

# Combustion Engineering, Inc. Collection

## Finding Aid

Windsor Historical Society  
96 Palisado Avenue, Windsor, CT 06095

**Creator:** Combustion Engineering, Inc.

**Dates:** 1951-2010, bulk dates 1956-1988

**Extent:** 5 linear feet

**Accession #:** 1986.1, 2010.27, 2010.45, 2010.64, 2011.31, 2011.34, 2011.42, and 2011.48

### Corporate History

Combustion Engineering, Inc. (CE) was a leader in steam and energy generation technologies for over 75 years. The company remained committed to its energy-based heritage from its inception in 1912, through periods of adaptation to changing market conditions, until it was acquired by Asea Brown Boveri (ABB) in 1990. During its early years Combustion Engineering manufactured fuel burning equipment such as industrial boilers, stokers, and dryers; improved the efficiency of railroad locomotive steam engines; and developed and supplied coal pulverizing equipment for coal-fired boilers. Although the company struggled through the Depression, when World War II began Combustion Engineering was well positioned with the technology, knowledge, and facilities to make a significant contribution to the war effort. Marine boiler production lines were diverted to make the steam-generating boilers needed for Liberty ships. After the war Combustion Engineering supplied steam generators to European countries receiving benefits through the Marshall Plan.

In the United States the post-war economy spurred a period of industrial and business growth. Combustion Engineering began to expand its range of products and services for this changing world marketplace. They developed industrial boilers capable of burning municipal waste as fuel, provided engineering and construction services to oil refineries and distilleries, and entered the emerging field of petrochemical manufacturing of plastics, solvents, and synthetic fibers. In 1963 the company's new CEO Arthur J. Santry, Jr. adopted a program of strategic diversification with the goal of becoming a multifaceted corporation supplying equipment, products, and services to a wide range of end-use markets.

From its inception, Combustion Engineering's world headquarters and general offices were located on Madison Ave. in New York City. With the post-war diversification, however, the company was outgrowing those quarters and made the pivotal decision to establish a new campus in Windsor, CT. By July of 1960, over 400 scientific, technical, and managerial employees and their families had moved to Connecticut. The cohort of new families was eagerly welcomed by retailers and community officials in the Greater Hartford area. Combustion Engineering corporate management encouraged employee recreational, athletic, and community service activities to build camaraderie and to help the transplants adjust to their new location. Eventually about 3,000 CE employees worked in Windsor. One legacy of the proactive reinforcement of corporate loyalty is a sizeable local retirees group, the Alstom/ABB/CE Retirees Club.

The Windsor site was located at 1000 Prospect Hill Rd. (the address was later changed to 2000 Day Hill Road) on a 530 acre tract purchased by Combustion Engineering in 1955 from the estate of the Rev. Francis Goodwin of Hartford. Much of the tract was wooded, but ultimately there were more than 30 buildings constructed on the property. Buildings 1, 1A, 2, 2A, 3, 3B, 5, 6, 6A, 12, 16, 17, and 18 were used for nuclear and fossil fuel research and development or for the support of power plant field operations. Building 2 housed the first critical assembly unit (or nuclear reactor) in Connecticut; nuclear fuel manufacturing took place in Building 3. The remaining buildings (Buildings 4, 14, 19, 22, 23, and 24) included office spaces, cafeteria, and administrative support services such as the document center, medical facilities, and maintenance.

Atomic energy was one of the most significant developing technologies to emerge from World War II. In 1946 Combustion Engineering began to study the feasibility of generating power from nuclear fuels. From 1955 until the mid-1960s CE supplied enriched uranium nuclear fuel under contract to the Atomic Energy Commission (AEC) for U. S. Navy submarine propulsion reactors and for utility power reactors. Other activities included the construction, testing, and operation of the S1C Prototype Reactor facility at the CE Windsor location. This facility, one of two Nuclear Power Training Units in the United States, provided instruction for thousands of Navy personnel in the operation of a full-size submarine reactor.

Manufacturing and research activities for the Navy continued until 1961 when the Atomic Energy Commission contracts terminated. The S1C facility was sold to the AEC in 1960, but Combustion Engineering continued to operate the S1C facility until 1970. After 1970, the S1C facility was operated by the Knolls Atomic Power Laboratory (KAPL). Many of the processes from this work are still designated as classified by the U. S. government.

In addition to the Atomic Energy Commission work, from the early 1960s until 2000 Combustion Engineering performed research, production, and servicing of nuclear and fossil fuel systems under both commercial and federal contracts. Projects included nuclear and combustion research for commercial use in Buildings 2 and 5, nuclear fuel manufacturing in Buildings 17 and 21, and large-scale boiler testing in the Building 3 complex. Processes which supported the tests included a high-pressure boiler system; demineralizers and scrubber systems; and chemical, photographic, electronic and x-ray laboratories. Fossil fuel research was conducted in the Building 3 complex from 1962 until 2000 when the fossil fuel operations were sold to Alstom Power, Inc.

West of the S1C property was a facility which tested coal gasification processes. The Process Development Unit (PDU) was built in 1977 by USDOE and closed in the early 1980s. The main building was then cleaned, renovated, and repurposed as a gym for Combustion Engineering employees.

In the 1980s the markets served by Combustion Engineering's core businesses – fossil and nuclear fueled power plants, oil and gas exploration and production, and petroleum and petrochemical projects – experienced serious declines and the company underwent a major restructuring. In 1990 Combustion Engineering was acquired by the European conglomerate, Asea Brown Boveri (ABB) and the dismantling of the Windsor complex began.

A 1994 environmental investigation for the U. S. Department of Energy surveyed and documented the extent of both chemical and radiological residues on the Windsor property. Although the waste storage and disposal procedures being used were commonplace at the time the site's research and development work was being done in the 1950s and 1960s, much tighter environmental regulations are now the standard. ABB, the USDOE, and the State of Connecticut agreed that a thorough cleanup of the property was necessary. The remaining buildings on the site, waste treatment and disposal areas, and the streambed are being remediated. It is anticipated that by 2012 all the buildings and supporting facilities will have been demolished and the land released for redevelopment.

In the fall of 2010, as the end of cleanup operations neared, ABB and Massachusetts-based developer Winstanley Enterprises presented Town of Windsor officials with preliminary plans for a comprehensive, mixed-use development on the former Combustion Engineering site. Zoning changes, infrastructure needs, and fiscal impact analyses will be studied as the design elements for the new town center (tentatively named Great Pond Village) take shape.

## **Scope and Contents**

The Combustion Engineering, Inc. Collection contains historical photographs, publications, and artifacts which portray some of the history of this company during its fifty year tenure (1960-2010) in Windsor, CT. Combustion Engineering was a prominent leader in the field of steam and nuclear energy generation technology. The collection was assembled during the decommissioning, remediation, and demolition

phase of operations at the Connecticut site. Over 250 photographs depict aerial views, exterior shots of the buildings on the campus, research and development activities, and various special events. Representative combustion engineering texts, technical manuals, and promotional materials provide historical documentation of the non-classified work conducted in Windsor. Additional printed materials, awards, memorabilia, clothing and artifacts were collected by the retirees group for an exhibit at the company's 50<sup>th</sup> anniversary celebration in April 2010. These provide a glimpse into the Combustion Engineering corporate culture which encouraged employee recreational, charity, and sports activities and recognized long-term employees with service awards and gifts. A DVD documenting the history and environmental remediation of the site will be added to the collection when it is available.

## **Arrangement**

Materials are arranged by format. The photographs and views of facilities and operations are arranged by building number. A separation sheet is included in the sequence when the actual item is oversized. Other materials are arranged chronologically where possible; however, many pieces are undated.

### Series I. Maps

#### Series II. Photographs

- Subseries A. Aerial views
- Subseries B. Facilities and operations by building number
- Subseries C. Off campus buildings
- Subseries D. Atlas Transport Tank emergency response vehicle
- Subseries E. Historic photographs of Heine boilers
- Subseries F. Boilers and nuclear reactor vessels
- Subseries G. Special events

#### Series III. Printed and published materials

- Subseries A. History of Combustion Engineering
- Subseries B. Printed materials produced by Combustion Engineering
  - Section 1. Annual reports
  - Section 2. Corporate newsletters
  - Section 3. Engineering handbooks and texts
  - Section 4. Operations manuals and emergency plans
  - Section 5. Marketing and promotional materials
  - Section 6. Employees
  - Section 7. 25<sup>th</sup> and 50<sup>th</sup> anniversary celebrations
- Subseries C. Publications by entities outside of Combustion Engineering

#### Series IV. Artifacts

- Subseries A. Flags, banners, signs, plaques
- Subseries B. Combustion Engineering memorabilia and promotional items
- Subseries C. Clothing

## **Box and Folder Lists**

### Series I. Maps

- Oversize CE Windsor site, May 2002
- Folder B09 CE Windsor site, undated, between May 2002 and Dec. 2009
- Doc Storage CE Windsor site, Dec. 2009

### Series II. Photographs

- Box 1 Subseries A. Aerial views
- Subseries B. Facilities and operations by building number, Building #1 -- #2
- Box 2 Subseries B. continued, Facilities and operations by building number, Building #2 -- #17

Box 3 Subseries B. continued, Facilities and operations by building number, Building #18 -- #24

Box 4 Subseries B. continued, Facilities and operations by building number, Building #24

Subseries C. Off campus buildings in Windsor

Subseries D. Atlas Transport Tank emergency response vehicle

Subseries E. Historic photographs of Heine boilers

Subseries F. Boilers and nuclear reactor vessels

Subseries D. Special events: banquets, social and recreational activities

Series III. Printed and published materials

Subseries A. History of Combustion Engineering

Section 1. Manuscript histories

Box 5

5.1 Combustion Engineering family tree

Santry, Arthur J. "Combustion Engineering Today," Dec. 7, 1967

"C-E Experience" [brief history of the nuclear program]

Transcript of interview with H. G. Ebdon, c.1968

Partial transcript of interview with Hubert G. Ebdon, recorded 1968 and mid-1970's

5.2 Pry, Robert H. [C-E history, June 1977]

"History of C-E Raymond Division"

"C-E Industrial Group"

"The Combustion Story"

5.3 "C-E Systems Milestones"

"Combustion Engineering: A Brief History," 1985

"CE Windsor Site," 2010

Stewart, Robert C. "Critical Facilities Building No.1; Critical Assembly Building No. 2," 2004

Stewart, Robert C. "Building #3: Kreisinger Development Laboratory; Building #6: Hot Waste

Dilution Vault," 2008

Section 2. Move from New York to Connecticut in 1960

5.4 Articles and clippings about the move

Subseries B. Printed materials produced by Combustion Engineering

Section 1. Annual Reports

5.5 Annual Report, 1982

Section 2. Corporate newsletters

5.6 *CE Power Systems Reporter*, Aug/Sept. 1985 and Oct. 1985

5.7 *CE World: 75 Years of Excellence*, Oct./Nov. 1987

5.8 Articles about CE products, services, and contracts

Section 3. Engineering handbooks and texts

5.9 *Superheat Engineering Data*, 7<sup>th</sup> ed. rev., 1939

*Steam Tables* 3<sup>rd</sup> ed., 1940

*Steam Tables*, 1967

*C-E Fuel Burning and Steam Generating Handbook*, 1983

*C-E Fossil Fuel Burning and Steam Generating Handbook*, 1991

DeLorenzi, Otto. *Combustion Engineering: A Reference Book on Fuel Burning and Steam Generation*. 1<sup>st</sup> ed., 1949

Singer, Joseph G. *Combustion Fossil Power Systems: A Reference book on Fuel Burning and Steam Generation*. 3<sup>rd</sup> ed.

Section 4 Operations manuals and emergency plans

Box 6 "Critical Facility Operations Manual" [Building 2] Nuclear Division, Combustion Engineering, Inc., 1961  
"Windsor Nuclear Fuel Facility Industrial Safety Instructions" ABB Combustion Engineering Nuclear Power Division, 1993

Box 7 "Emergency, Disaster, and Mobilization Plan" Nuclear Division, Combustion Engineering, Inc., undated, circa 1955-1970  
"Windsor Nuclear Fuel Facility Emergency Plan Implementing Procedures" ABB Combustion Engineering Nuclear Power Division, 1993

#### Section 5. Combustion Engineering marketing and promotional materials

##### Box 8

8.1 "This is C-E in Windsor"  
"The HP Pulverizer"  
"Nuclear Power Plant Training"  
"C-E Control Panels and Systems"  
"Instruments and Controls for Industrial Processes"  
"Ring-type Distributed Control Systems"  
"Marketing Communications: Meeting Corporate Goals"  
"Product Information Bulletin: C-E Ignitor Delta-P to IFM Conversion Kit"  
"Product Information Bulletin: Series 80 Ignitor Control System"  
"Product Information Bulletin: Safe Scan I Flame Scanner"

#### Section 6. Employee related materials

8.2 Job advertisements, 1967-69  
8.3 Organizational charts  
8.4 Employees who moved to Connecticut in 1960  
8.5 Employee directory, 1968  
8.6 Service Award programs  
    "Presentation of Service Emblems," 1953, 1956-1958  
    "Quarter Century Service Award Program," 1964, 1966-1969  
    "Women's Service Award Program," 1966-1969  
8.7 Articles about employee service recognitions  
8.8 Articles about employee extracurricular activities – charity  
8.9 Articles about employee extracurricular activities – sports  
8.10 Articles about employee extracurricular activities – special events  
8.11 Employee ephemera  
8.12 Alstrom/ABB/CE Retirees Club

#### Section 7. Combustion Engineering anniversary celebrations

8.13 25<sup>th</sup> Anniversary Sept. 14, 1985  
50<sup>th</sup> Anniversary April 5, 2010

#### Subseries C. Publications by entities outside of Combustion Engineering

8.14 Connecticut Development Commission "Community Monographs: Windsor," 1957  
8.15 Town of Windsor *Town Report, 1959-1960* (photocopy, see also 1986.1.3)  
8.16 *Fortune* [magazine], Dec. 1971  
8.17 *Hartford Times* [newspaper] clippings

#### Series IV. Artifacts

8.18 Combustion Engineering Collection cataloged objects list

## **Related Materials at Windsor Historical Society**

Subject files:

Businesses – Manufacturing – Combustion Engineering  
Houses – Mechanic St., 33

Town of Windsor Photograph Collection, Box 1 Folder 24

## **Related Materials at Other Repositories**

Connecticut Historic Preservation Collection, Thomas J. Dodd Research Center, University of Connecticut, Storrs, CT

Hale, Gilbert. Interview by Robert Stewart, 7 February 2008

Hanzalek, Fred. Interview by Robert Stewart, 26 February 2008

## **Subject Terms**

ABB Asea Brown Boveri Ltd.

Combustion engineering -- Handbooks, manuals, etc.

Combustion Engineering, Inc.

Ebdon, Hubert G.

Hazardous waste site remediation – Connecticut – Windsor

Naval Nuclear Power Training Unit (U.S.)

Nuclear energy – Research and development

Pry, Robert H.

Singer, Joseph G.

Stewart, Robert C.

Windsor (Conn.) – Manufacturing industries

## **Custodial history**

The core of the Combustion Engineering, Inc. Collection consists of an assortment of artifacts and documentation collected, reviewed, and donated to the Windsor Historical Society during the remediation and demolition process at the Windsor, CT site during 2010 and 2011. The donation was arranged through the efforts of Keith Knauerhase and John Conant at ABB and Nadia Glucksberg, formerly of MACTEC Engineering and Consulting, Inc. in Portland, ME and later of Haley & Aldrich in Portland, ME. These items were transferred to the Society with basic identifications provided by an ABB staff person. More detailed descriptive information about the photographs and site operations were later provided by John Conant, Nadia Glucksberg, Donnell Jackson, and Vi Nahabedian.

Additional objects were obtained from former employees and members of the Alstrom/ABB/CE Retirees Club with the assistance of Vi Nahabedian. These included a set of 26 cardboard display panels originally prepared for the 50<sup>th</sup> Anniversary celebration in April 2010. The panels were photographed and then dismantled. Images and articles were removed from the panels, photocopied where necessary, and included in the collection.

A small collection of materials assembled for Combustion Engineering's 25<sup>th</sup> Anniversary celebration was donated to the Society in 1986. These items have been integrated into the larger collection.

Some of these artifacts and images were included in the public exhibition *Combustion Engineering: A Windsor Landmark* on display at the Windsor Historical Society May 10, 2011 until Dec. 31, 2011. The collection was processed and the finding aid prepared by WHS staff members Barbara Goodwin and Christina Vida in April 2011.