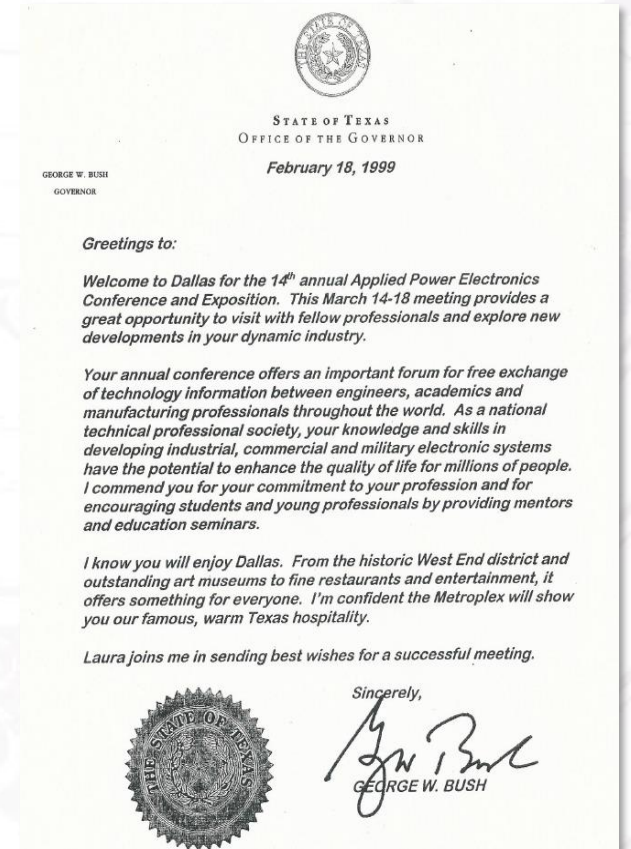
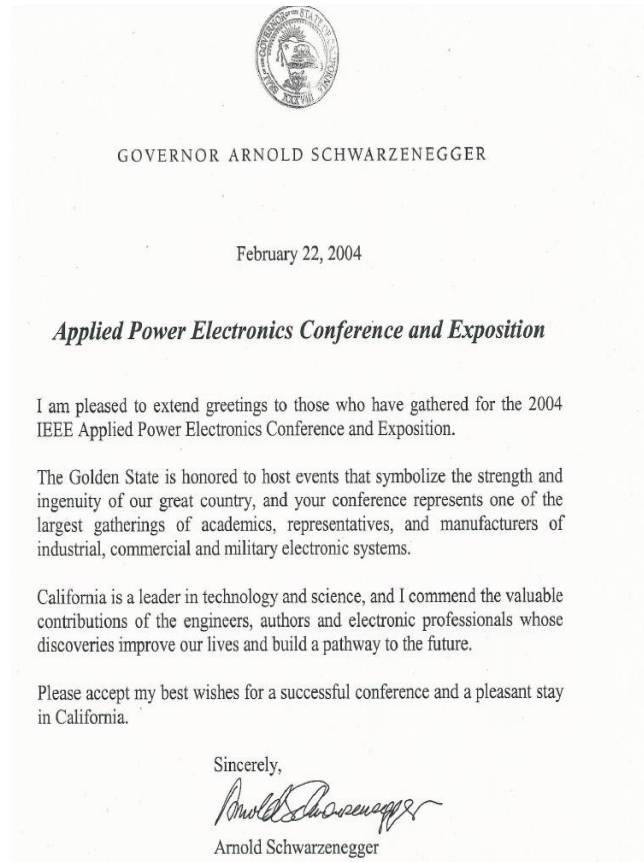
Year	Full Conference	Technical Sessions Only	Education Seminars Only	Exhibitor	Exhibits Only	Total	State
2008	603	441	54	1175	356	2698	TX
2009	364	356	36	858	481	2157	DC
2010	508	398	45	1063	536	2619	CA
2011	573	486	44	1115	679	2955	TX
2012	595	516	38	1282	753	3467	FL
2013	686	661	42	1652	1069	4375	CA
2014	674	628	55	1503	915	4058	TX
2015	709	709	40	1332	676	4040	NC
2016	858	714	48	1789	1337	5481	CA
2017	808	690	49	1588	620	4617	FL
2018	1000	702	51	2023	1048	4925	TX
2019	1093	807	78	2241	1638	5932	CA

California draws a lot of Exhibits Only walk-ins

Support from Government Officials

Two of many letters received throughout the years, from Mayors, Governors and even Presidents.

15 years ago in California, a message from the “Governator,” and 20 years ago from then Texas Governor George W. Bush.



New Orleans
MARCH 15-19, 2020

The Future – Why APEC?

APEC is the best power electronics exposition

APEC has the best professional development courses taught by world-class experts

APEC has highest quality presentations of peer-reviewed technical papers covering a wide range of topics

APEC is a time to network and enjoy the company of fellow power electronics professionals in a beautiful setting

APEC has the support 3 strong sponsors: PELS, IAS & PSMA

APEC has grown and will continue to grow because ...



New Orleans
MARCH 15-19, 2020

Volunteers like us are ...

- Professional
- Results Driven
- Accountable
- Passionate
- Energy Champions
- Flexible
- Creative
- Team-oriented
- Trustworthy
- Reliable
- Committed



From the “Gang of 8” to the hundreds that followed ...

Volunteers have made APEC so successful!

Some Past Volunteer Leaders



APEC
2020

New Orleans
MARCH 15-19, 2020

Past Chairs – Thank You for Your Leadership

1986	Fairmont Hotel - New Orleans, Louisiana	April 28 – May 1	John G. Kassakian
1987	Town and Country Hotel - San Diego, California	March 2 - 6	John G. Kassakian
1988	Fairmont Hotel - New Orleans, Louisiana	February 1 – 5	William W. Burns, III
1989	Baltimore Convention Center - Baltimore, Maryland	March 13 – 17	William W. Burns, III
1990	Biltmore Hotel - Los Angeles, California	March 11 – 16	Robert V. White
1991	Hyatt Regency Reunion Hotel - Dallas, Texas	March 10 – 15	Charles Harm
1992	Weston Copley Plaza Hotel - Boston, Massachusetts	February 23 – 27	Thomas M. Jahns
1993	Town and Country Hotel - San Diego, California	March 7 – 11	Kevin J. Fellhowlter
1994	Disney Contemporary Hotel - Orlando, Florida	February 13 – 17	Douglas McIlvoy
1995	Hyatt Regency Reunion Hotel - Dallas, Texas	March 5 – 9	Thomas Latos
1996	Fairmont Hotel - San Jose, California	March 3 – 7	Charles E. Mullett
1997	Weston Peachtree Hotel - Atlanta, Georgia	February 23 – 27	Thomas G. Wilson, Jr

Past Chairs – Thank You for Your Leadership

1998	Disneyland Hotel - Anaheim, California	February 15 – 19	David Torrey
1999	Adams' Mark Hotel - Dallas, Texas	March 14 – 18	F. Don Tan
2000	Fairmont Hotel - New Orleans, Louisiana	February 6 – 10	Robert V. White
2001	Disneyland Hotel - Anaheim, California	March 4 – 8	R. Mark Nelms
2002	Adams' Mark Hotel - Dallas, Texas	March 10 – 14	V. Joseph Thottuvelil
2003	Fontainebleau Hotel - Miami Beach, Florida	February 9 – 13	Bruce Miller
2004	Disneyland Hotel - Anaheim, California	February 22 – 26	Jim Kokernak
2005	Hilton Austin - Austin, Texas	March 6 – 10	Jason Lai
2006	Hyatt Regency Hotel - Dallas, Texas	February 19 - 23	Van Niemela
2007	Disneyland Hotel - Anaheim, California	February 25 – March 1	Russ Spyker
2008	Austin Convention Center - Austin, Texas	February 24 - 28	Steve Pekarek
2009	Marriott Wardman Park - Washington, DC	February 15 - 19	Kevin Parmenter

General Chairs normally volunteer at least 10 years of their time - many serving much more than that.



Past Chairs – Thank You for Your Leadership

2010	Palm Springs Convention Center - Palm Springs, California	February 21 - 25	Babak Fahimi
2011	Fort Worth Convention Center - Fort Worth, Texas	March 6 - 10	Patrick Chapman
2012	Disney's Coronado Springs Resort - Orlando, Florida	February 5 – 9	Frank Cirolia
2013	Long Beach Convention Center - Long Beach, California	March 17 – 21	Siamak Abedinpour
2014	Fort Worth Convention Center - Fort Worth, TX	March 16 – 20	Haidong Yu
2015	Charlotte Convention Center - Charlotte, North Carolina	March 15 – 19	Aung Thet Tu
2016	Long Beach Convention Center - Long Beach, California	March 20 – 24	Alireza Khaligh
2017	Tampa Convention Center - Tampa, Florida	March 26 – 30	Jonathan Kimball
2018	Henry B. Gonzalez Convention Center - San Antonio, Texas	March 4 – 8	Eric Persson
2019	Anaheim Convention Center - Anaheim, California	March 17 – 21	Ernie Parker
2020	New Orleans Ernest N. Morial Convention Center, New Orleans, Louisiana	March 15 – 19	José A. Cobos
2021	Phoenix Convention Center - Phoenix, Arizona	February 25 – March 1	Conor Quinn (Future Chair)

