Computerized System Integrity Tester (SIT)

System Integrity Test *is conducted on Railway Signalling Systems to ensure Safety & Availability. The test is highly automated by which human errors are eliminated. Evidence of test results is produced for further validation, if required.*

DESCRIPTION

Testing of Signalling System for compliance to TOC / RCC is mandatory before commissioning of any signalling system. After commissioning also this test is required to be carried out periodically once in 3 years. First test is offline and the second one is online.

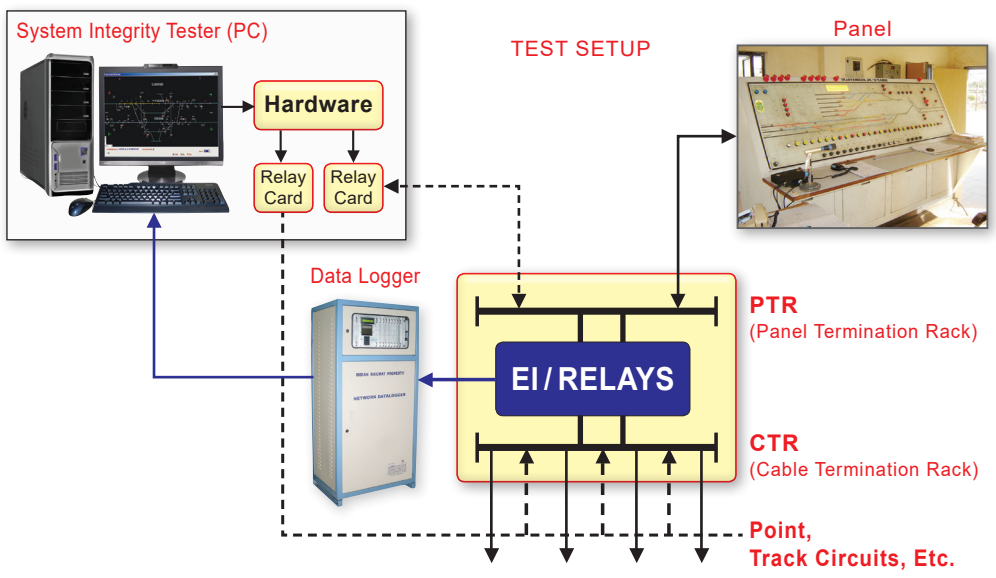
Implementation of interlocking (based on SIP) has the following stages

- Preparation of Route Control Chart (RCC)
- Design of logic circuits
- Wiring of logic circuit
- Testing and commissioning

We have automated the testing by which it is possible to find the mistakes in last 3 stages i.e. Design and Wiring of circuits and Testing.

- The conventional (manual) system has the following limitations
- Test procedure is not fully defined
- No document of Testing (Test plan)
- No evidence of Test Results
- No evidence of validation of test results
- No scope for verification of tests done, since no tangible output, results out of testing

ARCHITECTURE



Computerized System Integrity Tester (SIT)

Conducted at

45+

Stations

975

Identified defects of design & implementation of interlocking

TYPES TESTS CONDUCTED

- Negative test of controlling functions
- One Signal One Train Test
- Route Checking Test (In Offline only)
- Route release test - light engine and long train
- Test for route locking
- Test for back locking or route holding
- Test for approach locking
- Red-lamp protection test
- Aspect sequence control test
- Lamp cascading test
- Point track locking test
- SMKEY locking test for different assets
- Crank handle and LX Gate locking test
- Square sheet test(In Offline only)
- Point Operation in Route Test (In Route setting type Panels Only)

PORCESS OF TESTING

- Representation of Table Of Control in terms of data logger inputs
- Instructions for carrying out tests are defined
- Tests are converted to a software program based on Table of Control
- Desirable test results are generated by software program based on Table Of Control
- Online test results are compared with desirable results through software program
- Status of the required relays are taken by the system from Data logger

APPLICATION AREAS

Railway Signal Interlocking testing in Online & Offline for

- Panel Interlocking (PI)
- Route Relay Interlocking (RRI)
- Solid State Interlocking (SSI) / EI

BENEFITS

- Testing Made Independent of human Errors by Tester
- Testing to a large extent is made independent of testing capability of the Tester
- Validity of yard Specific test data
- Execution is faster than manual testing, hence can be repeated
- Completeness and correctness of testing can be ensured
- Document evidence of Testing for further analysis is made available
- Testing can be paused and continued to allow Train Movements Intermittently
- Overall System validation

SIT