



# One modular-based seal for all modular projects

for efficient standardization, modularization and industrialization

# Roxtec – a global safety solution provider

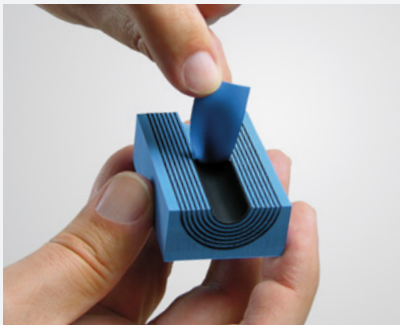
Roxtec serves and supports customers with modular-based sealing solutions for cable, pipe, and conduit penetrations as well as technical expertise and digital solutions for design, construction, and safe operations. Roxtec cable and pipe transits are tested and certified to protect life and assets and to ensure operational reliability.

The seals provide protection against multiple hazards, including fire, gas, water, humidity, EMI, and the risk of explosion. They resist corrosion, withstand vibration, provide cable retention and make a difference in demanding industries and challenging projects worldwide.

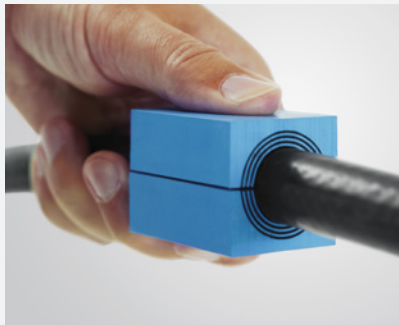
## Roxtec Multidiameter™ – one seal fits all

The Roxtec invention Multidiameter™ is based on sealing modules with removable rubber layers and ensures a perfect fit around cables and pipes of different sizes.

Roxtec ensures a perfect fit, regardless of the dimension of the cable, pipe or plastic conduit.



Roxtec Multidiameter™ is an innovation for flexibility based on removable layers.



It makes the mechanical system adaptable to cables and pipes of different sizes.



With only a few parts you get a strong reliable barrier securing operational performance.

# Increasing efficiency without compromising safety



Roxtec has supported standardization, modularization, and industrialization in energy projects for decades, contributing to rapid global expansion. Speed and safety count, and companies within energy transition and other emerging industries need to build and deliver in a streamlined manner. Scaling up hydrogen plants, small modular reactors (SMR) or battery energy storage systems (BESS), they require safe, flexible, and certifiable seals that can be integrated into prefabricated modules, containerized systems, and equipment platforms.

Well-established industries, such as the marine and offshore sectors, must also adapt to new needs and regulations by adding equipment in deckhouses, shelters and containers. Roxtec adaptable seals allow OEMs, original equipment manufacturers, OEM integrators, and EPCs, engineering, procurement and construction firms, to standardize interfaces across projects and geographies to save time, secure compliance, and accelerate deployment.

## Useful for all modular offsite projects

The Roxtec sealing expertise can be applied to any industry facing rapid scale-up, high regulatory expectations, and the need for flexible deployment. Roxtec solutions support modular skid and container designs and enable both high cable density and easy maintenance access. Standardizing with Roxtec is beneficial for manufacturers aiming to reduce costs in the industrialization within everything from energy and renewables through to modular data centers and advanced manufacturing. There are Roxtec seals for attachment either by bolting, casting or welding. They can be used in panels, steel, or concrete walls in any containerized or prefabricated modular buildings or kiosks.

## Contributing to efficient processes

Developers can standardize designs for global delivery all while being able to adapt to evolving technologies and requirements. With Roxtec seals in pre-engineered systems, they can industrialize processes, reduce time-to-market, and maintain system integrity in tough environments. Whether it is vessel, offshore unit, hydrogen production skid, utility-scale BESS or SMR installations, the seals support repeatable, scalable design and enable full transition to everything from new energy systems to sustainable fuels.

# Three pillars for emerging sectors



Standardization, modularization, and industrialization are essential enablers for scaling up emerging technologies. Sectors such as hydrogen and BESS face pressure to reduce costs, accelerate deployment, and deliver performance across diverse geographies.

- Standardization ensures component interoperability, simplifies regulatory compliance, and enables repeatable system designs, which is critical for managing complexity and maintaining quality at scale.
- Modularization breaks down complex systems into pre-engineered, factory-built units that can be rapidly deployed, expanded, or replaced. This flexibility supports faster project delivery, lower on-site construction risk, and the ability to tailor solutions for remote, offshore, or urban applications. Modular units also streamline logistics and maintenance, improving uptime and lifecycle economy.
- Industrialization, through automation, efficient manufacturing, and mature supply chains, drives down the cost, making emerging technologies competitive. It enables volume production, product availability, and strong supply resilience.

# Perfect fit for a modular strategy

Roxtec seals, services and software support efficient industrialization, plug-and-play onsite installations, and standardized quality control. The modular-based seals also simplify futureproofing, upgrades and global deployment. Furthermore, Roxtec sealing experts share their knowledge and collaborate with customers both onsite and digitally.

**“Roxtec isn’t just a component – it’s an enabler of industrialized, modular production.”**



## **Contributing to scalable manufacturing**

One sealing specification can serve all units. Manufacturers can use the Roxtec Transit Designer™ software, CAD drawings and BIM objects to automate layouts for using the same Roxtec sealing kits across all platforms or units. They can also include spare capacity for future expansion in their design to cover all design variations and upgrades.

## **Practical installation efficiency**

When prepacked labeled sealing kits are installed in line with design drawings at the factory, by trained installation teams, it is all about speed, quality, and efficient production. The installers can be trained on and use one single solution for all cables, pipes and cabinets, which makes it much easier to scale up. As Roxtec seals are openable, installers can easily handle design changes in the factory or in the field. The result of this standardization is simplified procurement, faster engineering, secured quality, efficient manufacturing, consistent compliance, and reduced risk of errors.

# Securing a successful modularization

When implementing modular offsite construction, it is important to consider the following challenges:

- How to ensure safety and compliance? It is crucial to ensure that modules meet stringent safety and regulatory standards, regardless of their end-destination.
- How to ensure design flexibility? It is difficult to cope with late-stage design changes and always be able to meet varying requirements and methodologies.
- How to manage several interfaces between modules and zones? The interface complexity can lead to issues when it comes to integration and available space.
- How to balance standardization and customization? Efficiency depends on the ability to deliver standardized components and solutions tailored for the project.
- How to streamline logistics and installation? From time to time, modules must be transported to remote locations where fast installation is a key concern.

## Globally certified solutions

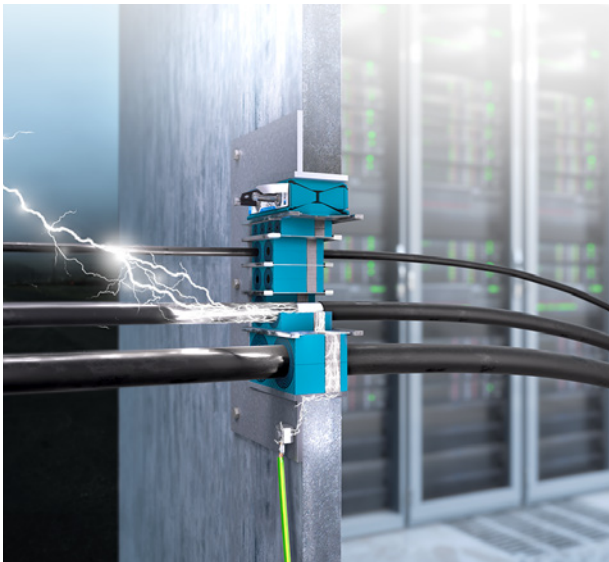
Roxtec offers innovative solutions for the challenges listed above. But how do modular-based cable and pipe transits ensure the highest levels of safety, all while overcoming the challenges of industrialization and modularization? Roxtec cable and pipe seals are tested, approved and globally certified. Compliance is quickly assured as the transits have the ratings needed in accordance with standards within, for example:

- Fire protection
- Gas and air tightness
- Environmental tightness
- ATEX/IECEX
- Blast load
- Bonding and grounding



# Ensuring regulatory compliance

How to ensure safety and compliance? It is crucial to ensure that modules meet stringent safety and regulatory standards, regardless of their end-destination.



Roxeltec sealing solutions are certified to protect against multiple hazards, including fire, water, gas, and electromagnetic interference. Their consistent compliance with international safety standards ensures that modules meet regulatory requirements, reducing the risk of non-compliance and enhancing overall safety.

- Certified protection
- Global compliance
- Focus on safety



## Directly reaching the market

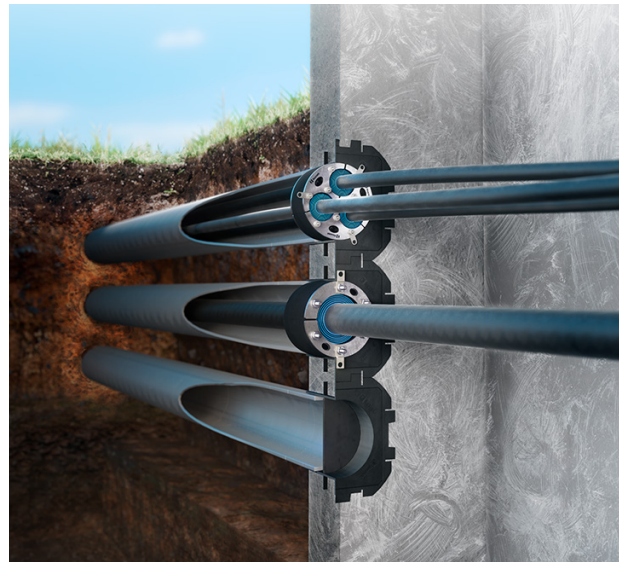
The certifications also mean accelerated time-to-market. The use of standard Roxeltec seals eliminates the need for repeated third-party testing for each new variant of a product or enclosure. The reduction of engineering and compliance validation cycles is critical when industrializing new technology. A hydrogen electrolyzer or a modular EV charging station, for example, can go to market faster by reusing approved and proven sealing systems, avoiding delays tied to penetration testing and code compliance.

# Enhancing design flexibility

**How to ensure design flexibility? It is difficult to cope with late-stage design changes and always be able to meet varying requirements and methodologies.**

Roxtec Multidiameter™ ensures adaptability to various cable, pipe and conduit sizes. This flexibility enables late-stage design modifications during the construction phase without the need for additional components or redesign. Roxtec seals can be installed locally in the field – in walls, floors, cabinets and equipment, and with minimal training, which allows local labor to handle part of the system assembly. In addition, the Roxtec sealing system is certified to many international and regional standards, supporting compliance with local codes and procurement requirements.

- Prepared for changes
- Ready for installation
- Comply with local codes



## Simplifying upgrades and maintenance

The Roxtec system allows for easy additions, upgrades or replacements of cables or equipment inside containers. This reduces lifetime costs and makes the tech platform adaptable to new markets. It enables technical integrations and upgrades in line with local regulations.

This is beneficial for emerging technologies that may evolve rapidly, as it enables quick integration of new components without much or any rework. Furthermore, the modular design of Roxtec seals allows for easy access which simplifies maintenance.

# Simplifying interface management

The Roxtec modular-based sealing system is designed to allow multiple cables and pipes of varying sizes to be routed and sealed through a single opening. This reduces the complexity of interface drawings and coordination between trades as well as the number of penetrations required.

It thereby minimizes potential points of failure and simplifies interface management between modules. The adaptability of the seals allows for adjustments onsite. They reduce the need for reengineering if specifications change late in the project and accommodate unforeseen changes without extensive rework.

- Reducing engineering effort
- Reducing penetration footprint
- Enabling late design changes

## Scaling up repeatable production

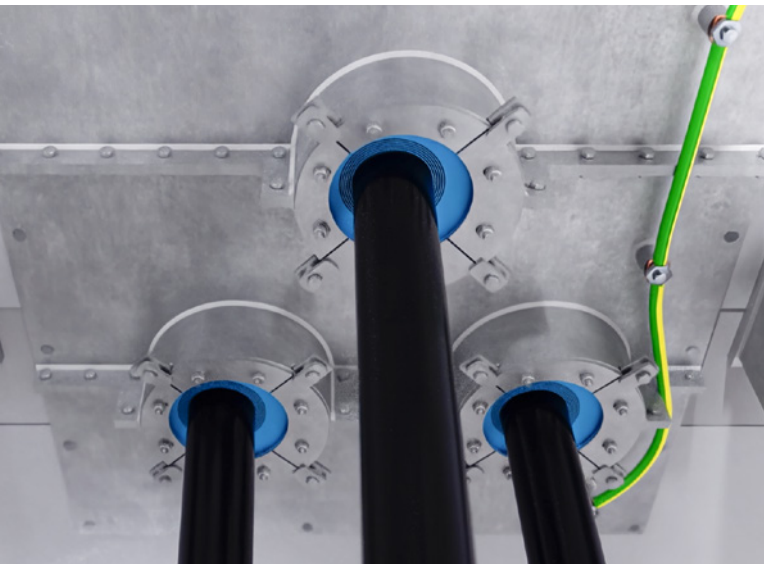
Roxtec seals can be designed once, standardized and reused across multiple projects, products or platforms. They save the time for custom design and engineering that is otherwise typically required. Consistent design-for-manufacture simplifies BOM, bill of materials. It enables seamless integration into modular construction, digital workflows with CAD, BIM, digital twins and traceability standards, as well as automated assembly setups.

As hydrogen systems, SMRs, battery storage, modular data centers, and other emerging technologies move from pilot to repeatable design and production, Roxtec seals contribute to efficient scale up, without any need for redesign. A company developing prefabricated units can use the same Roxtec kits across thousands of units.

**How to manage several interfaces between modules and zones?  
The interface complexity can lead to issues when it comes to  
integration and available space.**

# Combining standard and tailored solutions

How to balance standardization and customization? To succeed financially and in pure practical industrialization, it is crucial to master both standard and specific solutions.



Roxtec seals support standardization by providing a consistent sealing solution for different modules and projects. At the same time, their modular-based nature allows for customization to meet specific project requirements. They efficiently help balancing the need for standardized components with the flexibility to address any unique challenge. Roxtec has extensive R&D resources and testing capabilities for use in the product development and pre-certification process as well as for the customization of seals.

- Standard seals
- Customized seals
- Standard customization

## Saving money through process optimization

Purchasing Roxtec standard sealing kits in bulk, pre-packed with all components, is an easy way of reducing unit costs and simplifying the supply chain. Organizations can simplify their sourcing and procurement processes and save time and money on logistics. Using identical seals across product lines enables lower item inventory and easier logistics and spare part management as well as streamlined installation tooling and methods. Installers only need to be trained once, even as product variants evolve.

# Facilitating transportation and installation

The lightweight and compact design of Roxtec seals simplifies transportation, also in remote or challenging environments. It is thereby possible to ensure certified protection from the plant to any remote area, onshore or offshore. The seals are designed for quick and straightforward installation to reduce onsite labor requirements and speed up construction, addressing logistical challenges associated with modular construction.

By consolidating penetrations, Roxtec helps make modules more compact, potentially reducing volume and weight. Proper sealing also minimizes the risk of environmental damage or moisture ingress during transport, reducing the need for rework upon arrival.

- Compact seals, compact modules
- Accelerated installation on site
- Protection during transportation

## Enabling quick modifications

The modular nature of Roxtec openable seals allows for adjustments without significant delays. This also reduces labor costs and shortens project timelines, which is crucial when scaling up production and

deployment. Fast installation of seals shortens onsite works and reduces the need for infrastructure. The transit design also simplifies fast inspections and retrofits, reducing infrastructure dependency for maintenance.

## Fewer penetrations, less structural rework

Using Roxtec seals is a way of securing structural integrity. The seals allow for high cable density but require few openings. Concentrating penetrations in specific zones with Roxtec reduces the need to reinforce walls or bulkheads riddled with multiple holes. Secure, certified seals minimize the risk of needing post-transport repairs due to compromised cable or pipe entries, which helps avoiding structural rework costs.

**How to streamline logistics and installation? Modular construction often requires structural reinforcement, specialized logistics for transport to remote areas where fast installation is a key concern, or onsite support facilities for handling of large modules.**

# Case study examples

## 1. Cable variations – not any issue anymore

In a battery energy storage system project, design engineers realized there were more than 30 global variations for power, control and earthing cables.

Also neighboring countries in the European Union had different earthing and cabling requirements. The solution was to use Roxtec seals – which meant that one standard penetration seal coped with all cable variations and regulations.

## 2. Global compliance – safety work made easy

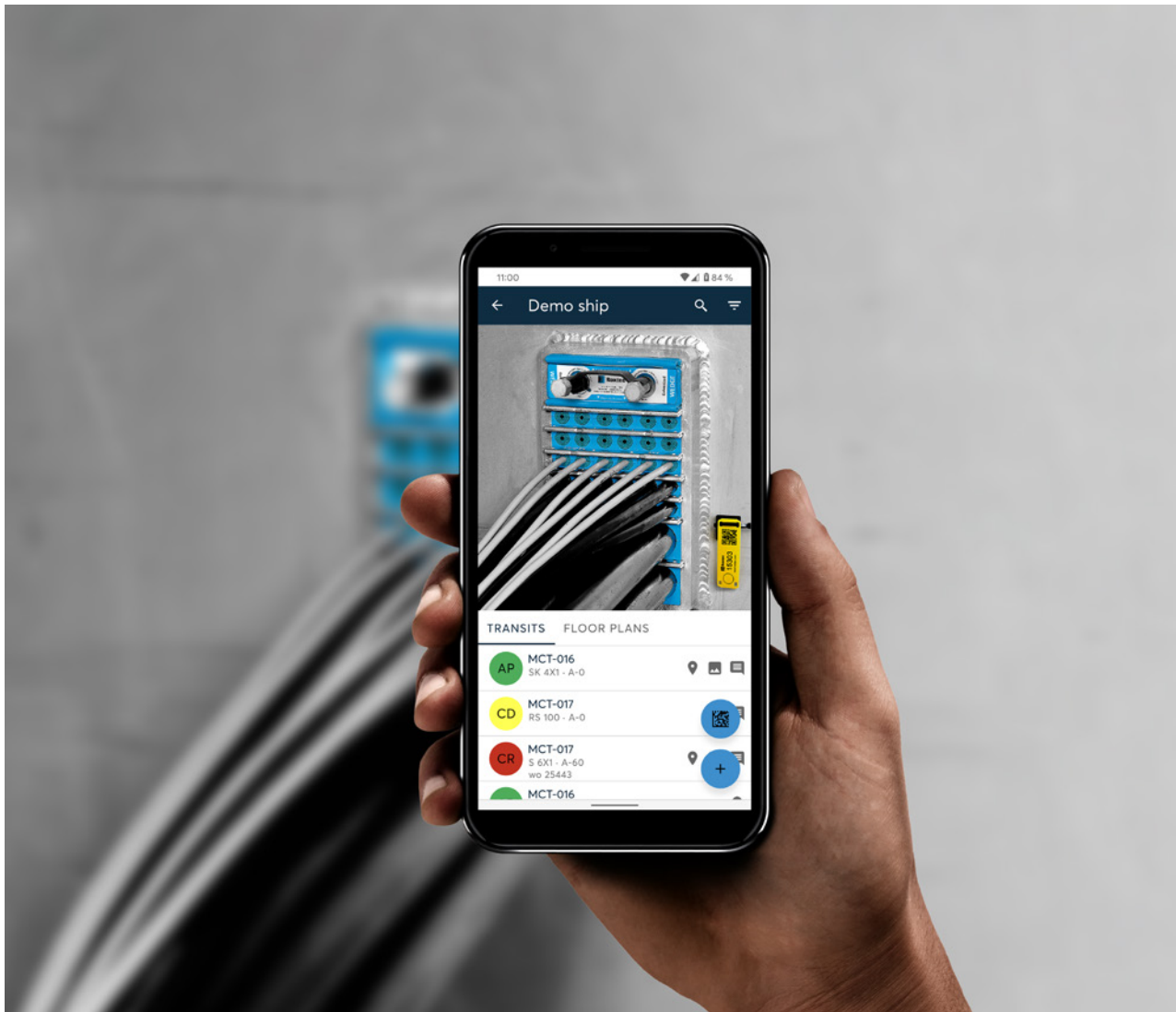
A hydrogen electrolyzer was designed in Europe and then built in the USA before being deployed in Canada. The manufacturer, the builder and the owner needed approvals for all safety and operational system in accordance with EN, UL/FM and CSA standards. The solution was to use Roxtec seals – which meant that one standard penetration seal was able to meet all certification requirements.



# Ensuring control with transit management software

The Roxtec Software Suite™ is developed to simplify work with everything from design, drawings and certificates through to installation, quality checks and mandatory documentation. It helps users save time, increase quality and optimize safety throughout the lifecycle of an asset.

The set of interlinked tools is useful for anyone working with sealing solutions for cables and pipes and it enables efficient cooperation and synchronization between many actors in a project. It helps selecting the right seals, documenting the process, and reporting transit status in accordance with official standards and regulations.



# Roxtec Software Suite™

The suite contains digital tools for designers, production teams and owners. The tools work together, in real time, to ensure documented quality – from planning and construction through to future upgrades of any type of asset.

## **Roxtec Transit Designer™** – for design and engineering

For design of hundreds of cable and pipe transits in just a few minutes. It is a quick, safe and easy way to generate all required manufacturer-approved outputs.

- Cable, pipe and seal selection
- Sealing requirements precision
- Getting the right seals in the right place

## **Roxtec Transit Build™** – for installation and quality inspection

For a seamless installation process. This constantly updated tool for systemized quality assurance enables contractors to hand over a perfect result to a future owner or user.

- Installation quality control
- Systemized documentation
- Handling changes, avoiding costs

## **Roxtec Transit Operate™** – for upgrades and long-term quality assurance

For owners or quality managers keeping control throughout the lifecycle of an asset. This register tool helps guarantee a high safety level after any changes and upgrades.

- Up-to-date activity log
- Complete documentation
- Fully compliant transit register

# Roxtec standardization drives industrialization



In summary, integrating Roxtec seals into the design of modular offsite construction projects and processes can address several challenges. Their adaptability, compliance with safety standards, and ease of installation make them ideal for efficient assembly and integration of prefabricated units in controlled environments.

They become a valuable component in enhancing both cost-efficiency and reliability of modular offsite construction. Standardizing with Roxtec contributes to the ease of industrializing emerging energy technologies when the goal is to scale up and reduce costs.

Benefit	Impact on industrialization
Pre-certified systems	Reduce testing, faster market access
Scalable design templates	Faster development and rollout across multiple deployments
Designed for manufacturing	Integration into modular and automated assembly lines
Standard parts procurement	Lower costs and simplified logistics
Easy installation and retrofit	Lower labor costs and improved maintainability

# Protecting life and assets

Roxtec is the world leader within flexible cable and pipe transits. Since the start in Sweden in 1990, we have grown successfully to cover all continents. Our passion is innovative sealing solutions, and our goal is to make our world a safer place.

- Extensive R&D resources and advanced test facilities
- Inventor of Multidiameter™
- Customers in more than 80 markets

Would you like to learn more about cable and pipe seals for modular offsite projects?

Scan the QR code or visit [roxtec.com](https://roxtec.com)

