



ABB Modular Systems

Predesigned, prefabricated and pretested integrated solutions reduce risk and improve reliability



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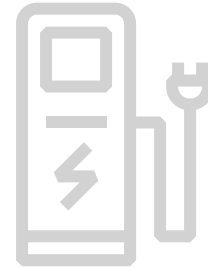
Integrated portfolio of solutions for your specific electrification needs:



**Pre-engineered
Product Packages**



**Custom eHouses,
Skids & Mobile Substations**



E-mobility Solutions



Battery Energy Storage

Scalable, flexible modular solutions designed to reduce risk and ensure operability and reliability



Pre-engineered product packages

Pre-engineered product packages

Packaging of multiple products and services, including interface engineering, to reduce coordination and product integration issues and to help our customers with:



Vendor Management

- Managing performance of multiple vendors covering goods & services



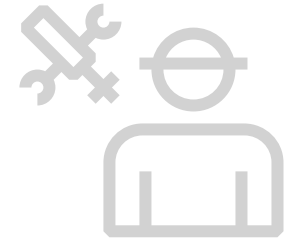
Contract Management

- Procurement resource to negotiate multiple supply agreements
- Project management of multiple contracts with differing, terms and conditions, payment schedules & warranties



Equipment Compatibility

- Ensuring supply of goods & services from multiple vendors are technically compatible



Reducing schedule delays

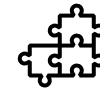
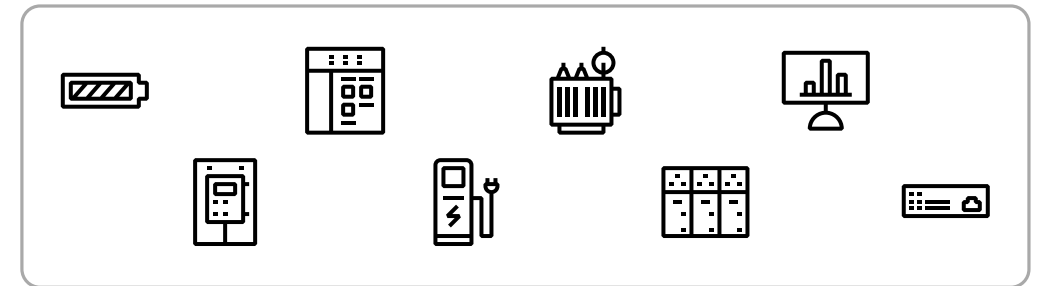
- Management of deliveries across multiple vendors & ensuring technical compatibility between all elements are common causes of project overrun

Pre-engineered product packages

Without Packaging & Solutions



With Packaging & Solutions



- Integrated solutions
- Simplified project management
- Single contract
- Reduced risk
- Schedule predictability

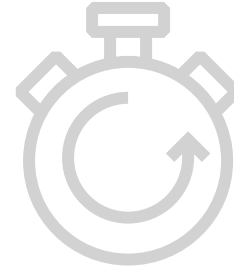
Pre-engineered product packages deliver



**Commercial
and execution simplicity**



Risk mitigation



**Reduced installation
and energization period**



Reduced client resources

Commercial & schedule predictability of outcome

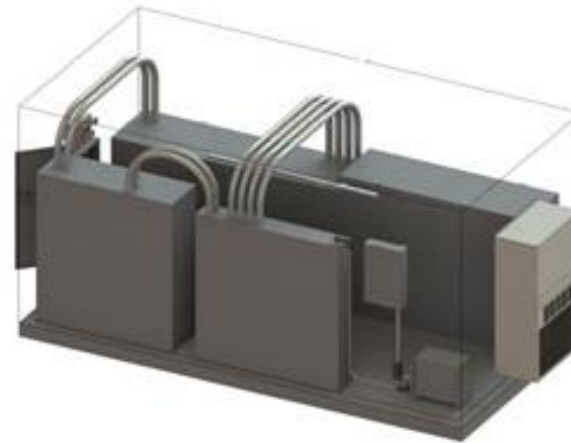
Integrated eHouse and skid portfolio

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eHouse

Prefabricated switchroom, containing electrical switch & control gear for the control of plant equipment, power reticulation & storage



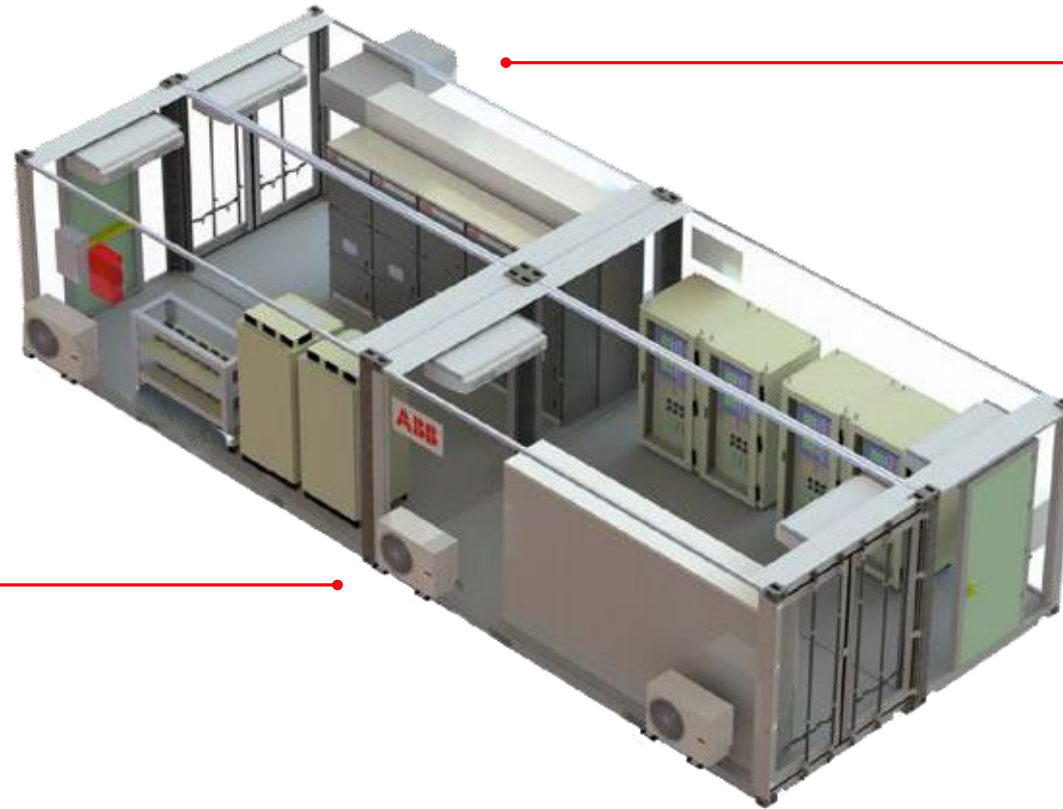
Skid modules

Electrical equipment mounted onto a common base frame, designed for either indoor or outdoor applications

Integrated eHouse and skid portfolio

Custom engineering –
unique product
engineering requirements
to specific specifications

Enclosures can vary
depending on job
demands; eHouse, skids
or mobile substations



Complex projects
that require a custom
or tailor-fit solution

Project that requires
design, engineering,
integrated components,
manufacturing and
project management

Integrated eHouse and skid portfolio

Technical model



1 Fully integrated concept design & engineering



2 ABB undertakes product selections from internal & third-party supply vendors.
Single source of responsibility for equipment compatibility



3 Individual product elements design integrated with consideration of overall system
supply & site installation



4 Site installation assistance & commissioning for plant start up

Pretested & integrated solution to reduce site installation time & improve energization time

Integrated eHouse and skid portfolio

Benefits



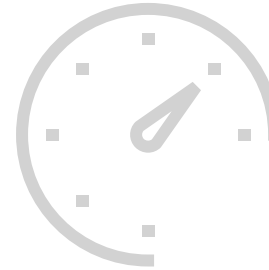
Risk Mitigation

Transfer of risk from client to ABB for coordinating selection & design interface of all elements in the package



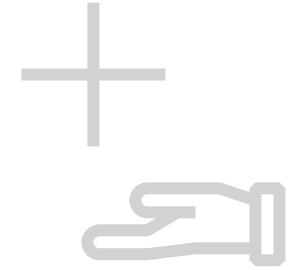
Reduced Client Resources

ABB responsible for scope of works reduces client manpower to engineer and manage the project



Schedule Improvement

Applying interface engineering between product elements supports improved energization period



Simplified Execution

Single project manager & contract for the entire package, reducing requirements for multiple commercial agreements

Integrated eHouse and skid portfolio

Benefits



Schedule & cost predictability

As majority of works is performed off site, client is insulated from local labor shortages, environmental & industrial relations factors



Health & safety

Works performed onsite reduces customer requirements for HSE Management during construction phase



Reduced site resources

Comprehensive Factory Acceptance Testing (FAT) can be performed before delivery reducing site costs & commissioning requirements



Security & warranty

Equipment security & protection from environment to extend lifetime and make maintenance much simpler. Product warranties commence when the eHouse is completed, not when loose products delivered



Secondary solutions

Modular Systems portfolio for secondary application

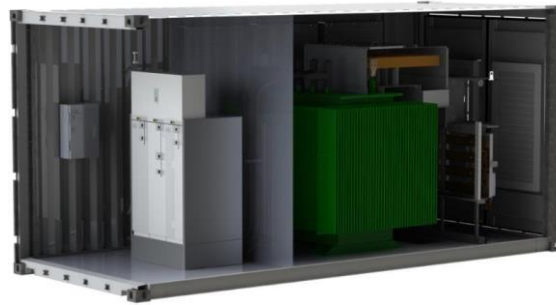
Several designs to fit requested requirements

Skid units



- Open air design
- Small single structure to large multiple structure skid solutions
- Non-IAC solution

EcoFlex



- Standard ISO transportation dimension & certification
- Optimized for simple economical transport (Sea, Rail, Road)
- Robust and relocatable
- Modular can be combined/joined
- Accommodates a variety of switchgear types which can be Arc-Proof
- IAC tested to IEC62271.202 for safety of Personnel and Public (single module solution)

UniPack



- IAC tested to IEC62271.202 for:
 - Safety of Personnel and Public
 - Reliability of equipment inside
- Electrical segregation between compartments
- Oil containment features
- Steel or GRP enclosure material for harsh environment

UniPack Compact Secondary Substation (CSS)

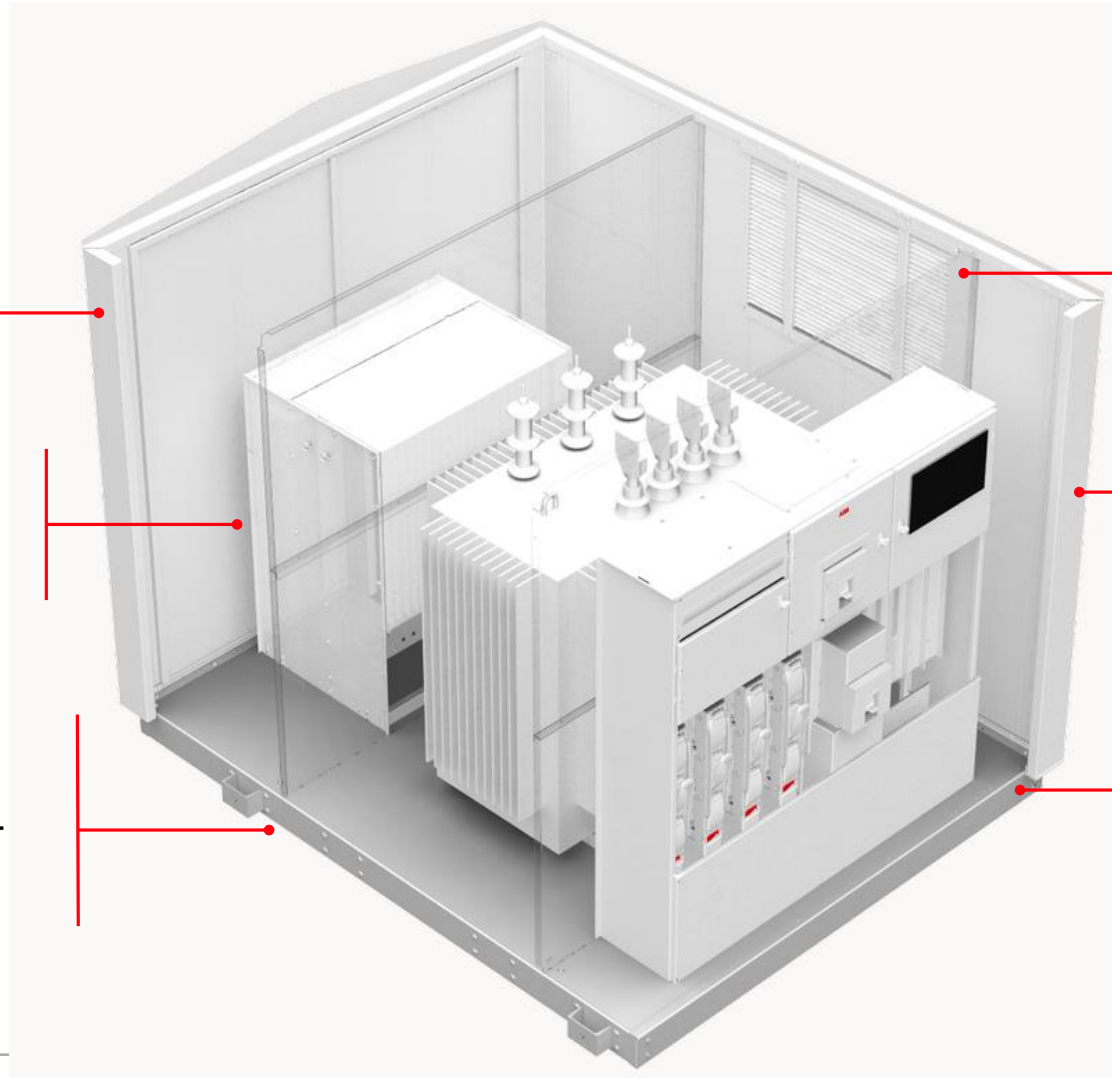
Benefits

Type tested according to IEC 62271-202 for safe working conditions

Digitally enabled for optional predictive maintenance and remote management

Wide range of ratings

- Up to 40.5kV
- 3.5MVA transformer
- 800V and 5000A on low voltage board



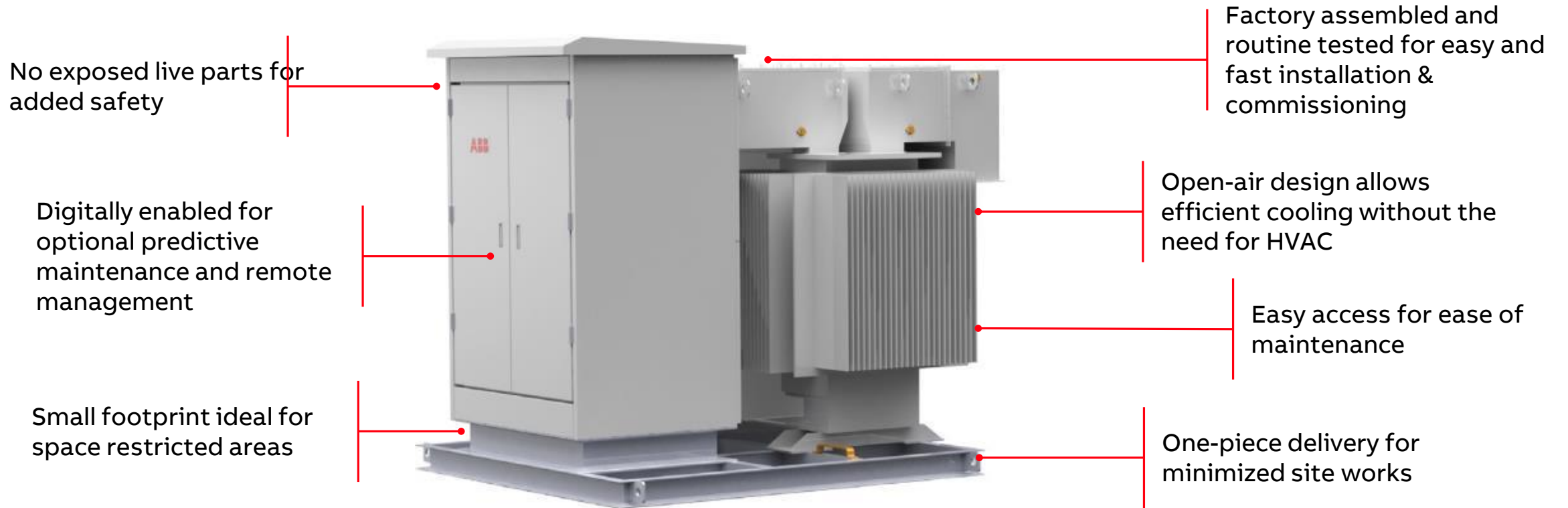
Arc tested solution – safe for installation in public areas

Corrosion resistant enclosure material using Polyester (GRP) for long life and minimum maintenance

Lightweight and factory assembled for easy and fast installation & commissioning

Secondary Skid Unit

Benefits



EcoFlex eHouse

Benefits

Type tested according to IEC 62271-202 for safe working conditions

Factory assembled and integrated with all major equipment and tested prior to shipping

Highly configurable to suit specific project needs

All-in-one solution reduces risk, site work and overall project lead time

Modular and flexible design, ideal for future scalability

Transportable; certified to be transported and lifted as standard economical freight

ABB