Peninsula Engineers Council (PEC) Engineer of Year (EOY) Nomination and Election Process

Last Revision: May 2016 by Ken Hoffman, Chair of EOY Requirements

COMMITTEE MEMBERS

The following are those that contributed to the development, and establishment, of this election process:

- Chair Mr. Ken Hoffman (ECVP), Past PEC Pres.
- Dr. Don Kunz (AHS), Past PEC Pres.
- Dr. John Lin (AIAA), Past PEC Pres., Past PEC EOY
- Mr. Bill Reed (AIAA), Past PEC EOY
- Mr. John Zinskie (ASME), Past PEC Pres., Past PEC EOY
- Dr. John Duberg (ECVP), Past PEC EOY
- Mr. Doug Ensor (ECVP), Founder, Past PEC Pres., Past PEC EOY
- Mr. Dom Maglieri (ECVP), Past PEC Pres., Past PEC EOY
- Mr. Marshall Rouse (NTA), Past PEC Pres.
- Mr. Louis De Grace (SAE), Past PEC Pres.
- Mr. Andy Schuster (SAWE), Past PEC Pres.
- Mr. Dan West (SOLE), Past PEC Pres.
- Dr. Jale Akyurtlu (SWE), Past PEC Pres.
- Mr. Jim Kelly (VSPE), Past PEC Pres.

DOCUMENTS OBJECTIVES

- To familiarize each PEC member society with the “Engineer of the Year” nomination and election process
- To help each PEC member society to become more effective in preparing a nomination for the EOY
- To create a document that each PEC member society may use to brief their society's membership

PEC EOY ELECTION PRINCIPALS

- Each PEC EOY nomination emphasize and recognize life time achievements
- Each active PEC Society is able to nominate one person for the PEC EOY Award that year
- Each year only one PEC EOY is elected from the nominations submitted for that year
- Each active PEC member society submits a secret ballot in the form of valid evaluation sheets to determine the PEC EOY

PEC EOY ELECTION PROCESS

- To makes the election of the PEC “Engineer of the Year” as objective as possible
- To level the playing field for ALL PEC active member society nominees so as to have an equal opportunity to be elected
- To allow time to prepare public announcements of the event

PEC EOY PROCESS - KEY DATES

- Annually your chapter reviews members for recognition, and selects an PEC EOY for nomination
- April – PEC EOY Committee requests societies begin considering who their PEC EOY nomination
- May - August – PEC EOY Chair will be available for support to individual societies
- August 1 – PEC EOY Nominations committee will have notified societys of that year's guidelines
- September meeting – "Nomination, Evaluation, and Election Process Brief"
- October 1 – Nominations must be received by the PEC EOY Nominations committee on or before
- October meeting – Distribution of the PEC EOY Nomination packets received
- November meeting – Presentors for the PEC EOY nominees describe them further and answer questions
- December meeting – on or before December 20 PEC EOY election will be held
- February – National Engineers Week Awards Banquet

PEC EOY PRESENTATION

- Are done at the November PEC meeting as an opportunity to put a human side on the nominee and/or explain the person's contributions.
- Ground Rules:

– Only the current presenter is allowed in the meeting room during presentations and questions
– Limit is 5 minutes for someone to tell the story why the nominating society choose that particular Engineer for EOY Award
– Presenter can not make comparison to other EOY Nominees
– Presentations may not be by the PEC Representative for nominating society
– Presentations are to be oral
– Limit of 5 minutes for questions from PEC Representatives

- Don't read the nomination!

PEC EOY ELECTION

- Is held during the regular PEC December Meeting
- A vote by an active PEC member society will be from their valid evaluation sheet(s)
- Evaluation sheet weighting may be adjusted by an individual society to fit their needs, if the same system is used for all nominees
- A society need not be present at the PEC December meeting, yet they must have a valid vote submitted to the PEC EOY Nominations committee before then
- For a society's vote to be valid:

– there must be a valid evaluation sheet each nominee that year
– each evaluation sheet must have the society's name
– each evaluation sheet must have the name of the nominee evaluated
– each evaluation sheet must have the weighting as "1st, 2nd, 3rd, …" overall preference
– each evaluation sheet must have the sum total points from all four scored areas

PREPARING YOUR NOMINATION

- Review pertinent materials
  - Nomination Request Letter
  - Nomination Guidelines
  - Sample Nomination
  - Evaluation Criteria
- Talk to your nominee and his/her employer, co-workers and family to ask questions about their work and outside activities.
- Your nomination should:
  - Describe the whole person, giving a short biography with the context and description of the significance of their professional accomplishments
  - Professional accomplishments should be so stated that **everyone** from other society understands
  - Explain all abbreviations that you choose to use
  - Be concise, limit the nomination to 2-3 well written and carefully edited pages
  - Use the evaluation criteria to determine what to emphasize, while telling your story why this person is your PEC EOY nominee

SUGGESTED GUIDELINES TO EVALUATE POSSIBLE NOMINEES FOR ALL FOUR AREAS

TECHNICAL

Top 1% Technical Scoring (35-33) • National/Industrial Authority • Publications with National & International Significance • Expanded Knowledge Base • Advanced State-of-the-Art • Many Honors & Awards • Patents with National and International Significance	Top 10% Technical Scoring (32-25) • Conceived New Systems • Major Productivity Enhancements • Widely Recognized Technical Authority • Some Honors & Awards • Significant Patents • Widely Recognized Technical Authority
Above Average Technical Scoring (24-18) • Consistent Standout Achievements • Known For Innovations • Developed Analysis/Design Tools • Numerous Publications • Numerous Patents	Average Technical Scoring (17-1) • Very Competent and Reliable • Published • Some Patents
Not Described Technical Scoring (0) • Average Technical Competence	Total Points Scored

LEADERSHIP/MANAGEMENT

Top 1% Leadership/Management Scoring (30-29) • National/Industrial Leader • Led One or More Major National Programs • President of University • Dean of College • Led Formation of Science & Technology Policy • Led National Committee or Board	Top 10% Leadership/Management Scoring (28-22) • Industry Functional Leader • Major Program Manager • Department Chairman • Chief Engineer or Equivalent • Productivity Innovations • Commercialization Successes • Participated in Foundation of Science & Technology Policy • Member of National Committee or Board
Above Average Leadership/Management Scoring (21-16) • Program Manager • Well Known for Cost Effective Management • Developed New Management Tool • Full Professor	Average Leadership/Management Scoring (15-1) • Project Manager Experience • Extensive Supervision • Associate Professor
Not Described Leadership/Management Scoring (0) • No leadership References • No management References	Total Points Scored

SERVICE TO THE COMMUNITY (i.e. Civic or Service Organizations)

Top 1% Service to the Community Scoring (15-14) • Led National Committee	Top 10% Service to the Community Scoring (13-10) • Led Regional Committee • Member of National Committee
Above Average Service to the Community Scoring (9-6) • Led Local Community Committee(s) or Board(s)	Average Service to the Community Scoring (5-1) • Member of one or more local Committees/Boards
Not Described Service to the Community Scoring (0) • No Service to the Community	Total Points Scored

SERVICE TO THE PROFESSION

Top 1% Service to the Profession Scoring (20-19) • Elected Member of your Society's National or International Board, or Equivalent Position • Journal Editor or Equivalent • Honorary Fellow	Top 10% Service to the Profession Scoring (18-13) • Member of National Committee, Section/Regional Chair, TC, or an Equivalent Position in National or International aspects of a Society • Associate Editor • Fellow
Above Average Service to the Profession Scoring (12-9) • Member of Section Council, Section Officer or Equivalent Position in a National or International Professional Society • Publishes & Reviews Papers	Average Service to the Profession Scoring (8-1) • Member Attends Meetings of Professional Organizations • Publishes • Assists with meetings & other Functions of Professional Organizations
Not Described Service to the Profession Scoring (0) • Infrequently attends professional organization meetings • A Passive Member	Total Points Scored

RESPONSIBILITIES

• Each Nominating Societies will prepare and provide a short one page biography and photograph for use in news releases and banquet publicity. Preferably provided with the nomination, or as soon as possible after submitting the nomination. Examples are at http://va-pec.org/awards/PEC_awards.html
• The Nominating Society will introduce their Recipient PEC EOY at the PEC's National Engineers Week Awards Banquet in February.
• The PEC EOY recipient will attend the following Career Days event as the Keynote speaker.

KEYS TO SUCCESS

• If possible, use a committee to select your society's nominee for the PEC EOY Award
• Know your nominee
• Re-submitting of non-recipient and deserving candidates in forthcoming elections is encouraged
• Spend time writing the nomination
• Keep nomination short, concise and well written.
– 2-3 pages nominations have been the most successful
– Cover letter and list of papers (if appropriate) as extra pages
• Talk to other society representatives to understand how they evaluate nominees for PEC EOY.
• Start Early!

FINALLY

- It is an honor to be nominated for the PEC EOY Award. Formally recognize your nominee whether within society, or not.
- The PEC EOY is elected based on their merits

– PEC representatives are not influenced by the size of the nominating society, but the quality of the nominee.
– Try to select your nominee before August 15.

- Allow time to improve your nomination

– Internal reviews (“red team”, etc.)
– Edit your nomination package (it may take several re-writes)

- Prepare for, and cast, your valid vote of evaluation sheets at/before the December Meeting

– Review all nominations packages and presentations.
– Rank the nominees prior to voting using your chapter’s own criteria or the evaluation criteria
– If necessary translate your voting system into an equivalent of the suggested system

- Congratulate and recognize all PEC EOY nominees

Peninsula Engineers Council, http://va-pec.org

Following are also:

- a sample of a **NOMINATION REQUEST LETTER AND GUIDELINES**
- a samples of a **NOMINATION SUBMITTAL**.

PENINSULA ENGINEERS' COUNCIL
June 17, 2015

PEC Member Society

National Engineers' Week will be celebrated **February 21-27, 2016**, concluding with a tentative banquet night of Saturday evening, February 27. One of the major highlights of this banquet is the recognition of the PEC selection of the Peninsula Engineer of the Year. In preparation for this occasion, enclosed is a copy of the guidelines for nominating a candidate for the 2016 Peninsula Engineer of the Year Award.

With this award we are **recognizing life long efforts and accomplishments**, and in some years the award is given by the narrowest of margins. Resubmitting a non-recipient nominee in a future selection is encouraged. In nominating individuals for this award, successful and valuable people are duly recognized as such. Our youth, our future engineers, see that the hard work it takes to be an engineer gets recognized.

Biographical sketch/qualification submittals shall have a reasonable reading volume, and should address, yet not be limited to, the areas of technical accomplishments; leadership; contributions to engineering societies; and contributions to the local community. Information within cover letters, or letters of endorsement, of the submittal packages will not be considered as part of the candidate's qualifications, and if submitted, will not be included into the packages provided to the societies. In addition to the nomination submittal, it is requested that a color photograph of the candidate, along with a brief biographical sketch, be provided for use in preparation of the EOY banquet brochure, and flyer. It is important that societies provide these additional items in advance of the election. Societies should refer to the enclosed evaluation guidelines, (enclosure 2), for guidance in what evaluation criteria will be considered as they develop their nominations by **putting their nominee in context to their society and to other societies**. This format was initially developed around the guidelines for an AIAA Fellow Nomination. The modifying of the categories and weightings were specifically designed to "level the playing field" when representing each PEC society.

Nominations **must** be emailed, by midnight **Monday October 1, 2015**, in order to be considered, and will be distributed at, or before, the October council meeting. Paper copies of nomination packets are no longer accepted as valid. Submitted nominations must be sent to: **khoffman.acct@gmail.com**.

After much deliberation, debate and experience with other procedures, the current nomination process was adopted in April 2003 and revised in July 2005, (enclosure 1). The EoY Nominating Process is the product of the PEC's Nominating Committee - Selection Requirements subcommittee that consisted of members who were all PEC Past Presidents, and six of whom were also selected as PEC EoY themselves. The selection of the EoY is now based on the ordinal number ranking of candidates by each member society using a common evaluation process. Each member society uses the same evaluation form with predetermined "weightings" and "scores" rank of all the nominees. The evaluations are made after reading the biographical sketch/qualification submittal described below. After several years of experience we have found that the absolute scores of nominees between societies may not be the same, but the ordinal ranking is very consistent. In 2005 the committee decided to adjust the "weighting" of the four evaluation areas to give Technical achievement the highest ranking. The committee continues to review the selection process, as well as to be available for training support to individual societies. A tutorial of the nomination process may be downloaded at: **http://va-pec.org/awards/PEC_Nominating_EOY.pdf**.

During the November PEC monthly meeting, a society spokesperson, other than the PEC voting member, is expected to represent their nominee explaining the significance of his/her accomplishments and respond to questions. At that time the spokesperson will elaborate on the candidate's qualifications explaining why their society considers the nominee as an outstanding individual, without repeating what was already submitted in the nomination packet, which will already have been read and reviewed by the societies' representatives. Presentations shall be limited to five minutes, with an additional five minutes allowed for questions. Method of presentation to be oral, and not given by the nominee. Presenters are to remain outside of the committee room until time for their presentation.

The actual election of the PEC Engineer of the Year will take place at a PEC meeting before December 20th. Each society must submit their evaluation score sheet for **each** nominee, Sec. 9 of PEC BY-LAWS ARTICLE VI, to the nomination committee no later than the date set for the EoY election meeting. Late submittal will be considered invalid.

Again, there are many valuable people out there that are good candidates for your consideration.

Thank you,
Kenneth Hoffman, Chair
Peninsula Engineers Council (PEC)
Engineer of the Year Nominating Committee

Enclosures:
1. PEC CONSTITUTION and PEC BY-LAWS concerning EOY
2. Suggested Evaluation Sheet for Nominee Submittals

This document is available online at http://va-pec.org/awards/PEC_2016_EOY_guidelines.pdf

GUIDELINES TO MEMBER SOCIETIES
FOR NOMINATING A CANDIDATE FOR THE 2016
PENINSULA ENGINEER OF THE YEAR AWARD

PEC CONSTITUTION ARTICLE III - MEMBERSHIP

Sec. 1. - The membership of the Council shall consist of recognized engineering and technical societies which have members working or residing in the Peninsula Area of Virginia. The Peninsula Area shall be defined as the Cities of Hampton, Poquoson, Newport News, and Williamsburg and the Counties of James City and York.

PEC BY-LAWS ARTICLE VI - ELECTION OF THE ENGINEER OF THE YEAR

Sec. 1. - The Engineer of the Year Nominating Committee will be responsible for disseminating the nomination guidelines to member societies and for conducting the election.

Sec. 2. - Each member society is entitled to nominate one candidate for the Peninsula Engineer of the Year Award and to cast one vote to select the Peninsula Engineer of the Year.

Sec. 3. - Current officers of the Council may not be nominated for the Peninsula Engineer of the Year.

Sec. 4. - Each candidate shall be or have been actively practicing in the engineering field, either in direct technical analysis or technical management. Licensing is optional for Peninsula Engineer of the Year. For state and/or national consideration, the candidate must have a Professional Engineer's license.

Sec. 5. - Each candidate shall have worked or been a resident of the Peninsula area of Virginia for at least two years at the time of nomination.

Sec. 6. - The nomination shall contain a biographical sketch outlining the candidate's record of achievement as a leader in his/her profession and in his/her community.

Sec. 7. - The annual sequence of events for nominating and electing Engineer of the Year shall be as follows:

1. The Engineer of the Year Nominating Committee shall establish and disseminate the nomination guidelines to the member societies by August 1. This shall include a schedule of the following dates.
2. Nominations from the societies must be postmarked or delivered to the Engineer of the Year Nominating Committee by October 1.
3. The Engineer of the Year Nominating Committee shall distribute the nominations to the Council delegates at the October meeting.
4. Presentations on behalf of the nominees may be made at the November meeting.
5. The election of the Peninsula Engineer of the Year shall occur at a Council meeting no later than December 20.

Sec. 8. - Delegates should confer with their respective societies and review the qualifications of the nominees prior to the election meeting. Each society shall complete an "Evaluation" sheet, to be provided by the Council's Engineer of the Year Nominating Committee, for each candidate. The completed evaluation sheets must clearly show a "1st, 2nd, 3rd …" etc., overall preference of the candidates, as well as identify the "Points" awarded in each evaluation category.

Sec. 9. - A society voting for Engineer of the Year must submit their completed Evaluation sheets for each of the candidates. The Nominating Committee will collect all Evaluation sheets at the election meeting. Societies unable to attend the meeting may submit their Evaluation sheets to the Nominating Committee prior to the election meeting. The Nominating Committee will determine the Engineer of the Year based on the highest overall "place" ranking votes among the submitted evaluation sheets. In the case of a tie, the Nominating Committee will use the highest overall Evaluation criteria "points" awarded by voting societies to determine the Engineer of the Year.

Area	Top 1%	Top 10%	Above Average	Average	Not Described	Score
Technical	***(35-33)*** • National/Industrial Authority • Publications with National & International Significance • Expanded Knowledge Base • Advanced State-of-the-Art • Many Honors & Awards • Patents with National and International Significance	***(32-25)*** • Conceived New Systems • Major Productivity Enhancements • Widely Recognized Technical Authority • Some Honors & Awards • Significant Patents • Widely Recognized Technical Authority	***(24-18)*** • Consistent Standout Achievements • Known For Innovations • Developed Analysis/Design Tools • Numerous Publications • Numerous Patents	***(17-1)*** • Very Competent and Reliable • Published • Some Patents	***(0)*** • Average Technical Competence	
Leadership/ Management	***(30-29)*** • National/Industrial Leader • Led One or More Major National Programs • President of University • Dean of College • Led Formation of Science & Technology Policy • Led National Committee or Board	***(28-22)*** • Industry Functional Leader • Major Program Manager • Department Chairman • Chief Engineer or Equivalent • Productivity Innovations • Commercialization Successes • Participated in Foundation of Science & Technology Policy • Member of National Committee or Board	***(21-16)*** • Program Manager • Well Known for Cost Effective Management • Developed New Management Tool • Full Professor	***(15-1)*** • Project Manager Experience • Extensive Supervision • Associate Professor	***(0)*** • No leadership References • No management References	
Service to the Community i.e. Civic or Service Organizations	***(15-14)*** • Led National Committee	***(13-10)*** • Led Regional Committee • Member of National Committee	***(9-6)*** • Led Local Community Committee(s) or Board(s)	***(5-1)*** • Member of one or more local Committees/Boards	***(0)*** • No Service to the Community	
Service to the Profession	***(20-19)*** • Elected Member of your Society's in National or International Board, or Equivalent Position • Journal Editor or Equivalent • Honorary Fellow	***(18-13)*** • Member of National Committee, Section/Regional Chair, TC, or an Equivalent Position in National or International aspects of a Society • Associate Editor • Fellow	***(12-9)*** • Member of Section Council, Section Officer or the Equivalent Position in National or International Professional Society • Publishes & Reviews Papers	***(8-1)*** • Member Attends Meetings of Professional Organizations • Publishes • Assists with meetings & other Functions of the Professional • Organizations	***(0)*** • Infrequently attends professional organization meetings • A Passive Member	

SAMPLE NOMINATION – DR. LIN

Dr. John C. Lin is a resident of Yorktown, VA since 1987. He is a Senior Research Engineer at NASA Langley Research Center and an AIAA Senior Member.

In recent years, Dr. Lin has developed the Micro-Vortex Generator (MVG) technology for various flow control applications. The MVGs are passive flow control devices with a low-aspect-ratio that are optimized for the turbulent boundary layer for minimal device drag. The MVGs produce an array of trailing stream wise vortices very efficiently, which result in rapid wall ward momentum transfer. This wall ward momentum transfer helps to reduce and/or eliminate flow separation on the downstream surface.

The MVGs offer an inexpensive yet highly effective solution to enhance aircraft high-lift performance by alleviating flow separation on the flap. The MVG technology provides dramatic performance enhancements for high-lift applications (published test results have shown over 10% increase in lift, 50% decrease in drag, and 100% increase in L/D). Furthermore, they are small enough to be stowed with the flap at cruise and hence do not increase the cruise drag.

In working closely with the domestic industry, Dr. Lin successfully transferred the MVG technology to several aerospace companies. Currently the technology is being used by at least three types of commercial aircraft currently in production. MVGs are used on the outboard wings of the Gulfstream "GV" aircraft, the 1997 winner of the coveted Collier Trophy, to enhance its high-speed buffet boundary and maneuver capabilities. MVGs are also being used on the flaps of the Piper "Malibu Meridian" aircraft and the Boeing "767 ERG" aircraft to enhance the high-lift performance. Wind-tunnel tests have shown that flap-mounted MVGs would enable Boeing's advanced concept high-lift system to eliminate the vane-element, while still maintaining equal or better lift capability with only three high-lift elements, which would result in substantial cost savings.

Dr. Lin also developed the MVG technology in the form of Micro Tabs for NASA Langley's Airframe Noise Reduction Program, providing substantial flap-edge noise reduction. Furthermore, in corporation with the Newport News Shipbuilding (NNS) and the Navy, Dr. Lin has successfully extended the MVG technology to hydrodynamics and hydroacoustics applications. The following sections described the MVG technology development and transfer, as well as its profound impact.

McDonnell Douglas Aerospace / Boeing

Through a Memorandum of Agreement (MOA) between NASA Langley Research Center and McDonnell Douglas Aerospace (MDA), a series of highly successful tests were conducted at NASA Langley's Low-Turbulence Pressure Tunnel (LTPT) at flight Reynolds numbers between 1991 and 1997. Using theMVG technology developed by Dr. Lin, these tests successfully improved the performance of a number of MDA high-lift airfoils, that included those of the C-17, MD-80, and F-18.

In a letter of acknowledgment to NASA in June 1993, Dr. Rodney Linford, Vice President – General Manager of Advanced Programs and Technology at MDA, wrote, "We would like to express our gratitude to John Lin in developing, applying, and validating the MVG concept for significantly reducing flow separation on a variety of flap types at approach and landing conditions. This reduction/elimination of flow separation on the various flap segments contributes directly to improved landing performance, and, more importantly in many instances, to reduced approach noise."

As a result of these tests, MDA (now Boeing) has developed an advanced single-flap high-lift concept airfoil that takes advantage of the MVG technology. The LTPT test results in 1997 and a recent semi-span test at NASA Ames 12-Foot Tunnel have shown that the advanced single-flap used in combination with MVGs can produced performance at least equal to those of the existing vane-flap system, while maintains all the economic benefits of a single-flap system. The MVG technology enabled the Advance Subsonic Transport (AST) program to meet one of its main objectives, which is to eliminate the "vane" of a four-element high-lift system. A cost savings of at least one million dollars per aircraft is projected if the vane is eliminated.

In the merger of Boeing and MDA in 1997, Boeing gained access to all the MDA's (proprietary) LTPThigh-lift data using the MVG technology. As a result, Boeing has applied the MVG technology to the high-lift airfoil of one its 767 derivative aircraft, the 767 ERG (Extended Range, Gross weight), currently in production.

Gulfstream Aerospace Corporation

As part of a MOA between Gulfstream Aerospace Corporation (Gulfstream) and NASA Langley, tests were conducted at Langley's LTPT during 1994 and 1995 to investigate the high-lift performance associated with the Gulfstream's GV aircraft program. These tests implemented a two-dimensional, high-lift model to validate the CFD predictions used to design this aircraft's high-lift system and to confirm the flap configuration and positioning. The MVG technology was investigated as a potential means to extend this aircraft's high-lift capabilities during these tests. The MVGs enabled the GV aircraft to meet its development schedule and eliminate at least one additional design cycle by resolving the issue of flow separation on the flap encountered during the high-lift testing phase in LTPT.

In 1996, Dr. Lin's MVG technology was extended to the transonic range, enhancing the GV's high-speed buffet boundary and its maneuver capabilities in this regime. The MVGs enabled the GV aircraft to achieve several percent increase in maximum cruise speed and expand its flight envelope and controllability by reducing the shock-induced separation on the wings. The adapted MVGs produced extremely high margins for buffet-free flight at the high-speed, high-lift edges of the flight envelope. In a letter of acknowledgment to NASA in March 1997, Mr. Bill Shira, Director of Flight Sciences at Gulfstream wrote, "Dr. Lin's vortex generator design extended the flight envelope of this aircraft, allowing us to meet our technical goals and assuring a successful product." During 1997, Gulfstream demonstrated the exceptional capabilities of the GV aircraft by setting 46 world and national records consisting of 21 city pair speed records and 25 performance records. Designed to quickly climb to the cruise at altitudes of up to 51,000feet, the GV flies higher and farther than any other aircraft in its class. As a result, the National Aeronautic Association (NAA) has awarded the prestigious Robert J. Collier Trophy to Gulfstream for the GV aircraft onApril 29, 1998. The award recognizes the top aeronautical achievement in the United States for 1997. The MVG technology contributed to the successful development of this excellent aircraft.

The GV aircraft was brought to the marketplace in a timely manner in 1997. During the first year of its introduction, Gulfstream has received over $3 billion in sales order (over 100 GV aircraft valued at over $30 million each).

The New Piper Aircraft, Inc.

In 1996, the New Piper Aircraft, Inc. (Piper) was trying to re-enter the General Aviation (GA) marketplace with a Malibu derivative aircraft, called the "Malibu Meridian". Unfortunately, the airplane with its improved fuel-carrying capability and increased weight, had difficulty meeting the FAA safety certification requirement of landing stall speed below 61 kt -- it was landing too fast.

Piper was in a critical situation, until it was introduced to Dr. Lin's MVG technology. Through a MOA with NASA, the MVG technology was transferred to Piper. The flap-mounted MVGs enabled the Piper "Malibu Meridian" aircraft to reduce its stall speed by several knots and pass the FAA 61 kt stall speed requirement during its first flight test on November 1, 1996.

In a letter of appreciation to NASA in January 1997 for the transfer of the MVG technology, Mr. Trevor Linton-Smith, Senior Engineer - Aerodynamics at Piper wrote, "By analysis and flight test we have been working this challenge since May and the reason for this letter is to relay the great news that John C. Lin's vortex generators on our flap have worked beautifully and we now have a program. Piper is extremely grateful to John Lin and thank you very much NASA Langley for working on this kind of technology. For Piper, we now have a dreamboat solution to a problem that looked very ugly back in May '96."

Piper has accumulated over $108 million in sales order (83 Malibu Meridian were ordered at $1.3 million each) in 1998.

Airframe Noise Reduction

Under NASA's Airframe Noise Reduction program, it was determined that one of the flap-edge noise generation mechanisms during landing approach was associated with cylindrical shear-layer instability. In 1998, Dr. Lin has successfully developed another miniature passive flow-control device, called Micro Tabs, for flap-edge noise reduction via rapid mixing and dispersion of the cylindrical shear layer.

With their innovative miniature and low-profile design, the Micro Tabs produce an array of trailing horseshoe vortices very efficiently. Each tab causes flow to roll up quickly, creating horseshoe-shaped vortices downstream that result in very rapid mixing. This rapid mixing helps to weaken and disperse the cylindrical shear layer that feeds the trailing vortex downstream, resulting in the weakening of one of the main flap-edge noise production mechanisms.

Wind-tunnel tests at NASA Langley during 1998 have shown that the Micro Tabs are effective in reducing the flap-edge noise associated with the shear-layer instability in the model frequency range. A substantial level of noise (dB) reduction was achieved through tests in the Quiet Flow Facility (QFF), LTPT, and 14 X 22 Foot Subsonic Tunnel. These data are considered proprietary under the Airframe Noise Reduction Program.

Newport News Shipbuilding and the Navy

Through a MOA with the Newport News Shipbuilding (NNS) and an Interagency Agreement (IA) with the Navy. Several highly successful joint tests between NASA, NNS, and the Navy were conducted at NASA Langley and the David Taylor Lab (NSWC-CD) using the MVG technology developed by Dr. Lin to enhance hydrodynamic and hydro-acoustic performance of marine vessels. All results are classified.

In a letter of appreciation to NASA in December 1997, Mr. G. A. Wade, Vice President at NNS wrote, "Dr. Lin's work has been invaluable over the past year in helping NNS engineers develop, apply, and test MVGs ... . The importance of this work and testing cannot be overstated, and a large share of its success must be attributed to Dr. Lin's personal efforts."

Summary

Dr. John C. Lin has distinguished himself in recent years. The MVG and Micro Tab technologies developed by him not only contributed significantly to the domestic aerospace industry and NASA program goals but also have a substantial impact on the shipbuilding industry and the naval community as well.

Dr. Lin's technologies contributed to cost reduction, noise reduction, and improved safety in the aerospace industry. MVGs provided one of the most cost effective means of performance enhancement without incurring any major change to the airplane -- they are easily retrofitable to any new or existing aircraft, as demonstrated by the example of the MDA/Boeing, Piper, and Gulfstream aircraft. The MVG technology eliminated at least one additional design cycle from the GV high-lift system. The MVGs can contribute to noise reduction indirectly through improvement of high-lift systems (i.e., less engine power to achieve the same lift, as indicated in Dr. Linford's letter to NASA), and Micro Tabs can reduce the flap-edge noise directly through rapid dispersion of the cylindrical shear layer. Furthermore, it is commonly known that the stall-speed reduction which the MVGs can provide would benefit GA aircraft safety. Finally, Dr. Lin's MVG technology has a significant impact in invigorating the GA industry, as demonstrated by the exceptionally successful examples of Gulfstream (GV) and Piper (Malibu Meridian).