GENERATOR AIR BRAKES INDIVIDUAL PADS REMOTE MONITORING SYSTEM USING CHARTLESS RECORDER AND RECORDER REMOTE VIEW SOFTWARE AND PC

Prakash Kumar.S
Executive Engineer(E)
Gerusoppa Project

T.N.Niranjanamurthy
Asst.Exe.Engineer(E)
Gerusoppa Project

Chethan .U.S
Asst.Exe.Engineer(E)J
Gerusoppa Project

At Gerusoppa Power House ,Generator Brake System consists of 9 No. of pneumatic operated Pads with respective Brake Air Cylinders Situated in respective Unit Generator Barrel.

Operation of these Brake System is being carried out through Pneumatic ON and OFF Pushbuttons at respective Unit Brake and Jack Panel. Provision was also being made to operate these Brake System by remote Electrical Pushbutton operation from control room through Suitable Solenoids mounted in Brake panel and further these Electrical operations are provided with speed and Governor Start interlocks to avoid inadvertent Brake ON operation during Unit Running. Both Electrical and Pneumatic System are working satisfactorily.

Requirement of individual Brake Pad Remote Monitoring System: In the present System remote Brake ON indication at Control room is being configured to indicate any one Brake pad (out of 9) ON condition also with this if any other pad was in released(for ON Command) status then **user cannot identify the physical Status of particular Pad**. So the shortcoming of Present indication System and its effects are as follows.

Even when **one of the Brake PAD is in Lifted condition** remote **indicator will provide Brake ON** indication but along with it ,it cannot provide overall Brake Pads Status. So it also necessitates a system to distinguish the Brakes Pad Status monitoring from the point of a fault between physical Status of Brake pad and Control wiring feedback System fault and if you provide a scheme for identifying the particular Pad fault remotely then above problem could be solved easily, so that particularly during Unit pre-start operation faulty Brake Pad can be attended easily thereby unforeseen outages can be minimized.

In-house Brake Pad Remote monitoring Design Background :

In the existing Brake Pad Feedback System there was no provision for additional Limit Switch Changeover Contact for taking it in to remote indication hence to Start with existing Limit Switches provided in each Pads in all

the Four Units were replaced and Retrofitted by procuring the new Limit Switches through EE(MSP)J .

Options for utilizing these additional Changeover contact to new Scheme.

Option-1: Utilise these Limit Switch changeover Contact of individual Pads for remote Lamp indication at control room or at respective Unit Brake Panel

This option needs a separate panel space for accommodation of **9x4:36 lamp indicator** and also needs control cable of **10 Core 1.5Sq.mm** to be layed from respective Unit Brake Pads to Control room.

The above scheme draws additional panel space to accommodate 36 lamp indicator at Control room so it will not give a aesthetic view and also each time if the user wants to know the respective brake pad status user has to go to these lamp indicators place so it is not user-friendly.

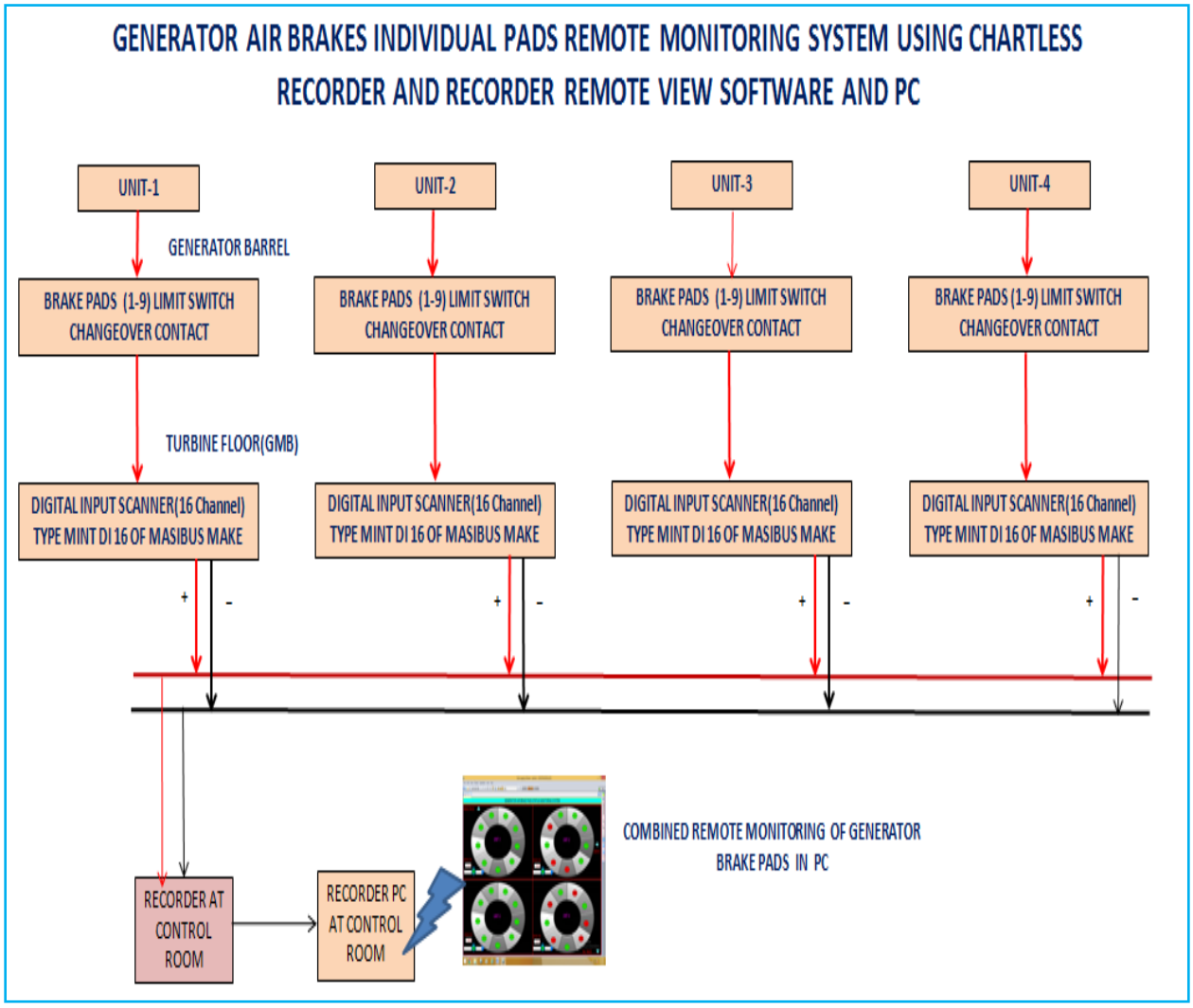
So this option-1 was dropped and a cost effective latest technology and less material involved scheme was designed and implemented.

Brief Description of new Scheme(Option-2): This Scheme utilizes 16 input Digital Scanner (Rs.11,400 per unit of Masibus make(any make can be used) with MODBUS RS485 RTU Protocol Communication option for logging of each Brake Pad Status from respective Brake Pad Limit Switches and installed at Generator Marshaling Box /Turbine floor.

The Physical Status of each Brake Pad will be stored Digitally in the Module /Scanner and in turn these stored Digital data's were made available in Digital Recorder at Control room through Modbus Master communication Command through RS485 Network , further these recorder data's were made to display in Recorder remote view software which is already exists at Control room.

The Scheme drawing and real time Remote View Display pages in PC are enclosed as Annexure. This scheme established completely by utilsing KPCL in-house Site Engineering design concepts economically and effectively. Operator can view all the Units any Brake pad Status in a momentary look to PC/Large Format Display provided at Control room

ANNEXURE


GENERATOR AIR BRAKES INDIVIDUAL PADS REMOTE MONITORING SYSTEM USING CHARTLESS RECORDER AND RECORDER REMOTE VIEW SOFTWARE AND PC
UNIT-1
UNIT-2
UNIT-3
UNIT-4
GENERATOR BARREL
BRAKE PADS (1-9) LIMIT SWITCH CHANGEOVER CONTACT
BRAKE PADS (1-9) LIMIT SWITCH CHANGEOVER CONTACT
BRAKE PADS (1-9) LIMIT SWITCH CHANGEOVER CONTACT
BRAKE PADS (1-9) LIMIT SWITCH CHANGEOVER CONTACT
TURBINE FLOOR(GMB)
DIGITAL INPUT SCANNER(16 Channel) TYPE MINT DI 16 OF MASIBUS MAKE
DIGITAL INPUT SCANNER(16 Channel) TYPE MINT DI 16 OF MASIBUS MAKE
DIGITAL INPUT SCANNER(16 Channel) TYPE MINT DI 16 OF MASIBUS MAKE
DIGITAL INPUT SCANNER(16 Channel) TYPE MINT DI 16 OF MASIBUS MAKE
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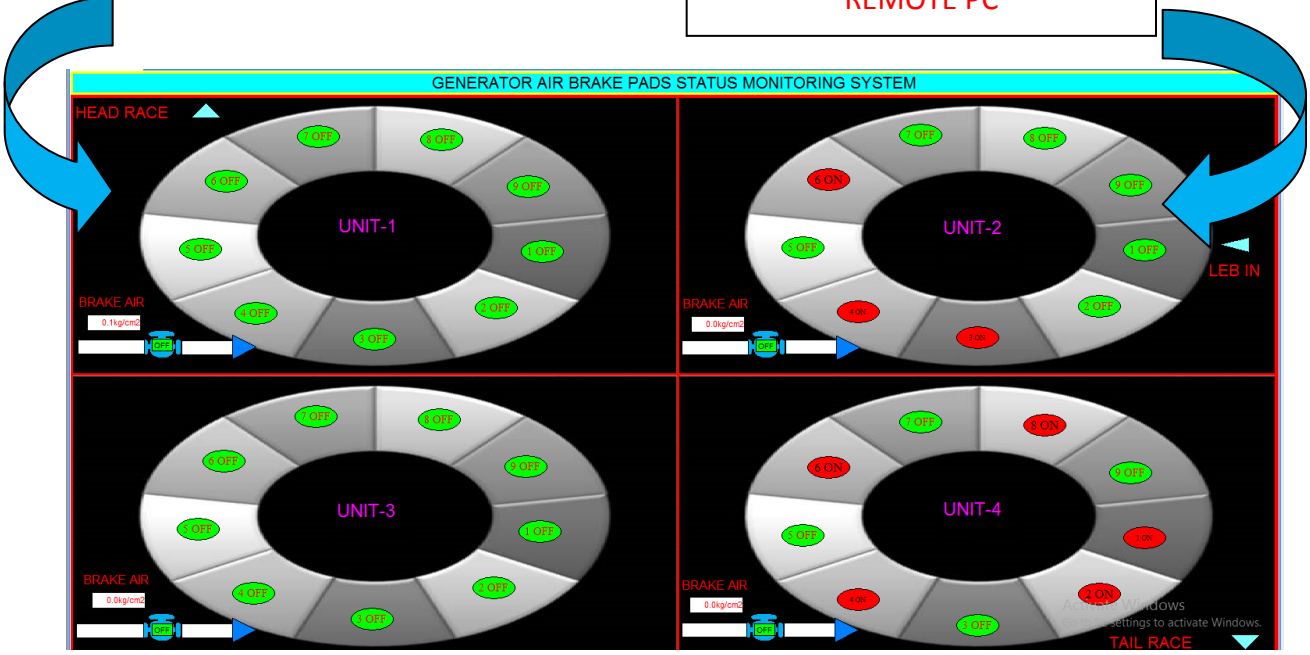
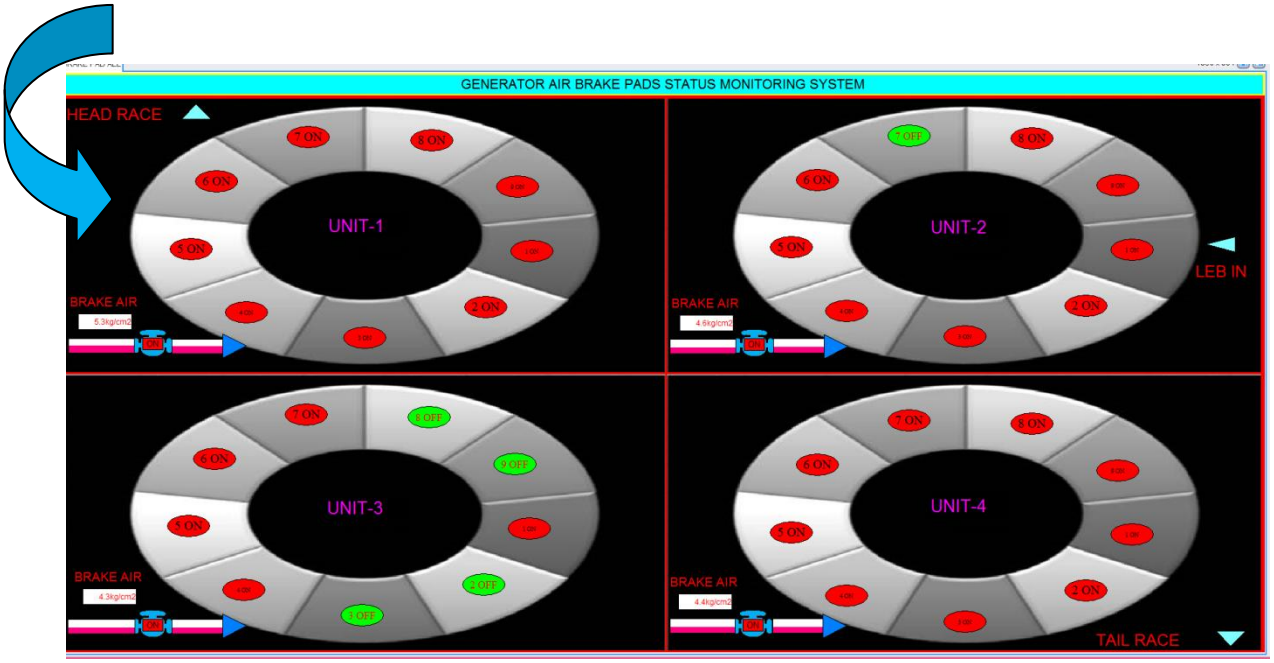
RECORDER AT CONTROL ROOM
RECORDER PC AT CONTROL ROOM
COMBINED REMOTE MONITORING OF GENERATOR BRAKE PADS IN PC

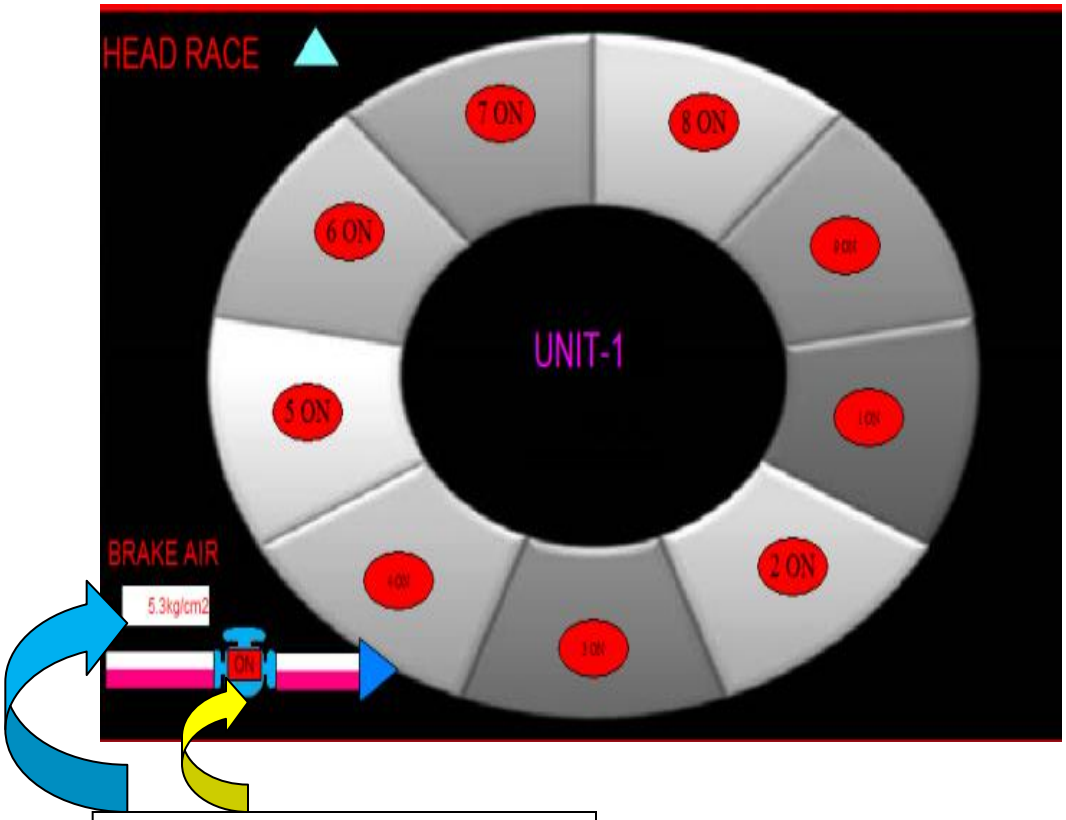
ALL BRAKES RELEASED(OFF) STATUS IN REMOTE PC

SOME OF THE BRAKE PADS PARTIALY RELEASED STATUS IN REMOTE PC



ALL BRAKES ENGAGED(ON) STATUS IN REMOTE PC





PRESENCE OF BRAKE AIR AND BRAKE AIR SOLENOID ON STATUS INDICATOR