



Smithsonian

National Museum of American History Kenneth E. Behring Center

Guide to the Emmet Mercury Boiler Records

NMAH.AC.0968

Sara Wheeler

2017

Archives Center, National Museum of American History
P.O. Box 37012
Suite 1100, MRC 601
Washington, D.C. 20013-7012
Business Number: Phone: 202-633-3270
Fax Number: Fax: 202-786-2453
archivescenter@si.edu
<https://americanhistory.si.edu/archives>

Table of Contents

Collection Overview	
Administrative Information	1
Historical	2
Scope and Contents	2
Arrangement	2
Names and Subjects	
Container Listing	
Series 1: Background and Research on Mercury Boilers, 1920 - 1961	4
Series 2: Correspondence, 1921 - 1950	5
Series 3: Dutch Point Mercury Boiler Operational Records, 1923-1949 (bulk 1923-1927)	6
Series 4: South Meadow Station Operational Records, 1928 - 1961	8
Series 5: Hartford Electric Light Company Operational Records, 1928-1949	11

Collection Overview

Repository:	Archives Center, National Museum of American History
Title:	Emmet Mercury Boiler Records
Date:	1920 - 1961
Identifier:	NMAH.AC.0968
Creator:	Hartford Electric Light Company. Foster Wheeler Corporation Stone and Webster. General Electric Company Babcock and Wilcox Company. Emmet, William Le Roy, 1859-
Source:	National Museum of American History (U.S.). Division of Mechanical and Civil Engineering National Museum of American History (U.S.). Division of Work and Industry
Extent:	4 Cubic feet (14 boxes)
Language:	English .
Summary:	The Emmet Mercury Boiler Records contains information about General Electric Company and Hartford Electric Light Company's development, installation, and use of William Le Roy Emmet's mercury boiler units. The mercury boiler units used mercury fluid along with steam power to improve cycle efficiency in converting coal or oil to electric power. The collection contains articles, news clippings, reports, instruction manuals, log books, data sheets, photographs, and drawings related to the experimental unit installed at Dutch Point, Connecticut, and the first commercial use of a mercury boiler at the South Meadow Station in Hartford, Connecticut.

Administrative Information

Acquisition Information

Immediate source of acquisition unknown.

Provenance

Transferred to the Archives Center from the Division of Work and Industry in 2006.

Processing Information

Processed by Sara Wheeler, July 2017; supervised by Alison Oswald, archivist.

Preferred Citation

Emmet Mercury Boiler Records, 1920-1961, Archives Center, National Museum of American History

Restrictions

Collection is open for research but is stored off-site and special arrangements must be made to work with it. Contact the Archives Center for information at archivescenter@si.edu or 202-633-3270.

Conditions Governing Use

Collection items available for reproduction, but the Archives Center makes no guarantees concerning intellectual property rights. Archives Center cost-recovery and use fees may apply when requesting reproductions. Copyright held by the Smithsonian Institution.

Historical

The mercury boiler was developed by a General Electric Company's engineer, William Le Roy Emmet, to use mercury fluid in conjunction with steam power to improve cycle efficiency in converting coal or oil to electric power. An experimental mercury-steam generating unit was installed by Hartford Electric Light Company in 1923 at Dutch Point, Connecticut. In June 1927, ground was broken for the South Meadow Station in Hartford, Connecticut, and Babcock and Wilcox Company was contracted for the boiler. This unit was the first commercial installation in the nation and was based on the data collected from the Dutch Point unit. The Dutch Point unit was damaged during the course of operations and was permanently shut down by Emmet in September 1927. Emmet requested that all efforts be focused on the South Meadow Station. In August 1947, the first commercial unit at South Meadow Station was taken out of service and disposed of, and a second unit was installed and put into use on January 1, 1949. The engineering company, Foster Wheeler, was used to help design the second unit. During inspections in 1959 and 1960, it was discovered that the second unit had a wastage issue, and the unit was then operated at half load capacity for the remainder of 1960. On January 4, 1961, the second unit was removed from operation, and on April 19, 1961 it was officially retired. The mercury was removed and sold to Woodbridge Chemical Corporation. The decision was made to not to replace it with another mercury unit.

Scope and Contents

The collection documents the construction, operation, and demolition of mercury boiler generating units developed by William Le Roy Emmet and installed by the Hartford Electric Light Company in Hartford, Connecticut. The collection contains articles and research about the use of mercury and the development and implementation of mercury boilers. Also included is general correspondence between Hartford Electric Light Company and General Electric Company, operational logs, collected data, instructional guides, inspection reports, and photographs and drawings for the Dutch Point Mercury Boiler and the South Meadow Station.

Arrangement

The collection is arranged into four series.

Series 1: Background and Research on Mercury Boilers, 1920-1961

Series 2: Correspondence, 1921-1950

Series 3: Dutch Point Mercury Boiler Operational Records, 1923-1949 Subseries 3.1: Data Sheets and Reports, 1923-1927

Subseries 3.2: Log Books and Instructions, 1924-1949

Subseries 3.3: Photographs and Drawings, 1923-1927

Series 4: South Meadow Station Operational Records, 1928-1961

Subseries 4.1: Data Sheets and Reports, 1928-1961

Subseries 4.2: Log Books and Instructions, 1928-1955

Subseries 4.3: Photographs and Drawings, 1928, 1955

Series 5: Hartford Electric Light Company Operational Records, 1928-1949

Names and Subject Terms

This collection is indexed in the online catalog of the Smithsonian Institution under the following terms:

Subjects:

- Boilers
- Chemical engineering
- Electricity
- Mechanical engineering
- Mercury
- Mercury vapor

Types of Materials:

- Architectural drawings
- Articles
- Blueprints
- Correspondence -- 20th century
- Logs (records)
- Photographs -- 20th century
- Reports

Names:

- National Museum of American History (U.S.). Division of Mechanical and Civil Engineering
- National Museum of American History (U.S.). Division of Work and Industry

Container Listing

Series 1: Background and Research on Mercury Boilers, 1920 - 1961

Scope and Contents: Series 1 contains articles, reports, and news clipping related to the creation and implementation of Emmet Mercury Boilers, as well as a photograph of General Electric Company's engineer William Le Roy Emmet.

Box 1, Folder 1	Mercury guidelines and safety data, 1920 - 1955
Box 1, Folder 2	Mercury vapor process of power generation by Stone and Webster, Inc., 1922
Box 1, Folder 3	Articles and news clippings related to using mercury vapor, 1922 - 1926
Box 1, Folder 4	Mercury properties, 1923 - 1927
Box 1, Folder 5	Dutch Point history of mercury years, 1923 - 1927
Box 1, Folder 6	Articles, papers, and clippings related to mercury cycle, 1924 - 1951
Box 1, Folder 7	South Meadow Station development history, 1927 - 1936
Box 2, Folder 1	Articles related to mercury unit, 1927 - 1940
Box 2, Folder 2	J.C. Sontag's personal file on mercury units history, 1930 - 1952
Box 2, Folder 3	Articles and guides relating to mercury vapor process, 1934 - 1952
Box 2, Folder 4	Articles and reports about the mercury vapor process, 1934 - 1961
Box 2, Folder 5	Articles on construction and development, 1949 - 1950
Box 2, Folder 6	Photograph of William Le Roy Emmet, undated
Box 2, Folder 7	Mercury developments prior to installation, undated

[Return to Table of Contents](#)

Series 2: Correspondence, 1921 - 1950

Scope and Contents: Series 2 contains letters sent between Hartford Electric Light Company and General Electric Company. Also included are correspondence with Foster Wheeler Corporation, Yale University School of Engineering, Battelle Memorial Institute, and the American Society of Mechanical Engineers about the use and development of mercury boilers.

Box 2, Folder 8	Development and installation, 1921 - 1926
Box 2, Folder 9	Hartford Electric Light Company and General Electric Company, 1927
Box 3, Folder 1	Hartford Electric Light Company and General Electric Company, 1928 - 1929
Box 3, Folder 2	Hartford Electric Light Company and General Electric Company, 1930 - 1932
Box 3, Folder 3	Hartford Electric Light Company and General Electric Company, 1933 - 1934
Box 3, Folder 4	Hartford Electric Light Company, 1940 - 1950
Box 3, Folder 5	American Society of Mechanical Engineers, 1941
Box 3, Folder 6	General Electric Company, 1943 - 1950
Box 3, Folder 7	Foster Wheeler Corporation, 1948 - 1950
Box 3, Folder 8	Yale University School of Engineering, 1949
Box 3, Folder 9	Battelle Memorial Institute, 1950
Box 3, Folder 10	J.C. Sonntag of the Hartford Electric Light Company, 1956 - 1967

[Return to Table of Contents](#)

Series 3: Dutch Point Mercury Boiler Operational Records, 1923-1949 (bulk 1923-1927)

Scope and Contents: Series 3 contains test results, operational data, reports, log books, instruction manuals, photographs, and architectural drawings for the Dutch Point Mercury Boiler.

Subseries 3.1: Data Sheets and Reports, 1923 - 1927

Box 3, Folder 12	Test results, 1923 November-December
Box 3, Folder 11	Summary data, 1922 - 1927
Box 3, Folder 13	Boiler operation data, 1924
Box 3, Folder 14	Reports on testing process, 1924
Box 3, Folder 15	Mercury unit tests and temperature tests, 1926
Box 3, Folder 16	Test results, 1927
Box 3, Folder 17	Reports on issues with mercury unit, 1927 September
Box 4, Folder 1	Inspection and plant reports, 1927

Subseries 3.2: Logs Books and Instructions, 1924 - 1949

Box 4, Folder 2	Operating log, 1924 - 1927
Box 4, Folder 3	Mercury unit power plant instructions, volume II, circa 1948-1949
Box 5, Folder 1	Warnings and leakage instructions, undated

Subseries 3.3: Photographs and Drawings, 1923 - 1927

Box 5, Folder 2	Diagrams for mercury boiler, 1923 - 1924
Box 5, Folder 3	Equipment, black and white photographs, 1923 - 1927
Box 5, Folder 4	Cardstock, black and white photographs of mercury equipment, 1923
Box 7, Folder 1	Loose scrapbook pages with black and white photographs of plant development and equipment, 1922 - 1925

Box 7, Folder 2 Loose scrapbook pages with black and white photographs of plant development and equipment, 1925 - 1927

Box 7, Folder 3 Loose scrapbook pages with black and white photographs of mercury equipment, 1922 - 1927

[Return to Table of Contents](#)

Series 4: South Meadow Station Operational Records, 1928 - 1961

Scope and Contents: Series 4 contains operational data, reports, inspection records, log books, instruction manuals, photographs, and architectural drawings for the South Meadow Station. Also included are reports and proposals about renovating equipment and the removal of mercury units.

Subseries 4.1: Data Sheets and Reports, 1928 - 1961

Box 5, Folder 5	Mercury turbine data sheets, 1928 October-November
Box 5, Folder 6	Mercury equipment data, circa 1928
Box 5, Folder 7	Operational reports, 1928 - 1946
Box 6, Folder 1	Summary data, 1927 - 1948
Box 6, Folder 2	Mercury annual curves, 1928 - 1946
Box 6, Folder 3	Test of mercury vapor unit report, 1930
Box 6, Folder 4	Acid cleaning of mercury vapor equipment report, 1933
Box 6, Folder 5	Reports, data, and proposals related to station, 1945 - 1947
Box 6, Folder 6	Preliminary data for initial set-up, 1948
Box 6, Folder 7	Operational reports and data, 1948 - 1957
Box 6, Folder 8	Inspection report with photographs, 1949
Box 6, Folder 9	Boiler inspections, 1949
Box 6, Folder 10	Reports on the investigation of vanadium corrosion on mercury boilers, 1949 - 1950
Box 6, Folder 11	Results of chemical investigations of the fire-side corrosion of mercury boiler tubes, 1950
Box 9, Folder 1	Metallographic examination of mercury boiler fog bank tube, 1950
Box 9, Folder 2	Mercury fog bank repair, 1951
Box 9, Folder 3	Chemical treatment charts and tests, 1953 - 1960
Box 9, Folder 4	Tube replacement and renewal, 1955
Box 9, Folder 5	Furnace tube wastage studies, 1955

Box 9, Folder 6	Removal of mercury unit, 1961
Box 9, Folder 7	Removal of 1947 mercury unit, 1961
Box 9, Folder 8	Reports of radiography inspection of mercury vapor unit, 1961

Subseries 4.2: Log Books and Instructions, 1928 - 1955

Box 9, Folder 9	Demolition procedure for mercury turbine, 1928
Box 9, Folder 10	Operating log book, 1928 - 1930
Box 9, Folder 11	Visitor log, 1928 - 1947
Box 10, Folder 1	Operational log book, 1946 - 1947
Box 10, Folder 2	Operational log book, 1930 - 1931
Box 10, Folder 3	Operational instructions for mercury turbine, number 31038, 1931
Box 10, Folder 4	Instructions and logs for pickling of boiler, 1937 - 1942
Box 10, Folder 5	Instructions for demolition and dismantling mercury unit, 1947
Box 10, Folder 6	Revised preliminary instructions for 1947 unit, circa 1947-1948
Box 10, Folder 7	Instructions for work done by mercury boiler, 1955
Box 11, Folder 1	Mercury power plant instructions, volume 1, circa 1949-1950

Subseries 4.3: Photographs and Drawings, 1928 - 1955

Box 8, Folder 1	Black and white photographs of boiler equipment, circa 1928-1931
Box 8, Folder 2	Black and white photographs of equipment, 1928 January-April
Box 8, Folder 3	Black and white photographs of boiler equipment, 1928 June-July
Box 8, Folder 4	Black and white photographs of boiler equipment, 1928 August-October
Box 8, Folder 5	Black and white photographs of boiler equipment, 1930 - 1931
Box 8, Folder 6	Black and white boiler photographs, 1931 February-March
Box 8, Folder 7	Mercury turbine black and white photographs, 1930 February

Box 8, Folder 8	Mercury furnace walls, 1935
Box 8, Folder 9	Black and white photographs of tube corrosion from vanadium, 1949
Box 8, Folder 10	Black and white photographs of boiler tubes and boilers, undated
Map-folder 1	Foster Wheeler drawings of South Meadow unit, 1947 - 1953
Map-folder 2	Central Electric drawings of South Meadow, 1935 - 1949
Map-folder 3	South Meadow drawings, 1927 - 1930
Box 11, Folder 2	Black and white photographs of mercury furnace walls, 1925 September 23
Box 11, Folder 3	Black and white photographs of plant and equipment, 1923 - 1933
Box 11, Folder 4	Black and white photograph of airlock and method of pouring, 1927 July
Box 11, Folder 5	Assembly diagrams, 1927 - 1928
Box 11, Folder 6	Cross-section diagrams, 1927 - 1931
Box 11, Folder 7	Arrangement and elevation diagrams, 1927 - 1931
Box 11, Folder 8	Piping diagrams, 1928
Box 11, Folder 9	Boiler drawings, 1928 - 1935
Box 11, Folder 10	Arrangement of mercury vapor equipment photographs with notes, 1930
Box 11, Folder 11	Mercury turbine equipment, 1930
Box 11, Folder 12	Layout for cleaning boiler tubes, 1933
Box 11, Folder 13	Diagrams for boiler tube renewal, 1955

[Return to Table of Contents](#)

Series 5: Hartford Electric Light Company Operational Records, 1928-1949

Box 12	Hartford Electric Light Company, Mercury Station Daily Log Sheets, Inclusive, 1928-1931
Box 13, Item 1	Hartford Electric Light Company, Mercury Station Daily Log, 1947
Box 13, Item 2	Hartford Electric Light Company, Mercury Station Daily Log, 1949
Box 14, Folder 1	South Meadow [HG?] Unit "Reduced" Drawings, 1928

[Return to Table of Contents](#)