



PPMV Modular Systems

# Introduction to modular systems E-House solutions

# General

E-Houses is divided into 6 Sections

- Preface & Positioning within ABB
- Product Overview
- Applications
- Technical Overview
- Customer Benefits
- Execution
- Recently Completed Projects
- Global Resource & Capabilities

# Preface



Modular Systems is a product group within the PPMV Business Unit, specializing in delivery of product Packages, E-House solutions & Compact Secondary Substations (CSS).

The Modular Systems Team works across the PPMV, Transformer, Low Voltage Systems & Drives business units, in providing a cost effective multiple element offering to the market.

# Modular systems positioning within ABB

ABB Contact Point	Scope of Supply	
<b>Product Sales Teams</b>	Transformers Low Voltage Products Low Voltage Switchgear, Motors & Drives Medium Voltage Products Medium Voltage Switchgear, Motors & Drives Basic Distribution Automation	
<b>Modular Systems Team</b>	Product Bundles c/w Project Management (ie MV Switchgear, Transformers, LV Switchgear or Drives, Motors, Transformers)  E-House Solution c/w integrated products (ie MV, Switchgear, LV Switchgear, Basic EMS, Drives, <u>3<sup>rd</sup> Party Product</u> )	
<b>Systems Centres of Excellence (Industry Specific BU's - Oil &amp; Gas, Mining &amp; Minerals, Pulp &amp; Paper, Power Systems)</b>	High Risk Engineered Plant Systems, with Design & Performance Responsibility for O&G, Power Generation etc  Full Turnkey packages c/w ICSS, EMCS, DCS, Fire & Gas Systems  MAC & MEC opportunities	

# Product overview

## Sub elements



- The E-House construction is usually inclusive of the following equipment ;
  - Building base frame & internal / external wall sheeting
  - HVAC, Fire & Gas equipment
  - Auxiliary Power & Internal / external lighting
  - Support posts and stairs / landings
  - Internal cable reticulation

# Product Overview

## Sub elements



- Typical electrical equipment located in the E-House as follows ;
  - Medium Voltage Switchgear
  - Low Voltage Switchgear
  - Battery back up equipment
  - Variable Speed Drives
  - Power Management System (eSI)
  - Free issue client panels

# Product overview

## E-House portfolio



The E-House portfolio is segregated into the following areas ;

- Onshore non blast proof design
  - Colorbond type external cladding with skeletal frame
  - Sandwich wall construction
  - Welded sheet steel external cladding
- Onshore blast proof design (welded sheet steel external cladding)
- Mobile Substations
- Mobile Skid Solutions

# Product overview

## Applications



Compliant to IEC, NEMA, AS, BS, SABS & GOST requirements to name a few, in the following market segments ;

- Chemical, Oil & Gas – Blast & Non Blast Onshore E-Houses
- Minerals & Mining – Above ground E-Houses & Portable Skids
- Utilities – Mobile Substations & Conventional E-Houses
- Railways – Specialized E-Houses & Skid Solutions

# Technical overview

## E-House construction sub elements



Base Frame – fully welded, custom designed to suit equipment loadings and cable penetrations



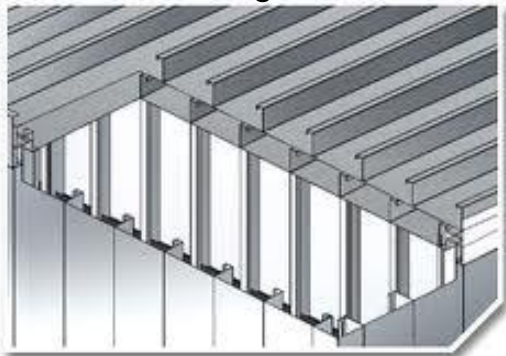
Walls & Roof Frame – fully welded or bolted sections.

# Technical overview

## E-House construction sub elements



Internal & External Cladding (if Skeletal Frame Type) – Powder coated, UV resistant corrugated sheets bolted onto wall & roof frames



Wall Panels (if Sandwich Construction) – Self supporting interlocking panel design, that that removes need for wall & roof frame sub structure

# Technical overview

## E-House construction sub elements - HVAC



Ducted System – high end solution typically used in extreme hot/cold environments & industry specific



Split Systems – Standard solution for majority of applications

# Technical overview

## E-House equipment sub elements – fire & gas



- Fire Indication Panels (Standard supply with all E-Houses). Via sensors located internally within the E-House, visual & audible alarm activation. Alarm signals available for plant DCS & Monitoring Systems.
- VESDA Systems (Very Early Smoke Detection Alarm). Sampling points piped back into master control panel for extremely sensitive smoke detection. Sampling points can be located internally within the switchroom or equipment.
- Gas suppression systems to internally flood the E-House in event of fire also available.

# Technical overview

## E-House equipment sub elements - switchgear



IEC or ANSI Medium Voltage GIS & AIS Switchgear (3.3kV to 33kV)



IEC or ANSI Low Voltage Switchgear & MCC's (380V – 690V)

# Technical overview

## E-House equipment sub elements - various



Relay Protection, Generator Control Panels & Misc Control Panels



Variable Speed Drives can be wall mounted as option to being inside MCC's

# Technical overview

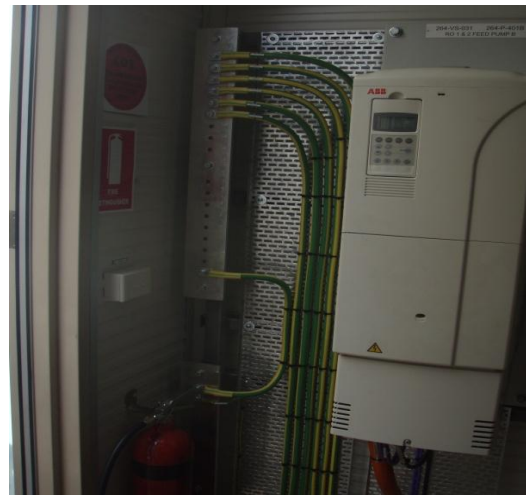
## E-House equipment sub elements – auxiliary power



- Battery back up auxiliary power systems (AC & DC Systems) to maintain power to automation, control & protective devices in the event of mains failure.
- Systems include ; batteries, charger, battery isolation & dedicated emergency power distribution boards
- Batteries can be located within Charger Panels on small units or on dedicated racks for larger capacity systems.

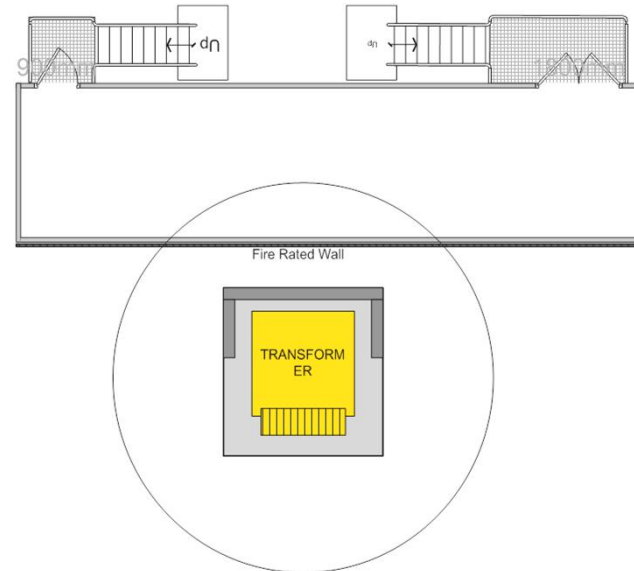
# Technical overview

## Power & control cabling, system testing



# Technical overview

## E-House construction options – fire rated



- Based on site equipment layouts and potential hazards located close to an E-House (eg Oil Filled Transformers), it may be necessary to include fire rated walls, roof or floor in the design. Fire rated surfaces have a finite time rating ie 60, 90, 120 minutes.

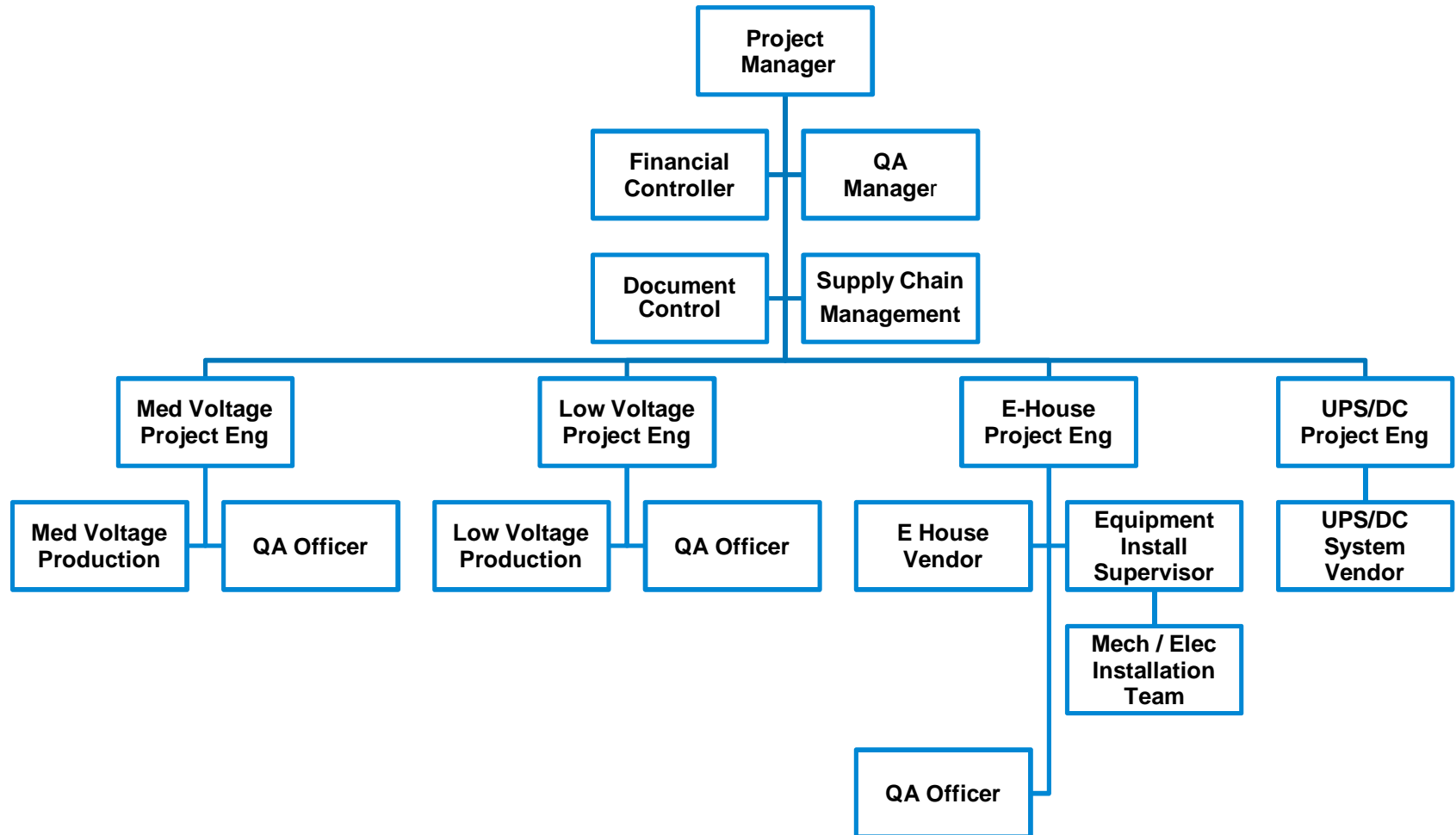
# Benefits for customers

## E-House value proposition

- Risk Mitigation : Transfer of risk from client to ABB for coordinating design interface of all elements in the package to form a single product solution.
- Reduced Client Resources : ABB being responsible for scope of works described above, reduces client manpower to engineer and manage the project.
- Predictable Delivery & Cost Schedule : As majority of works is performed off site, client is insulated from local labour shortages, environmental & industrial relations factors
- Reduced Site Resources : Comprehensive FAT can be performed before delivery reducing site commissioning requirements
- Simplified Commercial Agreement : Single contract for the entire package, reducing requirements for multiple commercial agreements.
- Single Project Manager : Single point of contact to execute the project package

# Project execution

## Typical packaged project execution model



# Typical project references

## Mining-LKAB Sweden project



- TR 2pcs,
- LV switchgear, 9pcs
- UPS, 1pcs
- VSD, 3pcs
- Containerized enclosure

# Typical project references

## Air product Indonesia project



- MV switchgear 6pcs
- LV switchgear 4pcs
- Dry transformer 1pcs
- DBs
- Containerized enclosure

# Typical project references

## Industry- air product- RU projects



- MV switchgear 6pcs
- LV switchgear 11pcs
- Remote control panel 1pcs
- DBs
- Colorbond type Building

# Typical project references

## Power generation



12 x Complexed E-Houses for Coal Fired Power Station



*...Authorized Panel Builder*



Power and productivity  
for a better world™

