

放射性固体废物玻璃固化技术综述 (PDF)

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Title: A SAMMRY OF GLASSSOLIDIFICATION TECHNOLOGY FOR RADIOACTIVE SOLID WASTAGES

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摘要: 阐述了放射性固体废物玻璃固化技术的原理与优势, 综合分析了国外玻璃固化装置, 包括燃料式熔炉、焦耳加热熔炉、感应加热熔炉、等离子体炬和电弧(等离子体弧)熔炉等反应器的结构、工作原理及其优缺点。提出等离子体熔炉较冷坩埚感应熔炉更适合于核电厂处理低、中放射性固体废物。

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参考文献/REFERENCES

- [1] 黄来喜, 何文新, 陈德淦. 大亚湾核电厂放射性固体废物管理 [J]. 辐射防护, 2004, 24 (34): 211226. [2] 罗上庚. 放射性废物处理与处置 [M]. 北京: 中国环境科学出版社, 2007. [3] 王培义, 周连泉, 马明燮, 等. 多用途放射性废物焚烧系统试验装置的设计及建立 [J]. 辐射防护, 2002, 11 (6): 326332. [4] Min B Y, Kang Y, Song P S, et al. Study on the Vitrification of Mixed Radioactive Waste by Plasma Arc Melting [J]. Journal of Industrial and Engineering Chemistry 2007, 13(1): 5764. [5] Voskuil T. Handbook: Vitrification Technologies for Treatment of Hazardous and Radioactive Waste [M]. Washington D C: United States Environmental Protection Agency, 1992. [6] Mason J B. Vitrification Melters for Low Level Radioactive and Mixed Wastes [R]. Richland WA: Vectra Technologies Inc., 1995. [7] Mason J B. Modular Enviroglass™ Vitrification Technology for Low Level Radioactive and Mixed Waste [R]. Richland, WA: Vectra Technologies Inc., 1995. [8] Wood C J. Vitrification of Low Level Radioactive Waste [R]. Palo Alto CA: Electric Power Research Institute, 1996. [9] Park J K, Song M J. Feasibility Study on Vitrification of Low and Intermediate Level Radioactive Waste from Pressurized Water Reactors [J]. Waste Manage, 1998 (18): 157167. [10] Jones J A. Vitrification Melter Study [R]. Idaho Falls: U.S. Department of Energy Idaho Operations Office, 1995. [11] Holmes M J, Downs W, Higley B A, et al. Vitrification of Low Level Radioactive Waste in a Slagging Combustor [R]. WHCSA2914FP. Richland WA: Westinghouse Hanford Company, 1995. [12] Zamecnik J R, Whitehouse J C, Wilson C N, et al. Transportable Vitrification System Demonstration on Mixed Waste [C]. Denver CO: Nuclear and Hazardous Waste Management International Topical Meeting, 1998. [13] Donaldson A D, Carpenedo R J, Anderson G L. Melter Development Needs Assessment for RWMC Buried Wastes [R]. EGGWTD9911. Idaho Falls: Idaho National Engineering Laboratory, EG&G Idaho Inc, 1992. [14] Luckscheiter B, Nesovic M. Development of Glass for The Vitrification of High Level Liquid Waste in a Joule Heated Ceramic Melter [J]. Waste Management, 1996, 16(7): 571578. [15] 胡唐华, 冯孝贵, 鲍卫民. 冷坩埚技术在核废物处理中的应用 [J]. 核技术, 2001, 24 (6): 521528. [16] 伍浩松 (译), 常冰 (校). 法国与韩国联合开发玻璃固化厂 [J]. 国外核新闻, 2006 (1): 2729. [17] 周慧, 汤宝龙, 姜耀中. 1999年核废物处理处置研讨会论文集 [C]. 临川: 中国核学会, 1999. [18] Sobolev I A, Dmitriev S A, Lifanov F A, et al. High Temperature Treatment of Intermediate Level Radioactive Wastes - via Radon Experience [C]. Tucson AZ: WM 2003 Conference, 2003. [19] Dmitriev S A, Lifanov F A, Savkin A E, et al. Plasma Plant for Radioactive Waste Treatment [C]. Tucson AZ: WM 2001 Conference, 2001. [20] Gillins R L, Geimer R M. Plasma Hearth Process Vitrification of DOE Low Level Mixed Waste [C]. Orlando FL: Electric Power Research Institute Low Level Waste Conference, 1995. [21] Tzeng ChinChing, Kuo YungYen, Huang TsairFuh, et al. Treatment of Radioactive Wastes by Plasma Incineration and Vitrification for Final Disposal [J]. J. Hazard. Mater., 1998, 58: 207220. [22] Shuey M W, Ottmer P P. LLW Processing and Operational Experience Using a

Plasma Arc Centrifugal Treatment (PACTTM) System [C] .Tucson AZ:WM2006 Conference,2006. [23] Womack R K.Using the Centrifugal Method for the Plasmaarc Vitrification of Waste [J] .Journal of the Minerals, Metals and Materials Society,1999,51(10):1416. [24] Eddy T L,Raivo B D,Soelberg N R, et al.Advanced Mixed Waste Treatment Project Melter System Preliminary Design Technical Review Meeting [R] .INEL95/0054, Idaho Falls:Idaho National Engineering Laboratory & Lockheed Martin Idaho Technologies,1995. [25] Soelberg N R,Chambers A G,Ball L.Vitrification of Surrogate Mixed Wastes in a Graphite Electrode Arc Melter [C] .Seattle WA:14th.International Symposium on Thermal Treatment Technologies:Incineration conference,1995. [26] U.S.Department of Energy.Graphite Electrode DC Arc Furnace,Innovative Technology Summary Report [R] .Washington,DC:U.S.Department of Energy,1999. [27] Environmental Technology Evaluation Center.Environmental Technology Verification Report for the Plasma Enhanced Melter [R] .Reston VA:American Society of Civil Engineers,2002.

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