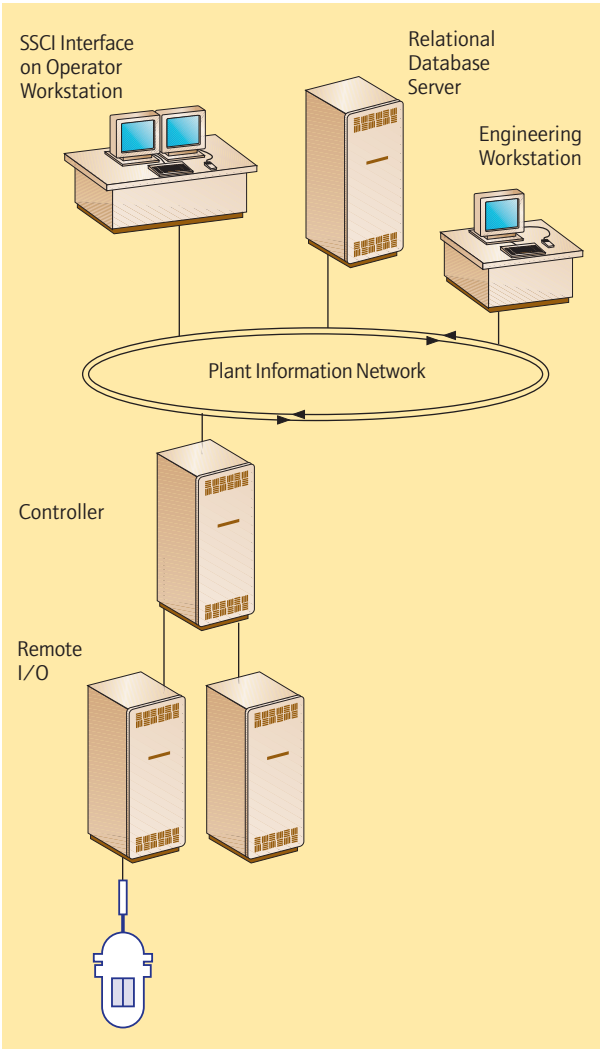
Supervisory Sequential Controller Interface

Repair, Replacement, and Automation Services

Background

To effectively monitor and control various plant processes, the operator executes predefined actions in a specified order or sequence. For example:

- Operating procedures have a defined order of steps and predefined course of action based on current operating conditions.
- Complex fluid systems require component actuation in a specific order to ensure that necessary conditions are satisfied for the safe operation of the associated equipment.
- On-line testing requires that systems being tested be taken out of service and tested in a manner that does not disrupt the remaining plant systems.



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Benefits

- On-line display of detailed operating procedures and possible courses of action, including current plant conditions that affect those decisions
- User-friendly graphical interface for the creation and modification of sequences
- A warm-standby redundancy mechanism that allows the operator to continue a sequence in progress from a different operator workstation
- Automatic or user-paced soft control of the components associated with a given sequence
- Ability to execute multiple sequences simultaneously
- Ultimate responsibility remains with the plant operator

Description

Supervisory Sequential Controller Interface (SSCI) is an on-line, workstation-based application for user-paced and system-paced procedure or sequence monitoring. It can monitor or execute multiple operating procedures or sequences.

SSCI uses a relational database to store the sequence information. The database server workstation (typically the engineering workstation) is used to perform the maintenance of the SSCI sequences and the initial extraction of the SSCI sequence information. The data may be used by multiple workstations for the on-line execution of the defined sequences.

The Windows-style graphical interface provides detailed text descriptions of these sequence steps, highlights the current step in the sequence, and displays the conditions associated with the steps of the sequence. SSCI can also issue appropriate soft control commands to the process controllers.

The user initiates the appropriate sequence and monitors its progression while maintaining a clear picture of the current plant state. The user retains both authority and responsibility for power plant operation, and can elect to terminate the sequence or override selected prerequisites to continue the sequence.

SSCI consists of three components:

- The SSCI manager is a graphical user interface that is available on both the engineering workstation and human-machine interface (HMI) operator workstation. Different execution options are available based on the type of host workstation.
- The engineering workstation is the database server workstation used to hold the contents of the SSCI sequences in the relational database. This workstation interacts directly with the relational database and is responsible for the initial extraction of the database information. Once the information is extracted, the database connection is no longer needed until a modification is made to the database.
- The HMI operator workstation is typically where the plant operators interact with the SSCI. The HMI operator workstation receives the necessary database information from the engineering workstation and stores this information locally.

The SSCI executive is the graphical user interface automatically invoked after the SSCI manager options have been selected by the user. It is typically run on an HMI operator workstation. The user selects the startup mode of the executive, which determines whether the application uses the database initialization files or recovers the previous state of the selected database from recovery files. This provides a measure of redundancy, as the operator can continue a sequence on another operator workstation in the event of a failure of the first operator workstation. The SSCI executive provides high-level sequence control (manual or automatic) and a single focal point for high-level sequence execution status.

The sequential interface is invoked manually from the SSCI executive interface. This interface allows the operator to monitor and optionally control the detailed execution of the programmed sequence algorithms.

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