

HISTORY OF PLANT ENGINEERING IN THE UNITED STATES and the AFE



A plant engineer is a person of wide interests with natural engineering ability, well grounded in fundamentals, mentally alert, and happily with diversified rather than routine work. As someone said back in September 1948... 'he is bound to be a temperamentally stable individual who is able to co-operate with others and work well under pressure.'

The plant engineering function is as old as the industry itself. Our ancestors were 'the millwrights', the autocrats of the 18th century. A Plant is a product of the twentieth century. By the time the twenty-first century rolls around, we will have evolved into 'Facilities Managers'.

New England is considered to be the cradle of the American Heritage, and industry is a part of that heritage..... and these autocratic millwrights of the industry reached their peak in New England. It is no surprise therefore that the first public recognition of the plant engineering profession came from this part of the nation. This is the story of the AFE.

The year was 1915....Post World War I era...The place...Boston.

Harry S Dennison of Dennison Manufacturing Company was the President of the FACTORY MANAGERS ASSOCIATION. E B Freeman of B F Sturdevant Company was its Secretary.



Harry Dennison was a thoughtful man. He reflected with his close friend Mr. Freeman; that the factory managers know how to manage men, money and materials.... And the association helps them to exchange ideas, and it provides for them a forum to discuss common problems. An association of factory managers, therefore, serves a very useful purpose.

But the factory managers didn't know how to operate and maintain the production machines in working order. Plant engineers are the key technical people who keep those wheels in motion, in the manufacturing plants. Without machines in good order, no production output, no gross national product, no economy, and no jobs....

Like factory managers, these master mechanics must have their own technical problems, and if they can get together to find resolution to their technical problems, the factory manager would have smooth running factories, and have something to manage. So, let's see if we can get them together...

Invitations went out to about 25 mechanical engineers, master mechanics and chief engineers in various plants within the metropolitan Boston and surrounding towns.

'You are invited to a dinner at City Club in Boston on the evening of Friday, May 14, 1915, to discuss the possible formation of a Society oriented towards the technical aspects of operating a plant.'

Please come...Your Host...Harry Dennison

The dinner meeting was very well attended. All those present were quite impressed with the potential for such a society, and were eager to help in its formation. As a result of this favorable response, a formal meeting was held on Wednesday June 9, 1915 to approve a draft constitution and to elect officers of the society. The meeting included the Society's first tour, a visit to the Charlestown Navy Yard, and the USS Constitution.

Following a hearty New England dinner, a business meeting was held, which resulted in the formation of a Society named

THE PLANT ENGINEERS CLUB

Mr G L Finch was the First President of this club.

Other officers were then elected, and several committees were appointed to deal with issues of current importance to the members.

This historic occasion is of deep significance for the profession, for the Boston pattern was; to a large extent, followed in other parts of the country.

Mr. Finch served as President for 4 years from 1915-19. Mr. H C Eaton who served 2 years from 1919-21 followed him. Then Fred Gibson for 4 years from 1921-25.

During the early formative years, members met regularly to exchange ideas, make plant visitations and voluntarily served on various technical committees, to generally resolve day to day operating problems.

Members spent considerable time and effort in preparation of codes and standards. Codes...so that we could all talk the same language and compare results.... Codes to help in optimizing plant performance.

A five-year effort on the part of the subcommittee on the Care of Steam Boilers and Other Pressure Vessels produced a standard for continuous boiler room tests. These standards proved of such great value that the American Society of Mechanical Engineers (ASME) became interested in them, and adopted most of them without any major changes in the ASME code for Pressure Vessels. Active on this committee were Fred Gibson, W H Larkin, H F Scott, and J R Gill.

The deliberations of this committee also produced a clarification of the causes of caustic embrittlement of pressure vessels, and a final solution to the problem. This activity also directly contributed to the formation of the Industrial Power division of ASME.

Early in 1922, there was a growing feeling among many prominent engineers in the various disciplines of the engineering profession, that there was a lack of solidarity within the professional community. This led to a series of meetings of several engineers from (9) different technical societies, including Fred Gibson

and Edwin Burnham from **the Plant Engineers Club**. The result was the chartering of

THE AFFILIATED TECHNICAL SOCIETIES OF BOSTON

on June 12, 1922, with the intent "... to bring the technical societies and their members into closer touch with one another for more effective public service, and for the advancement of scientific investigation, education and research."

This affiliation grew strong in years that followed. Many more societies joined in, and that led to a change in the name of the affiliation to

THE ENGINEERING SOCIETIES OF BOSTON

Later, with many other societies from the New England area joining in, the name of the affiliation was again changed to:

THE ENGINEERING SOCIETIES OF NEW ENGLAND (ESNE)

The Plant Engineers Club continues to be affiliated with the ESNE as a Charter member since its inception. In later years, after the formation of the **American Institute of Plant Engineers, AIPE**, the New England Region of **AIPE** also joined the affiliation.

The ESNE published the New England Journal 9 times a year. It also sponsored jointly with the **MASSACHUSETTS SOCIETY OF PROFESSIONAL ENGINEERS**, the annual celebration of the NATIONAL ENGINEERS WEEK which is held in February each year since 1959. From next year, various technical societies, including **AIPE**, ASME, AIEE (American Institute of Electrical Engineers), IRE (Institute of Radio Engineers), both later merging into the IEEE (Institute of Electrical and Electronics Engineers), and many others will co-sponsor jointly with National Society of professional Engineers (NSPE), the annual celebration of the National Engineers Week. This tradition of celebrating national Engineers Week was started back in 1951, and the event takes place each year in February during President Washington's birthday. Washington was an Engineer.

When the **AMERICAN ASSOCIATION OF ENGINEERING SOCIETIES (AAES)**; a national organization based in Washington, DC, was formed in 1980 to replace the ENGINEERS JOINT COUNCIL, the Engineering Societies of New England joined the AAES. Later, AIPE also joined the AAES.

Sometime in 1928, Kenneth Hamilton of the **Plant Engineers Club** prepared a document entitled 'Principles Governing the Responsibilities of the Plant Engineers'. This was published in the 'Industrial Engineer' magazine. Thirty years later, in 1955, Hamilton was honored as an **AIPE** Fellow. In the following year, this document was adopted by AIPE as 'The Code of the Plant Engineer'.

During the Second World War many of our Club members were actively involved with an industry group active in locating obsolete equipment to help supply and acute need for scrap iron. Likewise, in Britain, there was a critical and acute shortage of spare parts for machinery needed for the War effort. The British Government had actively supported and sponsored a similar Industry Group to act as a clearinghouse for interchange of spare parts. The seven (7) Charter members of this British Wartime group then recognized a need for a continuing organization with broader national and professional interests. So, at the end of the War, this group became the nucleus for the formation of '**Incorporated Plant Engineers**' in 1946, which was later renamed as the **INSTITUTION OF PLANT ENGINEERS** with headquarters in England. The organization had over 10,000 members dispersed throughout the British Commonwealth.

When Fred Gibson, the 3rd President of the **Plant Engineers Club**, retired, he moved to New York. There he interested three (3) Plant Engineers in the New York area to sponsor and form a similar club. There, in 1945, a **Plant Engineers Association of New York** was incorporated.

Plant Engineers in Pennsylvania and California started to organize themselves about the same time. The Philadelphia group had several informal meetings, before formally organizing themselves into a club similar to Boston. California, on the other hand, decided to interest engineers from various parts of the extensive territory to later serve as starting points for several clubs. Chicago followed the

same track. The Calumet group and the Northern Chicago group were both started by the charter members of the Chicago club. The Union-Middlesex County group in New Jersey was started by members of the New York Club. The Rochester New York Club and the Dayton Ohio Club were organized about the same time as the Chicago club. Baltimore, Pittsburgh, Marion and Cleveland followed in rapid succession in 1952. The Cleveland group was a revival of the Cleveland Engineering Society which had become inactive in the War. The two (2) clubs started in Pittsburgh later merged together into one. The period from 1945 through 1952 saw the formation of some nineteen (19) plant engineering groups within the United States.

The first coordinated activity involving several clubs was held in Philadelphia and Chicago in 1952. Members of Boston, New York, Philadelphia, Chicago, Dayton, Calumet and Northern Illinois clubs participated in hosting a plant engineers' team from Great Britain. The group toured in this country for six weeks studying American plant engineering and maintenance techniques. The movement gained momentum in the year 1953. Milwaukee, Niagara Frontier, Northern New Jersey, Detroit, Indianapolis, Kentukiana, Evansville and Toledo groups were organized in rapid succession. Continuing interaction between these groups led to a growing movement for a National Organization to cater to the needs of the plant engineering profession.

A regional conference was held in Whiting, Indiana, on November 17, 1953 with 75 representatives from Northern Illinois, Chicago, Calumet, and Marion, Indiana. It was at this meeting that an idea of a possible national organization was first debated. Later the officers of the three (3) Illinois clubs met to consider the proposal and discuss the type of organization most likely to receive approval of the majority of the clubs already organized. This proposal looked promising enough to be followed up with other clubs around the country.

In January 1954, the Illinois clubs jointly sponsored a luncheon at which members of a team of engineers from Netherlands were the guests of honor. They also hosted the very first national meeting at the Stock Yard in Chicago on January 27, 1954.

The **Boston Plant Engineers** delegates, Past President Leo Monty (1951/52), John C Coffin (1953/54), and James Sweet (1954/55) joined delegates from eleven (11) of the nineteen (19) active clubs: New York, San Francisco, Philadelphia, Chicago, Pittsburgh, Calumet, Northern Illinois, Detroit, Kentuckiana, and Northwestern Ohio, to discuss the aims, objectives and membership requirements of the proposed national organization.

At this meeting the delegates authorized Richard Morris of Chicago to incorporate a non-profit organization to be known as the

AMERICAN INSTITUTE OF PLANT ENGINEERS. the AIPE

On June 1, 1954, a charter was granted by the Secretary of State of Illinois. On August 20, 1954, the first meeting of the Corporation was held in Chicago to elect the interim officers and adopt the working by-laws. The annual membership dues were fixed at \$ 3.00.

The five (5) individuals, E C Burns, T E Hanson, R H Morris, T S Raymond and S A Simonson, who had paid the membership dues, and were the members of the organizing groups, were named as the 'Original Members of the Corporation'.

Northern Illinois Chapter, Waukegan, Illinois has the unique honor of being the first group to seek a charter from AIPE. Chapter 1 was chartered on September 17, 1954. It is still active with 60 members on its rolls.

This was quickly followed by Kentucky, Baltimore, New York, Chicago and Philadelphia chapters in October 1954. Then came Pittsburgh, Kansas City, and Union-Middlesex chapters in November; Dayton, Detroit, Milwaukee, Twin City, Calumet, San Francisco, central Indiana, Los Angeles, Tri-State and Northern New Jersey chapters in December 1954.

The First National Business Meeting of **AIPE** was held at the Palmer House in Chicago on January 20, 1955. Delegate attended this meeting from the above 19 Charter Chapters representing some 500 paid up members, and several other clubs who had not yet joined. The national officers were elected:

President Richard Morris

Vice President Robert Hiller

Treasurer Ted Ramond

Secretary Sig Simonson

Geographic Regions were established and the first Regional Vice Presidents were later elected:

Northeast John Waligora

Southern John Parchman

Central Edward Applegate

North Central Edward Potter

East Central W S Duncan

Western Thomas Hardgrove

By the end of the first year of operations the membership was at 850, and there were 26 chapters on the rolls. Regretfully, at that time, there were also some clubs, which initially showed some reluctance to seeking a charter from the **AIPE** organization, and needed some persuasion.

During 1956, the Constitution and By-laws were adopted. **AIPE** had its first booth in the Clapp & Poliak maintenance and Engineering Show. Four (4) issues of a new publication 'AIPE Digest' were published.

Robert Hiller of Pittsburgh chapter designed the familiar **AIPE** globe logo, which was officially adopted in 1956.

Merrimac Valley Chapter 27 was the first chapter from Massachusetts to join the AIPE. This was also in 1956.

With the acceptance of Montreal Canada Chapter in 1956, **AIPE** became an international organization.

In July 1957, the **AIPE** headquarters were moved from Chicago to Barrington Illinois.

The first **AIPE** Fellow award was bestowed on Oscar Graveley of Niagara Falls New York in 1957. **AIPE** Fellow award for meritorious services to the plant engineering profession is the highest award bestowed upon a plant engineer. Since its inception in 1957, thirty-nine (39) individuals have received this award.

It was not until three (3) years after the incorporation of **AIPE**, that Boston Plant Engineering Club, the originators of the plant engineering movement, decided to seek a charter from the national organization.

Boston Chapter 33 was chartered on August 26, 1957. It had 199 members on its rolls. Chapter President Leo J Monty served two (2) terms as the **AIPE** national Treasurer, and as National Vice President, Professional and public Affairs for several years. He received the **AIPE** Fellow Award in 1967. Chapter 33 of Boston later named their Scholarship award after Mr. Monty. Another Chapter President Gulab G. Hira, received the **AIPE** Fellow award in 1981. The Chapter received the Chapter Activity Award three years in succession 1973/74/75/76.

The first major survey called "The Profile: The American Plant Engineer" was developed and compiled from over 500 plant engineers in 1958. A typical plant engineer was 43 years old, a college graduate, had about 13 years of work in his field. He was responsible for a plant covering over 15 acres of floor space, representing a plant investment of \$ 15 million.

On July 10, 1958, the **AIPE** was admitted as an Associate member of the **ENGINEERS JOINT COUNCIL.**

National dues were increased from \$ 3.00 to \$ 100.00 effective in 1959.

Massachusetts Route 128, Chapter 52 was chartered on April 1, (April Fools Day) 1960. It had 83 members on its rolls. The first chapter President, Corliss T. VanHorn (1960/61), who secured the Chapter Charter, had also served as the National Treasurer (1963/65), **AIPE** Vice President (1965/66), and **AIPE** National President during (1966/67). He received an **AIPE** Fellow award in 1973. The Chapter received the **AIPE** Chapter Activity Award in 1962.

On May 1, 1960, the **AIPE** Headquarters were moved from Barrington, Illinois to Arlington Heights, Illinois. An **AIPE** "Organizational Manual for Officers" was developed in 1961.

To promote the international growth of the **AIPE**, a Foreign Affairs Committee was appointed in 1962, with engineers from England and Australia. **AIPE** also had a representative at the Third Plant Engineering Show and Conference in Tokyo, Japan. A chapter in Athens Greece was chartered.

In 1962, the headquarters was moved from Arlington Heights, Illinois, to Cincinnati, Ohio. The mayor of Chicago proclaimed a "Plant Engineers Week" in January 1963.

Seven (7) **AIPE** members attended the London International Plant Engineering and Maintenance Conference in June 1963.

The first "**AIPE** Plant Engineer of the Year Award" was made to John J Novotny of Orlando Florida in 1963.

A group of **AIPE** members went on a Study Tour of Europe from April 25 - May 16, 1966.

A major change in the constitution was approved in 1966, incorporating centralized billing from headquarters for both the National and Chapter dues. The National dues were increased from \$ 10.00 to \$ 15.00.

In 1966, The **AIPE's** strong image to the plant engineering field became evident when the Industrial Relations committee received a grant from the United

Nations to cover the cost of preparing a thesis for its technical division. This Thesis was commissioned to help developing nations prepare a program of plant engineering and to describe how a graduate engineer should be trained in plant engineering.

AIPE members were awarded seven of the fifteen Maintenance Merit Awards made by the Factory magazine in 1967.

The first pollution control study tour of six countries in Europe was sponsored in the Fall of 1967.

Robert F. Curran of Providence RI was the recipient of the first "Mr. Pollution Control Award" in 1967.

AIPE applied for and was admitted as a Full Member of the **Engineers Joint Council** in 1967.

National annual membership dues within the 60's, 70's, and 80's, increased gradually from \$ 15.00 in 1966, to \$ 20.00 in 1974, \$ 25.00 in 1976, \$ 40.00 in 1978, \$ 50.00 in 1982, \$ 55.00 in 1984, to the current dues level of \$ 60.00 in 1987.

The New England Region has been running annual regional Plant Engineers Conferences since 1969. The first conference was held in May 1969 at Hotel America in Hartford Connecticut under the chairmanship of Ray Bennettson.

A program to certify Plant Engineers as a Certified Plant Engineer (CPE) was instituted in November 1975. At the end of the first year of the program 400 plant engineers were certified, where there were 1200 plant engineers carrying the CPE designation after their names.

A group of plant engineers from the Institution of Plant Engineers in Britain visited us again in 1976. They stayed as houseguests of several individual members of various **AIPE** Chapters around this country. Members of the Boston and Massachusetts Route 128 chapters were some of those gracious hosts.

In June 1980 AIPE Headquarters moved to 3975 Erie Avenue, in Cincinnati.

Strategic Long-Range Planning (SLRP) was started in June 1981 to enhance the effectiveness and image of **AIPE** as a strong and valuable contemporary engineering association. New ideas and a multitude of programs were conceived to give more value for the dues dollar to the plant engineer. Increased emphasis was placed on recruitment of new members.

The **AIPE** President Club Award was instituted in 1981 for **AIPE** promotion. Gulab G. Hira of the Boston Chapter won this award for the first two (2) years in succession.

The **AIPE** Constitution and By-laws were adopted in 1984.

The latest chapter to receive the **AIPE** charter was on March 15, this year. It is the Shellrock River Chapter 172, of Clear Lake, Iowa, where they had only 12 members.

At least ten (10) charter members are required to form a new **AIPE** chapter. Sometimes a chapter surrenders its charter when its activity declines to a point that the membership falls below 10 members. Occasionally merging of two chapters results in one chapter surrendering its charter.

The New England Region of the **AIPE** comprised of six (6) states, Massachusetts, Connecticut, Rhode Island, Maine, New Hampshire and Vermont, with a total of 17 Chapters, plus one (1) Student Chapter at Mass Maritime Academy. Total New England Region membership ran into 1,200.

As of May 1988, the North American geographic area was divided into 9 regions; Eight regions in the United States, and Canada as one (1) region. There were a total of 141 active chapters, with an additional group called "Members-at-Large", who are not attached to any chapter. The current count with all classes of membership in the AIPE climbed to 8,000 members.

The Association of Facilities Engineers (AFE) was founded in 1954 as the American Institute of Plant Engineers (AIPE) by Richard Morris, Sig

Simonson, and Theodore Ramond as a national organization to unify the assortment of plant engineer clubs already organized.

You can read of this fascinating transition and recent history by going to www.afe.org, or simply go to the upper national scroll bar of our region 8 website, and click on 'About AFE', which will bring you to the 'history of AFE'.

We have come a long way since that historic day of May 14, 1915, when it all began with a dinner hosted by Harry Dennison at the City Club in Boston.

The age-old impression that we are perhaps a necessary evil, still persists in the minds of some corporate management. They are living in the past. Fortunately, the corporate environment is now showing some signs of change.

In the current technology oriented global economy, the survival of this nation is contingent upon us, you and I, not only being at the leading edge of the new technology, but also on making sure that we have that technology in use in our plants and facilities.

The technology is exploding all around us. Consider this! Most of the products you see in the market today did not even exist five years ago. It is incumbent upon the plant engineer to keep updating our know-how to ensure that we do survive in the world market, against a very aggressive competition.

GULAB G. HIRA, PE/CPE

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