NIRR-1 Compressed Air and Rabbit Transfer System

Compress Air System is a reactor auxiliary system employed to generate and supply compressed air used as the medium to provide required pressure for materials transport.

It is also one of the essential systems necessary for the operation of NIRR-1 that switched on to attain the required pressure prior to every NIRR-1 startup , and maintained auto –operation throughout all reactor operations. It provides the medium for transfer of Cd capsules as 1st stage of NIRR-1 emergency shutdown procedure.

The Features of NIRR-1 CAS are maximum working pressure, automatic range for working pressure effective volume of gas storage tank, and safety relief valve setting for the storage tank ' The NIRR-1 CAS provides the driving air source for sample capsules transfer (rabbit) system, discharges waste liquid from the waste storage tank, stir and mix the ion exchange resins during regeneration and requires the use of compressed air in NIRR-1 facility (dusting, Flushing, etc.)

NIRR-1 CAS has general operation regime which involves adherence to operation procedure, auto-operated throughout reactor operation and contains working pressure that is maintained between 0.4 & 0.8 MPa. It also have system safety settings set at working range of 0.42 – 0.68 MPa and safety relief valve as set at 1.0 MPa to prevent explosion. In general maintenance and ageing management CAS undergoes weekly surveillance/inspection and schedules under annual maintenance programme. CAS disables reactor utilization channels if safety analysis fails which leads to halt operation for utilization

Rabbit System (RS)
Rabbit System are pneumatic transfer systems and one of the reactor auxiliary system for accessing the reactor irradiation sites. It forms part of the irradiation system, transfers encapsulated sample materials in and out of the reactor irradiation sites and uses air pressure from CAS as a medium for sample transfer in and out of the reactor irradiation sites.

During reactor initial start-up, dynamic experiments, beryllium shim addition and some maintenance exercise, it is required to transfer cadmium poisons into the reactor for in-pile reactivity adjustment, or to achieve sub criticality.

Rabbit system type"A" and Rabbit system type "B" are the two types of RS available in NIRR-1 facility. It is also noted that RSs are housed in the rabbit room and access control for RS is given from the control room. The RS has features, functions and operations that distinguish it from CAS.

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