Fifteen years of operation of CECE experimental industrial plant in PNPI

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The experimental industrial plant for hydrogen isotope separation on the basis of the Combined Electrolysis and Catalytic Exchange (CECE) process has been operating safely and reliably for 15 years in Petersburg Nuclear Physics Institute. The Plant has been designed to carry out the development of CECE process. In parallel with study of hydrogen isotope separation by CECE process the facility is used for processing heavy water wastes contaminated by tritium. The plant produces reactor quality heavy water and heavy water with reduced content of tritium less than 10^5 Bq/kg. The plant has been modified several times since it's commissioning in 1995. Such troublesome components as the catalytic burners were removed, and an additional separation column as well as other equipment were added to the scheme of the plant. The columns are filled with wetproofed catalyst (0.8% Pt on styrene-divinylbenzene copolymer) developed by Mendeleev University. The catalyst has not been replaced since the first loading in the separation columns.

This paper describes the CECE tritium technology development and experience gained during the upgrade of facility, replacement of failed components and operation of the Plant since it's commissioning in 1995.