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The Effluent-Free Mill (EFM) and Salt Recovery Process (SRP) Archive Project fonds

B2022-0036

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Contents

Administrative history

In 1967, Professor Howard Rapson of the Department of Chemical Engineering and Applied Chemistry, University of Toronto, outlined the Effluent-Free Mill (EFM) and Salt Recovery Process (SRP). This technology aimed to facilitate the elimination of effluent from bleached kraft pulp mills by using the wastewater from pulp bleaching in the chemical recovery cycle whereby the organics would be destroyed in the kraft recovery boiler and spent bleaching chemical (sodium chloride) would be removed from the collected recovery boiler flue gas dust.

In recognition of the commercial potential of the EFM and SRP technology, a joint venture company, ERCO Envirotech Ltd., was formed in 1972 between ERCO, a Canadian chemical company supplying chemicals and equipment for pulp bleaching and Envirotech, an American company manufacturing equipment suitable for the SRP. In 1974, ERCO Envirotech Ltd. presented a proposal to Great Lakes Paper Company in Thunder Bay, Ontario. Great Lakes agreed to the proposal and integration of EFM and SRP technology into the design of the mill began.

Professor Douglas W. Reeve of the Department of Chemical Engineering and Applied Chemistry at the University of Toronto collaborated with ERCO Envirotech Ltd. and the Great Lakes Paper Company as the lead process engineer for the EFM and SRP during the process pilot plant development, mill design, mill construction and the extended start up. The mill, also referred to as Closed Cycle Mill, started up in late 1976 and the SRP in March of 1977. The Closed Cycle Mill faced many operational challenges in bleaching, in bleach plant effluent recovery, in salt recovery and in the recovery boiler. Ultimately, owing to poor environmental performance, high costs, and poor reliability, Closed Cycle operation was shutdown.

Reference: *The Effluent-free Mill and Salt Recovery Process Archive Project* by Douglas W. Reeve [See file B2022-0036/003(11) in appendix].

Scope and content

1967 – 2021
1.2m of textual records
approx. 100 technical drawings
approx. 271 slides
1 photo album

Records document the implementation Effluent-Free Mill (EFM) and Salt Recovery Process (SRP) by ERCO Envirotech Ltd. at the Great Lakes Paper Company in Thunder Bay, Ontario. Records were compiled by Prof. Douglas W. Reeve, the lead process engineer for the Effluent-Free Mill (EFM) and Salt Recovery Process (SRP) technology during the process pilot plant development, mill design, mill construction and the extended start up. Records include ERCO Envirotech Ltd. technical communications, published articles, photographs, drawings, etc. Material includes bound copied correspondence, proposals, technical reports, manuals, engineering drawings and original photographs. It covers the construction of the facility, research and development, and the ongoing communications around the process.

Arrangement: Due to this fonds' limited material, a series-level arrangement was not applied. Files reflect Prof. Douglas W. Reeve's original arrangement.
Access: Open
Boxes: B2025-0010/001 - /003

Appendix

File number	File title	Date range
B2022-0036/001(01)	Published papers (19)	1967 – 1984
B2022-0036/001(02)	Presentations	1970 – 1980
B2022-0036/001(03)	Research and development [compiled data, reports and correspondence]	1 Apr. 1973 – 31 Dec. 1973
B2022-0036/001(04)	Research and development	1 Jan. – 30 June 1974
B2022-0036/001(05)	Research and development	1 July – 31 Dec. 1974
B2022-0036/001(06)	"A report of the effluent free mills for The Great Lakes Paper Mill"	1974
B2022-0036/001(07)	Salt recovery plant engineering construction reference manual vol. 1	1976

File number	File title	Date range
B2022-0036/001(08)	Technical engineering drawings: Pulp Mill Flowsheets, Pulp Mill Piping and Instrumentation, Equipment Layout, Salt Recovery Flowsheets, ERCO Envirotech Drawings [9 files]	1974 – 1981
B2022-0036/002(01)	Effluent-free mill and salt recovery process – project history	19 Feb. – 31 Aug. 1974
B2022-0036/002(02)	Effluent-free mill and salt recovery process – project history	1 Sept. – 31 Dec. 1974
B2022-0036/002(03)	EFM and SRP project history	1 Jan. – 31 Dec. 1975
B2022-0036/002(04)	Project history of the closed cycle mill and the SRP Process	1 Jan. to 31 Aug. 1976
B2022-0036/002(05)	[EFM and SRP project history]	Sept. – Oct. 1976
B2022-0036/002(06)	Project history of the closed cycle mill and the SRP Process	1 Nov. – 31 Dec. 1976
B2022-0036/002(07)	Project history of the closed cycle mill and the SRP Process	Jan. – Mar. 1977
B2022-0036/002(08)	Project history of the closed cycle mill and the SRP Process	Apr. – June 1977
B2022-0036/002(09)	Project history of the closed cycle mill and the SRP Process	July – Sept. 1977
B2022-0036/002(10)	SRP and closed cycle mill project history	Oct. – Dec. 1977
B2022-0036/002(11)	SRP and closed cycle mill project history	Jan. – Mar. 1978
B2022-0036/002(12)	SRP and closed cycle mill project history	Apr. – June 1978
B2022-0036/003(01)	Project history of the closed cycle mill and the SRP Process	July – Sept. 1978
B2022-0036/003(02)	Project history of the closed cycle mill and the SRP Process	Oct. – Dec. 1978
B2022-0036/003(03)	Project history of the closed cycle mill and the SRP Process	Jan. – May 1979
B2022-0036/003(04)	Project history of the closed cycle mill and the SRP Process	June – July 1979

File number	File title	Date range
B2022-0036/003(05)	Project history of the closed cycle mill and the SRP Process	Aug. 1979
B2022-0036/003(06)	Photo album ERCO Envirotech Ltd. SRP EFM	1975 – 1978
B2022-0036/003(07)	Selected slides from technical presentations and a 1997 presentation: Lessons from the First Closed Cycle Mill	[ca. 1997]
]B2022-0036/003(08)	Slides taken at the mill [4 files]	[1974 – 1997]
B2022-0036/003(09)	Reeve, Douglas William. *Sodium Chloride Recovery from A Bleached Kraft Pulp Mill.* MASc Thesis - University of Toronto	1969
B2022-0036/003(10)	Reeve, Douglas William. *Sodium Chloride Recovery from Kraft Pulp Mills.* PhD Thesis - University of Toronto	1971
B2022-0036/003(11)	*The Effluent-free Mill and Salt Recovery Process Archive Project* by Doug Reeve [unpublished document]	Nov. 2021