

# SEPARATION PROCESS IN HORIZONTAL STEAM GENERATOR OPERATING ON SATURATED STEAM WITH CAPACITY OF 150 KG/S

A. Author 1<sup>1</sup>, B. Co Author 2<sup>2</sup>.

<sup>1</sup>Nnodi Akelachi Chinweikpe

Nuclear Safety, Physical Security and Safeguards

Nigerian Nuclear Regulatory Authority

Plot 564/556, Airport Road, Central Business District, Abuja (900001) – Nigeria. +2347064863167,  
+79528997184

Email: chinweikpe.nnodi@nnra.gov.ng, adeamann@yahoo.com

<sup>2</sup>Gvozdyakov Dmitry

Professor: Department of nuclear thermal power plant, Tomsk Polytechnic University Lenin str., 30,  
634050, Russia, Tomsk, +7(382-2) 70-17-77

Email: Dim2003@tpu.ru

**ABSTRACT** – The horizontal steam generator (SG) is a Russian pressurized water reactor principal equipment (VVER Series). It consist of a horizontal shell pressure vessel, horizontal heat exchange tube bundles, two cylindrical vertical collectors, feed water system, steam collector, coolant inlet and out let temperatures amongst others. The Russian horizontal steam generator is a heat exchanger device that generates nonradioactive steam in the second loop using the heat source as coolant. The device is designed to generate a saturated steam (working fluid) parameter within the steam generator outlet between 6.27 to 6.9,1MPa, 16MPa within the primary circuit and 0.2% moisture content respectively. These VVER compartment comprises of over 10,000 submerged tube heat transfer surface incorporated with separation devices. This research work seeks to explain the hydrodynamics of working fluids process and coolant along the primary and secondary circuit system as well as overview of various compartment of Russia VVER nuclear power plant reactor. Furthermore, the knowledge and technology of nuclear power plant operation and installation was acquired courtesy of Russia (ROSATOM) and Government of Nigeria scholarship, as a result of government alternative in acquiring a nuclear technology for the generation of electricity to address the shortage of electrical energy in Nigeria due to pollution growth. This paper also addresses various areas of technologies associated in the operations VVER generation II and III nuclear power plant reactors.

**Keywords-** VVER 1000, working fluid (WF), SG, coolant, heat exchanger, thermal capacity, analysis of cross section of horizontal steam generator.

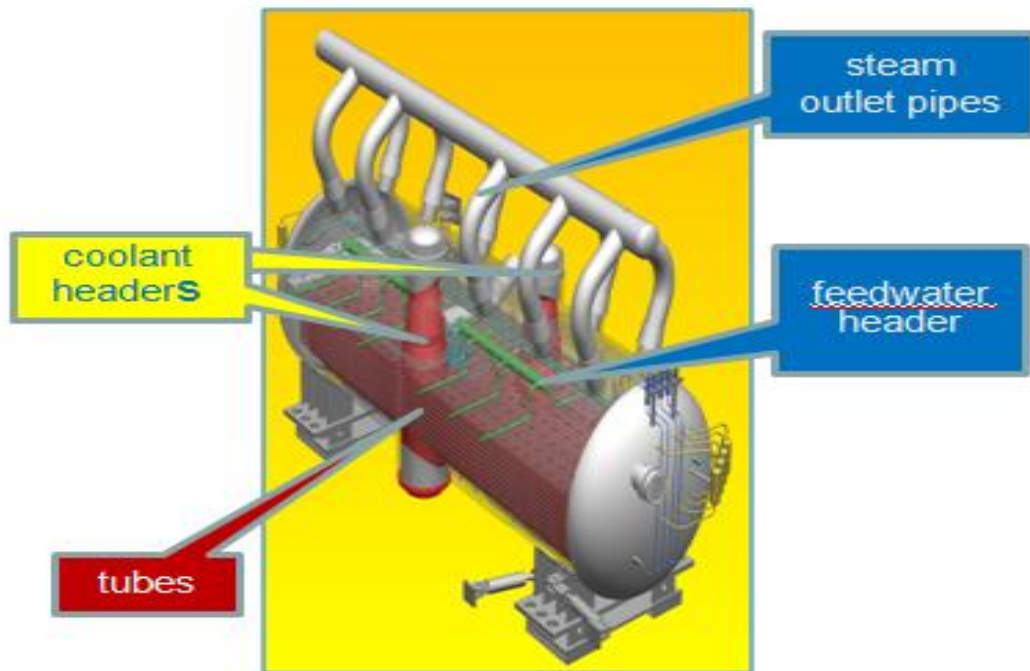


Fig – 1 Image of VVER horizontal steam generator