90 YEARS

1929 2019

Institute of Paper Chemistry
Renewable Bioproducts Institute

Miniature Paper Machines – A Story Three Years in the Making and Still Going!
How did this all start?

PaperCon 2015 – CanAm exhibit

T J Marshall circa 1912

PaperCon 2016 – APEC LLC exhibit

Kammerer VM 11 made 1953
The oldest known miniature machine

Located at the National Museum of Scotland in Edinburg

Commissioned by the museum in 1860

It was originally a working machine, now a static display
Robert C Williams Museum of Papermaking

• The George W Mead Paper Education Center gallery is to your left as you enter the lobby.

• Sitting in the back left corner is a miniature paper machine.
Miniature Machine

• The origins of the machine are currently unverified.

• Cindy Bowden, director of the museum from 1993 to 2010 states the machine was there when she arrived.

• She had been told it came from the Navy.
Machine ID

The head tank has an ID plate

- Made by Papierfabrik vorm. Brüder Kämmerer G.M.B.H., Osnabrück, Germany
- VM 15 Baujahr (construction year) 1954 (VM = Versuches Maschine or Test Machine)
- Manufactured for Parsons & Whittemore
- (Note the residual green paint)

Case closed, right?
• Parsons and Whittemore owned 5 pulp mills
  • Did they buy the machine for one of the pulp mills?
• The answer is most likely no.
  • P&W (and Parsons & Whittemore Lyddon), were exclusive agents for Papierfabrik Kämmerer machine sales in North America and the UK
• More than one machine was sold to customers via P&W
  • P&W states that no records are still around from that era
Who is Papierfabrik Kämmerer?

• The Hasemühle Paper Mill founded in 1808 near the Hase River in Osnabrück, Germany
  • In 1869 sold to Westerkamp & Eggemann
• In 1908, two brothers, Gustav and Rudolph Kämmerer, buy the mill
  • Name changed to Papierfabrik Brüder Kämmerer
Who is Papierfabrik Kämmerer?

- At the end of WWI, two big electrical companies own the majority shares of the company.
  - F&G (Felten & Guilleaume)
  - AEG (Allgemeine Elektricitats Gesellschaft).
  - Name changed to Papierfabrik GmbH vormal Brüder Kämmerer.
- In 1934, the general manager of F&G obtains a miniature paper machine made by T J Marshall & Co. of London, England circa 1911
- They give the machine to Papierfabrik Kämmerer and ask if a wider machine could be made as this machine made a sheet only 3-4 inches wide
- Why does F&G care about paper?
  - Both AEG and F&G are major suppliers of electrical cable and paper is the primary insulation wrap.
  - F&G desired to develop a paper with better dielectric properties
Who is Papierfabrik Kämmerer?

• Kämmerer begins to experiment with the machine, but the onset of WWII stops work on the project
• The paper mill is spared from allied bombing and survives with a good machine shop
• They restart the small machine project and by 1951 exhibit the first new machine at DRUPA in Düsseldorf.
  • The earliest machines are made for Kämmerer, the Technical University of Darmstadt, Voith Heidenheim, and the Oskar V Miller Polytechnic in Munich
• Kämmerer operated a small sub-company within the paper mill making machines from 1951 to 1967. It is believed that at least 55 machines were made and sold
Who is Papierfabrik Kämmerer?

• In 1976 the mill was sold to Ahlstrom and Kemi Oy and by the 1980s, owned 100% by Ahlstrom. They sold the mill in 2012 and operates as Kämmerer GmbH.

• Some time in the late 1990’s, Ahstrom moved a miniature machine display from Osnabrück to Finland
  • We were first told it went to Helsinki but that turned out that it went to an Ahlstrom heritage site in Noormarkku, Finland.

• After receiving pictures of the machine, we determined that this was the T J Marshall machine used as the model for developing the Kammerer machines

• This is one of three known surviving Marshall machines.
  • The other two are at the Museum Victoria in Melbourne, Australia and at CanAm Machinery in Fitchburg, Massachusetts
Back to the IPST machine

- Papierfabrik Kämmerer GmbH still is in business today as a specialty papers company
  - Kämmerer has lost most of the early records of the small machines, including documentation on VM 15
- Because the story was that VM 15 came from the Navy, I contacted the historian at the Navy Research Labs in Washington DC.
  - They purchased a Kämmerer machine in April 1955 and used it for experiments with both natural and man-made fibers for making filter media for a number of years

Photo courtesy of NRL
What about the Navy machine?

• The Navy eventually put the machine in storage and around 1990 asked the Smithsonian Institute if they would like the machine.

• The Smithsonian eventually declined and told the Navy to look at two other facilities in Philadelphia and Atlanta.

• Helena Wright at the Smithsonian provided photos of the machine in storage at the NRL.

Photo courtesy of Smithsonian
What about the Navy machine?

• The pictures of the Navy machine do not match the configuration of VM 15 in the museum
  • The RBI machine has a modified press section, and a size press, and a calender section
  • The Navy photos are not good enough to read the name plate
  • The Navy machine had a green head tank. Small traces of green show around the name plate on VM 15. We know of other machines that were painted green so this is not conclusive.
  • The Navy has not been able to find a record of transfer for their old machine
• One possibility is that the Navy machine was modified by someone before ending up at RBI
  • I have no proof of this however, but the press section has US made air load cylinders and the calender appears to be an addition as the frame is not brass
Museum machine VM 15
What’s next?

- Cincy Bowden says that a file did exist. The best hope is to find that file or a retired IPST employee who has knowledge of the machine.
- Ken Meine and I continue to look for any records on pilot and miniature machines of all types. **Surviving** miniature machines located to date include:
  - 21 Kämmerer machines
  - 3 T J Marshall machines
  - 6 Eastern Machine Builders machines
  - 1 Rice, Barton and Fales
  - 1 Escher Wyss
  - 2 Bertram Sciennes
  - 1 Papieripari
  - 1 Obkircher
  - 1 Cavallari
  - 1 Noble & Wood
Interested in papermaking history?

- The IPH (International Paper Historians) are holding their 2020 biennial congress in Washington DC September 15-18.
  - This is the first time held in the USA since 1982
  - A call for abstracts has been issued
- Support will come from The Library of Congress, the National Gallery of Art and the National Archives and Records Administration
  - The Smithsonian Institute may also join in
- Ken Meine and myself plan to present two papers on our miniature paper machine research
- Go to www.paperhistory.org to see more details
Have information on old machines to share?

Tom Rodencal at the NMIH museum with Rice, Barton & Fales machine

Ken Meine with his Kammerer VM 11 machine during first run after restoration
Information to share?

• Have information on miniature or early pilot machines?
• Contact:
  • Tom Rodencal  rodencal@bellsouth.net  404-210-4206
  • Ken Meine  khmeine@aol.com  937-746-4600 x202

• Want to see the restoration of VM 11?
  • Go to www.apec.com and click on the tab for pilot machine to see a slide show of the restoration of this machine

• TAPPI Technical Information Paper (TIP) 0502-16, Pilot Paper and Wet Laid Machines updated 2018
  • 58 machines available for customer or contract work
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