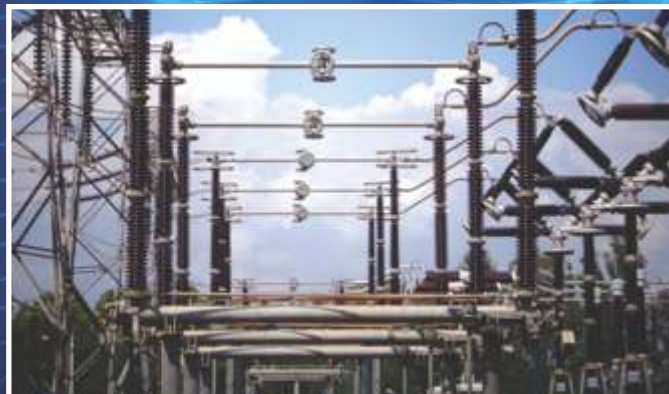


**S&S POWER**  
SWITCHGEAR EQUIPMENT LIMITED



## **EXCELLENCE IN SWITCHING & PROTECTION ENGINEERING**



## **RETROFITTING & UPGRADING DISCONNECTORS**

S&S Power Switchgear Equipment Limited offers a full range of Disconnectors to help meet many of the customer's application needs. With voltage range up to 420kV, current range up to 4000A, these Disconnectors are in service worldwide.



## COMPANY HISTORY

S&S Power Switchgear Ltd (S&S) was established in 1975 in Technical collaboration with Brush Fusegear, UK for manufacture of Fuses. S&S introduced High Voltage Disconnecting Switches in 1978 collaborating with Southwales, UK.

S&S indigenously developed Outdoor Porcelain Clad Vacuum Circuit Breaker and introduced for the first time in Indian market. S&S became the industry leader in the country in sales and market shares in Medium Voltage and High Voltage Disconnecter Industry. The factory has state-of-the-art manufacturing facilities to produce high quality equipment. A world class Factory in Puducherry houses all third generation equipment and provides low cost high quality manufacturing facility for Disconnectors. The products of S&S have been tested in internationally renowned Laboratories- Kema Holland and CESI-Italy. The type test conducted include Ice Breaking test for High Altitude installation of these Disconnectors. S&S continues its success march backed by a strong team of quality Engineers and a fully equipped in house Research and Development department.



S&S is the only company in India to have sold more than 18,000 nos of Circuit Breakers and more than 25,000 nos of Disconnectors to all major Utilities in India and Worldwide. Repeated orders from esteemed customers prove their confidence reposed on S&S products and timely delivery. S&S continues its thrust and introduced wide range of products to meet the customer's changing needs which are their core strength in staying ahead successfully in the competitive market. Careful selection of automatic and semi-automatic machines enables S&S to manufacture quality products to meet the stringent customer requirements.

## WHY S&S

- ◆ Quality Products & Services
- ◆ Timely execution of projects
- ◆ Complete after sales services
- ◆ Provide Customized Solutions
- ◆ Flexibility to adopt to Customer needs
- ◆ Long term experience in Disconnectors
- ◆ Regular upgradation of services

## CORE VALUES

- ◆ Committed to achieve success focusing on customer satisfaction
- ◆ Delivering value
- ◆ Excellence in operations
- ◆ Provision of suitable platform for best electrical deals
- ◆ Quality Focused Team

# RETROFITTING & UPGRADING SOLUTIONS

GIVING A NEW LIFE TO YOUR DISCONNECTORS

## OFFERING

- ♦ Retrofit Services
- ♦ Upgrade Services
- ♦ Refurbishment
- ♦ Training on installation, operation and maintenance
- ♦ Field survey and site sign off
- ♦ Annual Maintenance Contract
- ♦ Alternate make disconnector refurbishment
- ♦ Upgrade for smart grid compliance
- ♦ RTV coating for insulator (Service provided exclusively for bulk quantity)
- ♦ Replacement of porcelain with Polymeric insulators
- ♦ Spare parts and service work
- ♦ Overhaul of disconnectors
- ♦ Training of utility manpower on maintenance and servicing of disconnectors.



**Other Make Disconnector  
(Before Retrofit)**

## INTRODUCTION

S&S has formed a separate division to cater to the growing needs and demands of our customers to provide rejuvenation, over-hauling, retrofit, refurbishment and replacement of existing disconnectors and complete life cycle management. With the expertise gained over the years in the design, manufacture, supply and service of disconnectors, we have acquired a great deal of knowledge and experience in the life extension of disconnectors. We have also acquired considerable knowledge in replacing, retrofitting and refurbishing disconnectors of other makes. Retrofit is more of a process than a product. It requires engineering expertise and system and equipment knowledge. Retrofit projects are customized to meet our customers particular requirements. Retrofit involves assessing the condition of existing equipment and deciding components that need to be replaced, components that need to be modified and components that can be reused, all based on the customers future requirements.



**Scissor Assembly  
Retrofit with S&S Make**

## RETROFITTING PROCESS

- ♦ Design area focus
- ♦ Retrofitting process for disconnector switch
- ♦ Retrofitting process for earth switch
- ♦ Retrofitting process for drive box
- ♦ Retrofitting process for mechanical gang to electrical gang

## ADVANTAGES

- ♦ Short implementation time for replacement
- ♦ Extended warranty for the disconnectors
- ♦ Improved operator protection
- ♦ Minimization of maintenance costs
- ♦ Spare parts availability for long time
- ♦ Cheaper than a complete replacement
- ♦ Minimum shut down time of the substation bays
- ♦ Extended life time of the Disconnector with minimum investment



Before Retrofitting

After Retrofitting

## INTELLIGENT DISCONNECTOR DRIVE BOX

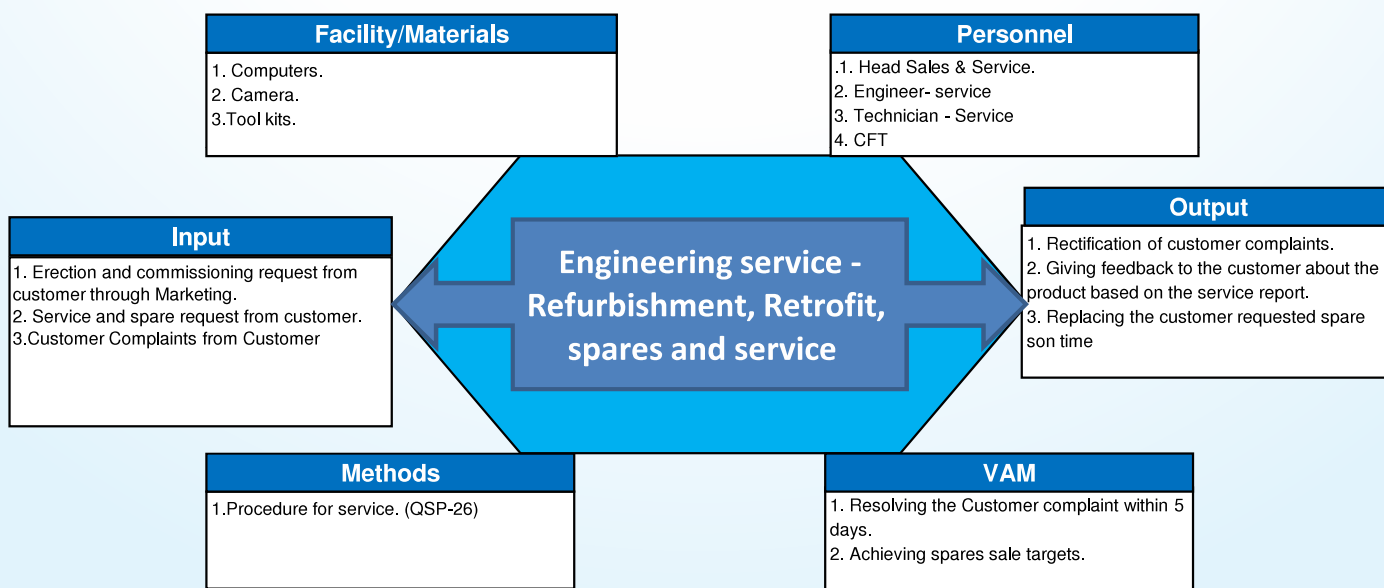
A variable speed programmable drive will enable the disconnect to have better and longer life. Intelligent drive box is a smart controller that monitors the voltage, current, torque and environmental variables (temperature and humidity) as a function of time and position. Based on a reference operating curve recorded at the time of commissioning, it also makes real-time comparative analysis to detect fault, breakages and major misalignments of the disconnect. Therefore, Intelligent disconnector drive box can monitor not only the motor operator, but also the disconnect itself. This technology is compatible in all types of disconnectors. It can therefore be retrofitted into any existing disconnector. This Application provides various advantages over the traditional drive boxes of disconnectors such as:



- ▶ Eliminates traditional Cam Switches
- ▶ Easy calibration
- ▶ Ice breaking operation
- ▶ Retry operation
- ▶ Suitable for all environments
- ▶ Live monitoring capability
- ▶ Real time Analysis
- ▶ Maintenance free
- ▶ Robust design

## SPARES & SERVICE PROCESS

**Repair**, when a damaged component needs to be replaced with a new one. Due to repair activities, which are included in the after-sales services, disconnector performances will regain rated values;  
**Upgrade**, when disconnector performances need to be increased. Upgrading does not usually affect the service life of the equipment. Example: integration of one interrupting chamber into an earthing switch;  
**Retrofit**, when an old part/component needs to be replaced with another one complying with the up-to-date project. Due to retrofitting, both disconnector performance and service life are improved. Example: replacement of live parts;



# EFFECTS OF RETROFITTING & UPGRADE

## Effects of Retrofitting Services

- ◆ Improvement in reliability of power supply
- ◆ Saving of running cost and maintenance work and duration
- ◆ Minimization of Power outages.
- ◆ Minimum down time.

## Effects of Upgradation Services

- ◆ Upgrading of fault levels
- ◆ Upgrading of rated current
- ◆ Upgrading to intelligent drive box

## Reason for Replacement

- ◆ Ageing related Deterioration
- ◆ Increase in maintenance cost
- ◆ Non availability of spare parts
- ◆ Adaptability to telemetry / digitisation

## Problem Caused by ageing equipment

- ◆ Increase in maintenance work
- ◆ Frequent power outages.
- ◆ Increase in maintenance cost



**Mechanical Gang**



**Electrical Gang**



**Before Retrofitting**



**After Retrofitting**

Conversion of mechanical gang to electrical gang of RC420kV Disconnectors

# TRAINING SERVICES

**Training on site and at the factory**, customers' personnel will be trained through specific, theoretical and/or practical training sessions, on the correct installation of the equipment.

**Supervision during both on-site installation and commissioning phases**, S&S Power will provide support to the customers' operators for the installation and the adjustment of the equipment;

**Development of new technical solutions** not included in the brochures. S&S Power counts on expert technicians, the most advanced technologies in the world.



**Onsite Training for Customer Representatives**



**Annual Training Program for Customers (Puducherry)**



**Training at S&S Factory for Customer Representatives**

# MAJOR RETROFITTING PROJECTS EXECUTED

## CENTRAL UTILITY

- ♦ NTPC: Singrauli, Madhya Pradesh - Replacement of Current Carrying parts on 420kV Pantograph Isolators
- ♦ PGCIL: Kadapa, Andhra Pradesh - Replacement of Current Carrying parts & Drive Box on 420kV Center Break Isolators
- ♦ Tenaga: Nasional Berhad, Malaysia - Various S/Ss in Malaysia Replacement of Current Carrying parts & Drive Box on 145kV Double Break Isolators

## PRIVATE UTILITIES

- ♦ Reliance Infrastructure Limited: Versova, Mumbai - Replacement of Current Carrying parts & Drive Box on 245kV Center Break Isolators
- ♦ NPCIL: BARC, Maharashtra - Replacement of Current Carrying parts on 245kV Isolators

## STATE UTILITIES

- ♦ GETCO: Chorania, Gujarat - Replacement of Current Carrying parts on 420kV Pantograph Isolators
- ♦ KSEB: Kerala - Conversion of Mechanical Gang to Electrical Gang on 245kV Pantograph Isolators
- ♦ Neyveli Lignite Corporation: NLC-TPS-II, Neyveli - Replacement of Current Carrying parts & Drive Box on 420kV Pantograph Isolators

## INDUSTRIES

- ♦ Ultratech Cement Limited: Tadipatri, AP - Replacement of Current Carrying parts & Drive Box on 245kV Double Break Isolators
- ♦ NALCO: Angul, Odisha - Replacement of Current Carrying parts on 245kV & 36kV Isolators

## SERVICE LOCATION



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