

STRATEGIC PLAN 2012- 2016 May 2012
“people and skills Powering Australia’s future”

VISION : SUSTAINABILITY AND EXCELLENCE IN AUSTRALIA’S POWER ENGINEERING



VALUE PROPOSITION: To Deliver a Sustainable Supply of Highly Skilled Power Engineering Professionals working effectively to meet the Challenges of Creating Australia’s New Energy Future and Underpin the Technical and Commercial Success of Member Companies in the Energy Sector. This will be provided through maximising collaboration between Industry, Universities, Professional Bodies and Government in Power Engineering Education, Research and Training

OBJECTIVES

STUDENTS VIEW POWER ENGINEERING AS AN EXCITING WHOLE OF WORKING LIFE CAREER CHOICE

UNIVERSITY UNDERGRADUATE POWER ENGINEERING TEACHING AND LEARNING PROVIDES SUSTAINABLE INDUSTRY SKILLS

VALUE ADDED CONTINUING PROFESSIONAL DEVELOPMENT PROGRAMS AND APPLIED RESEARCH

A VIBRANT, NATIONALLY RESPECTED ORGANISATION BY INDUSTRY, UNIVERSITIES AND GOVERNMENT

OUTCOMES

- Primary and secondary students aware of exciting careers available from doing science and mathematics and choose power engineering studies as a base for long term career success
- A successful bursary program to promote and market API and power engineering
- Increased representation of women in power engineering
- High quality Undergraduates are attracted to, and retained in, power engineering
- Sustainable, quality delivery of learning/education between motivated academics, students and industry
- Access to world class laboratory and industry infrastructure to support learning and the link to industry for students
- Student access to world class centres of excellence in education and learning drawing on specialised expertise/skills and collaboration of universities
- Industry support & recognition that high quality research complements quality teaching outcomes & provides a pathway for future industry leaders and academics
- Full range of up to date professional development training and courses, well attended and regarded by Industry
- The Nationally recognised representative of the power industry in Australia on power engineering skills and education
- Sustainable mechanisms to fund API objectives from all sources (industry, universities, government) and Members perceive API as value for money, providing “future proofing” for their organisations capability

Objective : Students View Power Engineering as an Exciting Whole of Working Life Career Choice

Outcomes/Goals	Measures	Immediate Actions 2012/13	Medium/Longer Term Actions (2-4 yrs)
Primary and Secondary Students aware of exciting careers in power engineering available from doing science and mathematics	<ul style="list-style-type: none"> • number of power engineering website hits • number of bursary holder visits to schools/number of school students engaged during bursary holder visits 	<ul style="list-style-type: none"> •Develop a social media strategy to engage young students • Review & Update of Power Engineering promotional material on website www.powerengineering.org.au • API Bursary Students Speaking Program at STELR Project schools and STELR Solar Car Challenge Schools • Investigate partnership opportunities with Engineers Without Borders to promote power engineering to students and increase representation of females 	<ul style="list-style-type: none"> •Investigate opportunities to support Professional Bodies to promote power engineering to high school students •Investigate opportunities to educate primary school students of relevance of science and maths and its relevance to power industry and benefits to society.
A successful national bursary program to promote and market API and power engineering	<ul style="list-style-type: none"> • number and quality of students applying for bursaries •Number of bursary students who obtain vacation employment • Number of University students choosing power engineering electives in 3rd & 4th year 	<ul style="list-style-type: none"> •Obtain members commitment to vacation employment and networking events(2 p.a.) by May each year. •Implement PES“Careers” service to connect API Bursary students with employers offering jobs and internships (use IEEE PES System) •Use Alumni for API Graduating bursary holders , including tracking of employment to promote power engineering •API State coordinating groups (industry members and universities) actively supporting API Bursary Program 	
Increased representation of women in power engineering undergraduate courses	<ul style="list-style-type: none"> •Plan prepared and approved •Number of females applying for power engineering electives in 3rd & 4th year 	<ul style="list-style-type: none"> •Implement board approved strategies and actions to increase representation of women in power engineering 	

Objective : Students View Power Engineering as an Exciting Whole of Working Life Career Choice (continued)

Outcomes/Goals	Measures	Immediate Actions 2012/13	Medium/Longer Term Actions (2-4 yrs)
Undergraduates are attracted to, and retained in, power engineering	<ul style="list-style-type: none"> • number of students selecting power engineering subjects • conversion rate and retention of API Bursary holders into power industry 	<ul style="list-style-type: none"> • Industry organised site visits as part of subject/units in 1st and 2nd years • Industry members provide relevant 4th year Project/Thesis topics to API Bursary holders (and include details on API website) • Cooperation with Academy of Technological Sciences and Engineering (ATSE), Institute of Engineering Technology (IET) and Electric Energy Society Australia (EESA) to involve young undergraduates • API to facilitate cross organisational exchanges for graduate power engineers by leveraging/sharing the experience of member organizations who have been doing this to provide career development for their staff. 	<ul style="list-style-type: none"> • Influence Engineers Australia engineering accreditation criteria/process so that university course structures match Power Industry expectations and demands for graduates skills and competencies • Increased industry support for 6 month internships as part of undergraduate course • Young Industry Engineers speak/present to 1st and 2nd year engineering students on their experience/careers • Investigate mentoring program for API Bursary holders

Objective : Students View Power Engineering as an Exciting Whole of Working Life Career Choice

Achievements in 2008

- Developed Power Engineering promotional material aimed at year 10-12 students through website www.powerengineering.org.au
- Piloted Power Engineering Summer Camp for year 10 and 11 students in WA – organised by Curtin University – run in conjunction with API Power Engineering Summer School in Perth
- Program commitment and funding for 4 years agreed by API Board - \$158,000 to \$163,000 in 2008/09, \$358,000 to \$383,000 in 2010/11 – Board Memo 038/08
- Program key activities and dates developed for National Program and agreed by API Board.
- API/CIGRE Prize for Bursary Holders submissions to National Energy Essay Competition
- API Prize for Bursary Holders who make a submission following their vacation employment in 2008/09 summer break on the topic “ Power Engineering Challenges in the Energy Industry”

Achievements in 2009

- Power engineering website updated with profiles of industry power engineers roles and duties and one new video interview with API bursary holder and recent graduate. Average 395 visits to website per month.
- Power engineering summer camp for year 10 and 11 students continued in WA (organised by Curtin University) and expanded to QLD (organised by University of Qld)
- API networking events held at Wilson’s Transformers(Vic), AREVA(Qld),ETSA Utilities Control Centre(SA),Transend Control Centre(Tas),Western Power Control Centre(WA), Transgrid Haymarket Terminal Substation.
- API bursary holders given free admission to Energy 21C Conference exhibition, Sept 09.
- API/ATSE Prizes(5) for best essays on topic “What will the energy sector be like in 2050 in context of ATSE Symposium theme
- Employers Guidelines for API Bursary Student Vacation Employment prepared.

Objective : Students View Power Engineering as an Exciting Whole of Working Life Career Choice

Achievements in 2010

- Power engineering website updated with IEEE Links to videos on power engineering. Average 420 visits to website per month with average of 3 pages viewed per visit.
- Power engineering summer camp for year 10 and 11 students continued in WA (organised by Curtin University) and QLD (organised by University of Qld)
- Energy in Schools Project (by QUT) resources provided to STELR Project to use in National Schools program
- Financial support (\$80,000) provided to STELR Schools project. API has arranged for API Bursary Holders to speak at STELR participating schools in all states.
- API networking events held at Ergon Energy Modular Substation Manufacturing facility, Energy Australia Green Square Substation, AGL Torrens Island Power Station, Aurora Energy Cambridge Substation, ABB Perth/Malaga Transformer Manufacturing facility
- Review undertaken of API Bursary Program eligibility and will be extended to 2nd and 3rd year students in 2011.
- Employers Guidelines for API Bursary Student Vacation Employment prepared.

Objective :Students View Power Engineering as an Exciting Whole of Working Life Career Choice

Achievements in 2011

- Power engineering website updated with IEEE Links to videos on power engineering. Average 420 visits to website per month with average of 3 pages viewed per visit.
- Power engineering summer camp for year 10 and 11 students continued in WA (organised by Curtin University).
- Energy in Schools Project (by QUT) resources provided to STELR Project to use in National Schools program
- Financial support (\$80,000) provided to STELR Schools project. API has arranged for API Bursary Holders to speak at ATSE Extreme Science event for high school students from around Australia.
- API networking events held at AEMO Control Centre, Brisbane, Ausgrid Learning Centre, Wilson Transformers. Well attended API 2011 Bursary Awards ceremony's held with hosting/presentations by;
- Ausgrid/George Maltaborow – NSW, AUPEC Conference/Merryn York – QLD, Electranet/Ian Stirling – SA, Transend/Peter Clark – TAS, Wilson Transformers/Robert Wilson – VIC, Western Power/Doug Aberle - WA
- API Bursary Program eligibility and was extended to 2nd and 3rd year students in 2011.
- On-Line Careers Service for API Bursary students and API member organisations using IEEE PES system investigated.
- Strategies and Action to increase representation of women in power engineering developed.

Objective: University Undergraduate Power Engineering Undergraduate Teaching and Learning Provides Sustainable Industry Skills

Outcomes/Goals	Measures	Immediate Actions 2012/13	Medium/Longer Term Actions (2-4 Yrs)
Sustainable, Quality Delivery of Learning /Education between motivated academics, students and industry	<ul style="list-style-type: none"> • Annual survey of API Bursary Alumni graduates working in industry • Number of power engineering academics 	<ul style="list-style-type: none"> • API funding and support for early career academics through annual Request for funding • Survey of API Bursary Alumni graduates working in industry to determine topics of interest and models of delivery which are important for their careers and feedback to universities • National networking opportunities for API sponsored early career academics (API Summer School and other national forums) 	<ul style="list-style-type: none"> • Support for distance delivery of subjects/courses • Investigate API members provision of guest lecturers to support student learning of contemporary industry practice
Access to World Class Practical and Laboratory Infrastructure to support learning and the link to industry	<ul style="list-style-type: none"> • Annual survey of API Bursary students to determine relevance and link to industry of learning experiences 	<ul style="list-style-type: none"> • API funding of laboratories and infrastructure proposals to a national agenda where it supports power engineering teaching • Facilitate provision of high investment lab infrastructure from host universities to other universities through active collaboration 	<ul style="list-style-type: none"> • Facilitate site visit process to industry for undergraduate learning • Facilitate provision of industry equipment to universities
Student Access to World Class Education and Learning drawing on specialised expertise/skills at a rationalised group of universities i.e. centers of excellence	<ul style="list-style-type: none"> • Number of universities using API developed modules • Rating of Value from Assessment questionnaires to API Module academics and students 	<ul style="list-style-type: none"> • Promote existing API developed undergraduate curriculum modules and identify future modules to meet industry needs • Assess and evaluate effectiveness of API Modules used in teaching and learning 	<ul style="list-style-type: none"> • Further Federal Government support for distance education • Postgraduate Module development towards an API facilitated National Power Engineering Masters Program • Investigate transportability of students between universities to enable access to API developed modules

Objective: University Undergraduate Power Engineering Undergraduate Teaching and Learning Provides Sustainable Industry Skills

Achievements in 2008

- API part funding of early career academics at UQ, UTS, UTAS
- API part funding of power engineering laboratory and equipment upgrades at UWA, Curtin University, Adelaide University, UTAS, Victoria University, UNSW, RMIT, Wollongong University (totaling \$342,000)
- API Curriculum Map Modules (9 undergraduate, 4 postgraduate) 80% developed as part of CASR Project
- Collaboration Agreement between universities in place to facilitate power engineering curriculum module development for 3rd and 4th year undergraduate subjects/units and postgraduate subjects/units

Achievements in 2009

- API part funding of early career academics at UQ,UTS,UTAS,USYD,UNSW,Curtin
- Survey of API Bursary holders to determine topics of interest and models of delivery which motivate them undertaken and report prepared for API and universities
- A framework for early career academic sabbaticals in industry over summer 3 month break developed and 3 sabbaticals arranged – CQU/Ergon Energy, QUT/Energex,UNSW/Energy Australia.
- API part funding of power engineering laboratory and equipment upgrades at UWA,Curtin,Murdoch,UTAS,Victoria,RMIT,UNSW,Newcastle,UQ,QUT,USQ,JCU(Totaling \$980,000)
- API CASR Project completed with 9 undergraduate modules made available free of charge to all universities with a commitment to power engineering
- Coordination and updating of QUT PESTC postgraduate courses commenced to align with API Curriculum map.

Objective: University Undergraduate Power Engineering Undergraduate Teaching and Learning Provides Sustainable Industry Skills

Achievements in 2010

- API part funding of early career academics at UQ ,QUT ,UTAS ,USYD ,UNSW ,Curtin
- API supported 3 University early career academics attendance at API 2010 Summer School
- API part funding of power engineering laboratory and equipment upgrades at UWA , Curtin, UTAS, Uni of Adelaide, Victoria Uni, UNSW, Uni of Wollongong, UQ, QUT, CQUniversity (Totaling \$865,000)
- API Collaborative Power Engineering Curriculum Module Development 80% complete for remaining 12 modules. On completion a total of 20 undergraduate modules will be available free of charge to all universities with a commitment to power engineering. Modules developed in 2009 beginning to be used by university academics in subject/unit upgrades and new development.
- Coordination and updating of QUT PESTC postgraduate courses to align with API Curriculum map completed – updating of PESTC modules now well progressed.

Objective: University Undergraduate Power Engineering Undergraduate Teaching and Learning Provides Sustainable Industry Skills

Achievements in 2011

- API part funding of early career academics at UQ ,QUT ,UTAS ,USYD ,UNSW ,Curtin
- API supported 2 University early career academics attendance at API 2011 Summer School
- API part funding of power engineering laboratory and equipment upgrades at UWA , Curtin, UTAS, Uni of Adelaide, Victoria Uni, UNSW, Uni of Wollongong, UQ, QUT, CQUniversity (Totaling \$865,000)
- API Collaborative Power Engineering Curriculum Module Development completed for remaining 12 modules. A total of 20 undergraduate modules are now available free of charge to all universities with a commitment to power engineering. Modules developed are beginning to be used by university academics in subject/unit upgrades and new development.
- Coordination and updating of QUT PESTC postgraduate courses to align with API Curriculum map completed – updating of PESTC modules now well progressed.

Objective: Value Adding Continuing Professional Development Programs and Applied Research

Outcomes/Goals	Measures	Immediate Actions 2012/13	Medium/Longer Term Actions (2-4 Yrs)
<p>Industry support and recognition that high quality university research complements quality teaching outcomes and provides a pathway for future industry leaders and academics</p>	<ul style="list-style-type: none"> • Number of successful research project proposals with industry, API and Govt. funding 	<ul style="list-style-type: none"> • Submit an Research proposals to Australian Research Council (ARC) based on research projects developed during CRC Bid and supported by industry members • Investigate OFGEM (UK) Innovation Funding Incentive Program (with ENA) to assess applicability to Australian Regulatory Environment. 	<ul style="list-style-type: none"> • Develop a framework for Industry based PhD and Masters research students.
<p>Full range of up to date professional development training and courses, well attended and regarded by industry</p>	<ul style="list-style-type: none"> • delegate feedback re value and quality 	<ul style="list-style-type: none"> • Canvas Industry requirements for Technical Masterclasses (embedded in Industry where possible) and document program and align where possible with industry performance and development processes • Organise API Powerchem Conference May 2012 • Organise API Power Engineering Summer School (Residential Accelerated Development Program, Feb 2013 - SA) • Continued Coordination of CPD Program with CIGRE Australian National Committee 	<ul style="list-style-type: none"> • Continuing Professional Development Program with 3-5 Masterclasses/Short Courses per State per annum • Support for Postgraduate CPD Modules based on Power Engineering Curriculum Model and Nationally available existing postgraduate modules.

Objective: Value Added Continuing Professional Development Programs and Applied Research

Achievements in 2008

- Masterclasses on Reactive Power Management and Voltage Stability (2), Power System State Estimation (2), Energy Sustainability (2), and Modern Partial Discharge Detection and Analysis for Insulation Assessment held.
- API PowerChem 2008 – Power Station Chemistry Conference and Exhibition and Training courses held.
- API Power Engineering Summer School (Residential) held in Hobart (Feb 2008) and Perth (Feb 2009)
- Coordinated CPD Program with CIGRE ANC commenced.

Achievements in 2009

- Masterclasses on Wind Power in Power Systems (Perth 29/30 June, Future Trends for Power Systems (Sydney, Oct), Insulation Coordination of T&D Networks (Brisbane 22/23 June), Turbine Functional Safety Competency (Morell, Brisbane, Perth June/July) held/supported.
- API PowerChem 2010 – Power Station Chemistry Conference and Exhibition and Training courses commenced organisation (to be held on 23 to 28 May, 2010)
- API Power Engineering summer School (Residential) held in Perth (2009) and organised for Sunshine Coast, Qld (Feb 2010).
- Opportunity for API/University Cooperative Research Centre proposal investigation commenced (for submission in 2010 or 2011).
- Coordination with CIGRE CPD Program continued.

Objective: Value Added Continuing Professional Development Programs and Applied Research

Achievements in 2010

- Masterclasses on HV Engineering (MacAlpine USYD – 18 attendees) and Smart Grids for a Finite Planet (Sioshansi USA Hobart, 20 attendees, Sydney 30 attendees) held/supported.
- API PowerChem 2010 – Power Station Chemistry Conference and Exhibition and Training courses held on 23 to 28 May, 2010, Sunshine Coast, Qld (100+ attendees)
- API Power Engineering Summer School (Residential) held on Sunshine Coast, Qld (Feb 2010 – 62 attendees) and planning/organisation of API 2011 Summer School to be held in Hunter Valley (20Feb – 4 March, 2011).
- Opportunity for API/University Cooperative Research Centre (CRC) proposal investigation commenced (for submission 2011). Draft business plan prepared and distributed to API Member organisations and proposals sought from API Partner universities to provide R&D in support of industry identified research themes.
- Coordination with CIGRE CPD Program continued.

Objective: Value Added Continuing Professional Development Programs and Applied Research

Achievements in 2011

- Masterclass on Reactive Power Management & Voltage Control (Presenter Prof Ian Hiskens – 35 Attendees) held/supported.
- API PowerChem 2012 – Organisation and planning for Power Station Chemistry Conference and Exhibition and Training courses to be held on 27 May to 1 June, 2012, Terrigal, NSW
- API Power Engineering Summer School (Residential) held at Nulkaba, Hunter Valley, NSW (Feb/March 2011 – 63 attendees) and planning/organisation of API 2012 Summer School to be held at Lancefield, VIC (19Feb – 2 March, 2012).
- API/University Cooperative Research Centre (CRC) proposal prepared and submitted in June, 2011. Draft business plan prepared and distributed to API Member organisations and proposals sought from API Partner universities to provide R&D in support of industry identified research themes. CRC Submission was not selected to proceed to Stage 2 and API Board is considering options to harness the momentum for this collaborative, coordinated research initiative.
- API Organised and held Senior Industry Executive Panel session at IEEE PES Asia Pacific Intelligent Smart Grid Conference (Perth, Nov, 2011)
- Coordination with CIGRE CPD Program continued.

Objective: A Vibrant, Nationally Respected Organisation By Industry, Universities and Government

Outcomes/Goals	Measures	Immediate Actions 2012/13	Medium/Longer Term Actions (2-4 Yrs)
The Nationally recognised representative of the power industry in Australia on power engineering skills and education	<ul style="list-style-type: none"> • Percentage of membership as a total for each sector within the industry 	<ul style="list-style-type: none"> • Develop and document API approach and support/funding of universities activities (both teaching /education and research activities) • Promotion of API Activities in accordance with an agreed Sponsorship Policy. • Continue to develop relationship with CIGRE ANC , UK Power Academy and IEEE PES for learning's and opportunities • Involve university representatives in API Board Strategic Planning Review (at least once per year) • Investigate expansion of API membership base to other industries with power engineering requirements (Electrical sections of Rail Organisations) 	<ul style="list-style-type: none"> • Research, investigate and cooperate on similar initiatives in the region and Europe/USA.
Retention of Existing Members	<ul style="list-style-type: none"> • Number of members not renewing membership per year. 	<ul style="list-style-type: none"> • Promote value of API activities to future viability of existing member organisations • Offer CE briefings on API Objectives and Achievements to existing member Boards/Executive teams through member contacts 	
Sustainable mechanisms to fund API Objectives from all sources (industry, universities, government)	<ul style="list-style-type: none"> • Funds available to support API Activities 	<ul style="list-style-type: none"> • Target Governor Membership of 15 • Target Principal Membership of 12 • University expenditure to at least match API expenditure/support for power engineering • Target renewable energy organisations to join API. • Target Solar Flagship Program companies to join API 	<ul style="list-style-type: none"> • Target Governor Membership of 15 • Target Principal Membership of 20 • Seek additional mechanisms to fund API Activities

Objective: A Vibrant, nationally Respected Organisation by Industry, Universities and Government

Achievements in 2008

- Amalgamation between API and PEA (Qld) completed.
- Promotion of API Activities in accordance with an agreed Sponsorship Policy implemented.

Achievements in 2009

- In principle agreement received from Australian Power Academy to amalgamate with API
- Working relationship commenced with IET Power Academy (UK) including visit by API Chair to meet with IET representatives.
- New members in 2009 include Eraring Energy, Siemens, AGL, Alliance Power & Data.
- API Sponsorship of Energy 21C Conference, AUPEC09 Conference, Electric Energy Society Australia National Conference, InGenius (RMIT), Techcon Conference.
- University representatives attended Feb 2009 API Board meeting to give input to Strategic Action Plan Review

Achievements in 2010

- Amalgamation of Australian Power Academy with API successfully completed.
- API Constitution amended to provide for minimum representation from various industry sectors on API Board.
- New members in 2010 include International Power Limited, Tyree Industries
- API Sponsorship of AUPEC10 Conference, InGenius RMIT, Techcon Conference
- University representatives attended Feb 2010 API Board meeting to give input to Strategic Action Plan Review.
- Relationships further developed with IET Power Academy (UK) and CIGRE (API Chair visit and presentation to international conference and IEE PES (CE visit and presentation to Gridwise Global Forum).
- CE input to Australian National Engineering Taskforce (ANET) Report (Oct 2010)

Objective: A Vibrant, nationally Respected Organisation by Industry, Universities and Government

Achievements in 2011

- Amalgamation of Australian Power Academy with API successfully completed.
- API Constitution amended to provide for minimum representation from various industry sectors on API Board.
- New API Board members from Principle Members – Wilson Transformers (Ed Wilson) , Aurecon (Barry Finlay/Mark Hibbert)
- New members in 2011 include International Power Limited, Ampcontrol
- API Conducted Workforce Planning – Skills & Demand in Industry Survey of the member organisations.
- API Sponsorship of AUPEC10 Conference, InGenius RMIT, Techcon Conference
- University representatives attended Feb 2011 API Board meeting to give input to Strategic Action Plan Review.
- Relationships further developed with API Chair visit to Strathclyde University, Glasgow.
- CE input to Australian National Engineering Taskforce (ANET) Report (Oct 2010)