WEMPEC History

WEMPEC

1981 - 2016
WEMPEC History

For me the WEMPEC idea began in the Mid 1960’s with the University-Industry Research Program (UIR)

Which provided part of my faculty salary to visit and facilitate interaction with Wisconsin industry

Many of the people I met through UIR in the 60’s and early 70’s provided important insight into what became the WEMPEC model

Hey!

50 years is a long time
WEMPEC History

In the beginning WEMPEC was just a few ideas, gathered from conversations with faculty and industry representatives about how a successful University-Industry program might be created

First
Emphasize Teamwork – a two way organization

Second
Deal directly with engineers

Third
Many industry sponsors

Fourth
Emphasize both education and research
WEMPEC History

First
Teamwork – a two way street
Essential for long term success
Why? To maintain a lively interest in the program

Some Possibilities

Sponsor visits to campus (to give seminars?)
Faculty visits to sponsor facilities (to give seminars?)
Sponsor input on research directions
Sponsor personnel taking credit or non-credit courses
Sponsor engineers participating in campus activities

Annual Meeting
WEMPEC History

Second
Deal directly with engineers

Why? To avoid “middleman” with limited knowledge of program

Some Possibilities

Keep sponsor contribution small enough
to allow approval within engineering
Interact with and come to know sponsor engineers
Motivation from engineers – not imposed on engineers
Develop “Champions” within sponsor engineering departments
WEMPEC History

Third
Many industry sponsors
Why? Benefits of diversity

Some Possibilities
Do not allow any “dominant sponsors”
Be able to “sell” the program everywhere
Low sensitivity to market sector variability
Enhanced employment opportunities for students
In the long term, graduates will “sell” WEMPEC to their employers
WEMPEC History

Fourth
Emphasize both education and research

Why? Utilizes resources effectively and both fulfill sponsor needs

Some Possibilities

Sponsor funding primarily used for student research support to increase research productivity

Provide tutorial materials on emerging areas

Off-campus credit and non-credit courses

Short Courses
In 1980
Things seemed to come together
It was my last year as ECE Department Chairman
Professor Lipo indicated his support
Energy prices were heading up
Demands on performance of drives were increasing
And power electronics offered solutions

A proposal was created for a
University – Industry Consortium called the
Wisconsin Electric Machines and Power Electronics Consortium
By
Professors Norbert Schmitz, Thomas Lipo and Donald Novotny

Also participating were a number of industrial friends including
Ken Phillips, Steve Bomba and Roy Hyink
who had significant impact on the final proposal

Ken Phillips became and remains a key WEMPEC supporter
WEMPEC History

Original WEMPEC Program Plan

WEMPEC is an organization of sponsoring companies with an interest in the general field of electric machines and power electronics who have agreed to help support an expanded program in this area in the Electrical and Computer Engineering Department at the University of Wisconsin-Madison.

Goals of WEMPEC

The sponsors and the faculty directors of the program will be dedicated to the development of the best possible educational, research and service program in the area of electric machines and power electronics. Specifically the program goals will include:
WEMPEC History

Original WEMPEC Program Plan

Goals of WEMPEC

1) A strong undergraduate elective program graduating 20-30 BS degree recipient per year.

2) A strong MS and PhD program involving 6-12 MS and 3-6 PhD students engaged in research in the fields of electric machines, power electronics and AC drives.

3) Improved instructional and research laboratory facilities.

4) A close and productive relationship between the program faculty and students and the sponsoring companies.
WEMPEC History

Original WEMPEC Program Plan

Program Faculty

Professor T. A. Lipo
Professor D. W. Novotny
Professor N. L. Schmitz

Program Components

Education

Undergraduate Courses, Graduate Courses, Seminars, Cooperative Programs and Continuing Education

Research

Generic Research and Special Research Projects
WEMPEC History

Original WEMPEC Program Plan

Program Components

Service

Liaison with Sponsors, Information Services and Consulting

Generic Research

The program faculty will initiate and carry out an expanded program of graduate student research projects of a basic and widely applicable nature with the support of the program funds provided by the sponsors. Examples of past work of this type and a list of possible future projects is given in Appendix B.
Original WEMPEC Program Plan

Sponsors Contributions and Benefits

To provide flexibility and to better serve the diverse range of size and specialization of potential sponsors, a unit contribution system has been established. Each sponsor may elect to provide from one to three units of support for the program in the amount of $5000 per year per unit. Program activities will be in proportion to units of support including such items as:

1) Faculty liaison visits.
2) Number of sponsor personnel attending program conferences.
3) Royalty credits on WARF patents.
4) Number of copies of research and tutorial reports and program advisory questionnaires.
WEMPEC History

Then in January 1981

WEMPEC
Wisconsin Electric Machines & Power Electronics Consortium

With three Sponsors

Allen Bradley
Eaton-Cutler Hammer
Graham

Three Professors – Lipo, Novotny and Schmitz

And
Very few Students
WEMPEC History

Planning Session Topic – Attract Graduate Students
WEMPEC History

Overkill
WEMPEC History

WEMPEC Distribution List - Spring 1984

FACULTY:
- T.A. Lipo 2-2087
- R.S. Marleau 2-0311
- D.W. Novotny 2-6926
- N.L. Schmitz 2-0311
- F.L. Alvarado 2-8900
- R.H. Lasseter 2-0186
- D.K. Reitan 2-3736
- J.J. Skiles 2-7369

SCHOLARS:
- Deng Duo
- Wu Hanguang

GRADUATE STUDENTS:
- Kwong Chang 2-0727
- Steve Colby 2-0727
- Wally Creer 2-7760
- Bill Hunt 2-7760
- Dan Kirschen 2-0727
- John Loehrke 2-7760
- Eduard Muljadi
- Kamarudin Nordin 2-0727
- Joseph Ojo 2-0727
- Tim Rowan
- Richard Schiferl 2-0727
- Soebagio
- Pradeep Sood 2-0727
- Chu Wang 2-6938
- Xinghi Xu 2-7760
- Don Zinger 2-0727

OTHER INTERESTED STUDENTS:
- Claude Detjens
- Bob Lorenz
- Tim Noeldner

Approximately 20 Sponsors

35 Years

All Retired

First PhD

First MS

16 Graduate Students

Our future WEMPEC faculty member
Inspecting a gift from an early WEMPEC sponsor
WEMPEC History

This is me again in the 1980’s

A bit less hair
a few more pounds
but pleased with
the success of
WEMPEC

Admiring WEMPEC “Headquarters” from the Roof of ERB
WEMPEC History

Celebrating the Success of the WEMPEC program
WEMPEC History
From that Small Beginning in 1981
WEMPEC
Has Grown into a Successful, Dynamic Program
with
35 Years of Operating Experience
Currently
90 Industrial Sponsors
Five Professors
Three Emeritus Professors
Three Staff Positions
71 On-Campus and 40 Off-Campus Graduate Students
Over 75 Active Research Projects
WEMPEC History

Over the First 35 Years

Approximately 120 PhD and 280 MS Graduates

More than 1300 Research Reports

18 On-Line Courses Offered on a Regular Schedule as Part of the On-Line Degree Program

Approximately 75 Short Courses

Over 120 Visiting Faculty

Over 17 Million in Sponsor Contributions
WEMPEC History

Modifications to Original Program Plan

Program Faculty and Staff

Professor R.D. Lorenz – Co-Director
Professor T.M. Jahns– Co-Director
Professor G. Venkataramanam– Assoc. Director
Professor B.Sarlioglu– Assoc. Director
Professor D.C.Ludois– Assoc. Director

Professor R. H. Lasseter-Emeritus Director
Professor T. A. Lipo-Emeritus Director
Professor D. W. Novotny-Emeritus Director

James Sember – Executive Director
Helene Demont – Administrative Director
Kyle Hanson – Laboratory Manager
WEMPEC History

Modifications to Original Program Plan

Education

Additional credit and short courses
Online graduate degree program
Major laboratory improvements and expansion

Sponsor-WEMPEC interaction

Dropped faculty visits to sponsor facilities
Dropped open discussion of sponsor input on research directions
Added internship program
Added on-line graduate degree program
Modified weekly seminar to always be given by sponsors
Modified non-generic research via grant or contract
Increased Sponsor contribution from $5,000 to $15,000
WEMPEC History
Laboratory Expansion and Modernization

The “Machines Lab”
1980

The Grainger
“Machines Lab”
2016
WEMPEC History

WEMPEC Benefits in Addition to Program Funding

More and Better Qualified Grad Students
Never Needed to Cancel Classes

Prompted Relevancy in Course Content
And Revision of Class Notes

Feedback on Research Topics and Directions

Donations of Laboratory Equipment

Created Tutorial and short course Opportunities

Created Market for Off Campus Courses and Degrees

Graduated Student Sales Force
WEMPEC History

WEMPEC

Is a Team Effort
And
The Best Things About It
Are

the People and the Spirit Created
by
Working and Socializing Together
WEMPEC History
Seminar - Symposium

This is a Seminar

This is a Symposium
WEMPEC History

Social Events

- Fall Orientation Picnic
- International Potluck Dinner
- End of Semester Celebration
WEMPEC History

WEMPEC Staff Meeting In the “Old Days”
WEMPEC Behind the Scenes

WEMPEC Staff Meeting In More Recent Times
WEMPEC History

A Rare Moment of WEMPEC Internal Conflict
WEMPEC History

WEMPEC

Has Provided a Structure

Which Enabled Attracting Very High Quality Faculty, Staff, Students and Sponsors

And Promoted Growth Beyond Anything Envisioned In the Original Program Plan

The Future Will Impose New Challenges But the Basic WEMPEC Structure has Stood the Test of Time And Will Continue to Provide the Basis for WEMPEC in the Years Ahead
WEMPEC History

In Closing
I Want to Recognize the Contributions
To the Success of WEMPEC

By all of the WEMPEC Students that have Earned Degrees
And Otherwise Contributed to the Program
and
By all of the Faculty that have Guided and Nurtured the Program

And Especially
By all of the Sponsor Representatives That Gave so
Generously of their Time and Expertise

A Hearty Thank You From WEMPEC