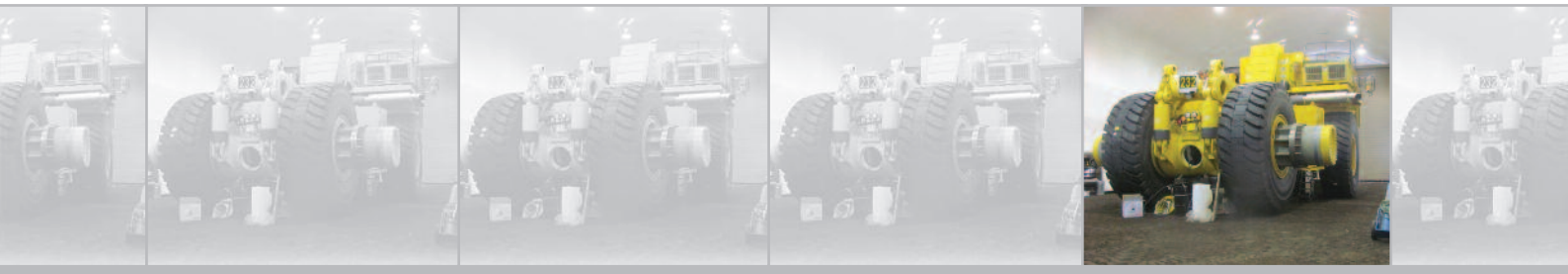
RUBB RELOCATABLE

mining & energy structures

the most versatile structures in the world



RUBB

we will never stop innovating

Rubb Buildings... Proven in the mining & energy industry.

Rubb buildings meet the high demands of the Mining and Energy sectors - they are robustly engineered to stand up to tough climatic conditions and can be erected quickly at remote locations. Rubb offers a wide range of facilities suitable for temporary or permanent building solutions.

Rubb structures have unparalleled engineering and design capability to provide customized solutions to complex project needs including high wall buildings and liftable buildings. They are ideal for use as a base during construction, for warehousing of vehicles, machinery and equipment, for bulk storage and on-site workshops.

Maine, USA. 7,000 tonne coke storage facility

The design and planning flexibility, speed of construction and durable, cost effective operation of Rubb mining and energy facilities provide our clients with a number of unique benefits and a major competitive edge.

Mining

Our steel framed PVC membrane clad structures offer the ideal solution for companies operating in the mining sector.

Applications include vehicle storage and maintenance workshops, bulk storage warehouses for environmentally sensitive materials and explosives, processing facilities and a wide range of custom structures.

Rubb structures offer protection for valuable mineral commodities such as copper, zinc and lead while in storage on site and at ports. They can be climate controlled by applying HVAC and dehumidification systems.

They may also be used as cost effective solutions for the storage of iron-ore and coal.

Oil and Gas

Structures are available to protect oil and gas projects and activities from the elements. Shelters also offer cover for oil and gas rigs and platforms while under construction, protecting workers from wind and snow. They are simple to erect and can be relocated or packed away for later use.

Nuclear and Environmental

More and more environmental engineers are turning to Rubb for resourceful answers to prevent dust, gas and other forms of pollution from escaping into the environment.

Rubb buildings and covers can also assist in processes such as nuclear decontamination work, fuel protection and waste treatment by excluding light and providing stability to treatment procedures. They can be sealed to provide a ‘negative’ pressure environment, allowing contaminated air to be removed and processed.

Flexibility

Rubb designs also offer our clients the ability to cost-effectively adapt the structures as operational needs change.

Our unrivalled skills and more than forty years’ experience in the field enables Rubb to design, fabricate, deliver and install responsibly engineered structures which fully meet the needs of the mining and energy sector.

Rubb structures offer:

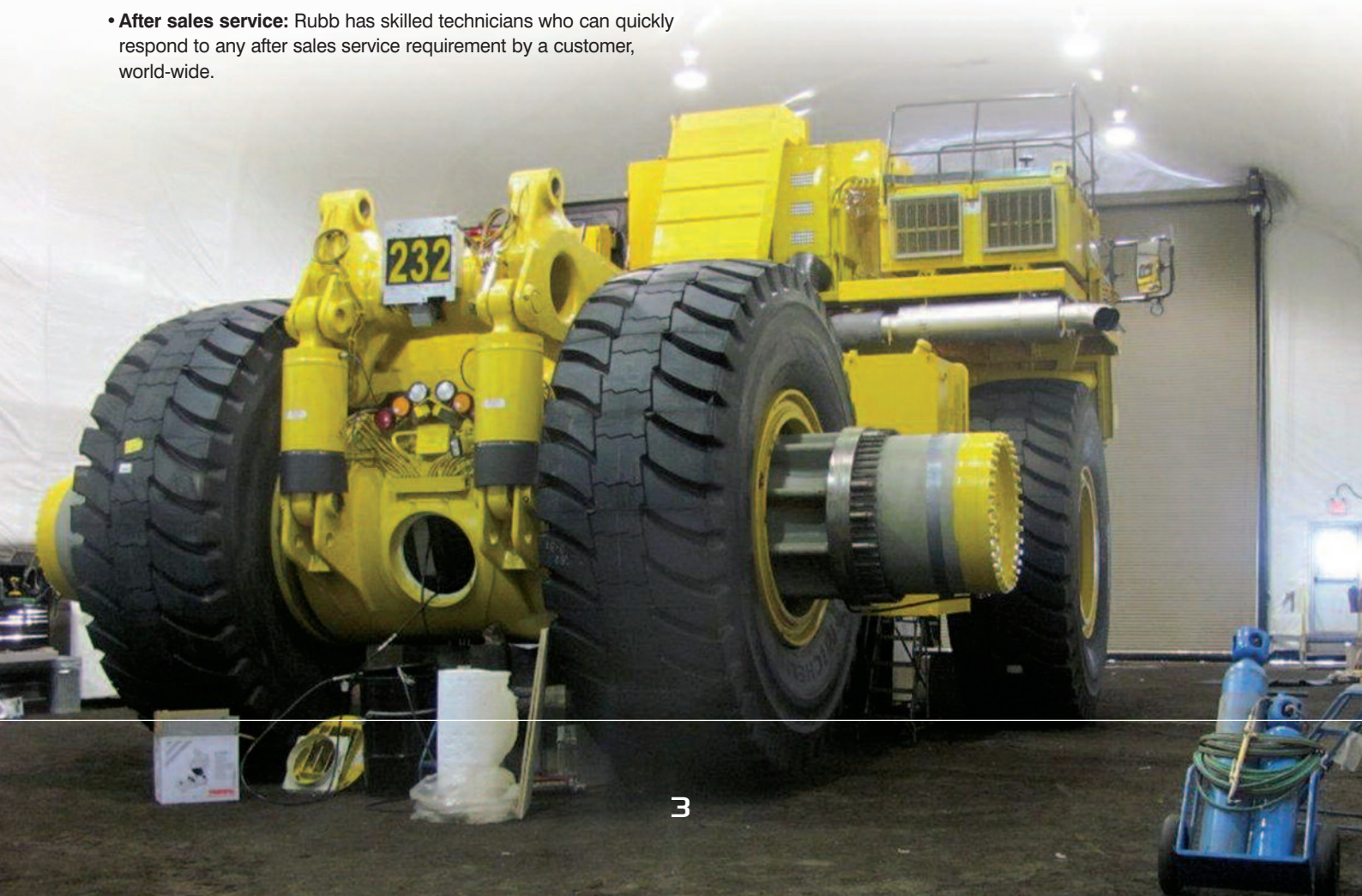
- **Quality (ISO 9001)**
- **Proven materials and engineering integrity**
- **Corrosion resistance**
- **Minimal long-term maintenance**
- **Air-tight facilities**
- **Climate control**
- **Translucent roof provides a safe and productive working environment**
- **Stability in the face of extreme climatic conditions, including heat and high winds (site specific)**
- **Relocatability**
- **Durability**
- **Insulation options**

Rubb benefits

- **Robust construction and quality:**
  Rubb buildings are solidly built. We are market leaders with regard to engineering integrity, structural and material reliability, and we intend to maintain that position.
- **Durability:** Our steel frames are post fabrication hot-dip galvanized, providing maintenance free structures with an unlimited life span. Our high strength PVC cladding is strong and durable – past projects have proven it performs well for more than 25 years.
- **Relocatability:** Although our buildings normally serve as permanent structures, they have the added benefit of being relocatable.
- **Reliability:** Rubb buildings meet all applicable building codes, and take all wind, snow and seismic loads relevant to the location where they are erected.
- **Proven:** Will withstand the elements in the world's most extreme climates (heat, UV light, arctic cold, seismic activity, wind and rain).
- **Lower maintenance costs:**
  Compared to conventional buildings
- **Fire safety**: In a fire event, the PVC fabric melts away from areas where heat and smoke accumulate, thus allowing for an optimal and automatic venting of heat and smoke.
- **Translucency – energy savings, superior lighting quality:** The translucent nature of the fabric allows light to penetrate, preventing dark corners and shadowing which is common with artificial lighting.
- **Operational safety:** Good lighting conditions ensure a safe and efficient working environment.
- **Environmentally friendly:** Rubb buildings are pre-fabricated, with most of the labor input being done in a factory environment, where it is easier to reduce and control wastage of materials.
- **After sales service:** Rubb has skilled technicians who can quickly respond to any after sales service requirement by a customer, world-wide.

Rubb quality

- **Rubb uses nothing but the highest quality of materials:**
  All steel used in Rubb structures is post-fabrication hot dip galvanized for strength and durability.
  In this process, the complete framework is built using high quality welded black steel and then hot-dip galvanized to provide a consistent zinc coating over the entire structure.
- Loading and sea-fastening, combined with final shipment release report is inspected and approved, with final documentation presented in English language.
- Rubb buildings follow international building codes and are in compliance with applicable local building codes (ISO9000).
- Our designs are fully documented, both the PVC fabric and steel.
- The fabrics we use are multi-layered, flexible, composite construction materials of extraordinary toughness.
- When tensioned over the steel frame they provide a drum tight shell which powerfully resists snow and wind loadings, impact and tearing.
- The polyester base fabric is coated with PVC making the material self-venting and self-extinguishing when exposed to flames.
- It offers translucent qualities, providing an internal bright and airy, safe working environment.
- It is fully reusable when taken down and relocated.
- Acrylic and PVDF coatings give a glossy finish and allow a variety of colours and graphics.
- Many buildings which have seen 25 years service still have the original membrane – still going strong and performing well.



Mining structures

Case study: Silver and Baryte, North America

When Silver and Baryte Industrial Minerals, North America, Inc. needed a state-of-the-art bulk storage facility for perlite, they turned to Rubb. Rubb had previously provided two bulk storage facilities (to their predecessor company Eastern Industrial Minerals) in 1998 and 2001.

Silver and Baryte required the new BVE (British Design, Vertical Sidewall) range facility 130' (39.6m) x 433' (123m), 56,333'^{2} (17,170m^2) to service the firm's customer base in the Southern USA near the Gulf of Mexico. The new facility, sited in Theodore near Mobile, Alabama, is equipped with a sophisticated dust containment system provided by Canadian company Wheelabrator Corp. The structure features large 16' (4.8m) x 16' (4.8m) roller shutter doors in each gable end to facilitate the loading and unloading of large trucks.

The facility is ideally situated at a deep water port so that shiploads of materials can be transported and stored for nearby clients who require delivery of perlite to match their production schedules.

Built to withstand the elements

The building was designed to code which required the structure to withstand sustained winds of 110 mph (130 mph 3-second gusts) and a live roof load of 12 psf.

In September of 2004 the two year old structure was subjected to the fury of Hurricane Ivan. The hurricane sustained winds of +135 mph which came ashore from the Gulf of Mexico at Gulf Shores, Alabama. The track of the hurricane moved inland up the eastern shore of Mobile Bay and subjected the Rubb building to sustained winds 30 mph higher than the design wind speed. As the hurricane moved inland and people were able to return to the site they found the Rubb building intact and the perlite dry. The entire area surrounding the warehouse was heavily damaged.

As a result Mr John Poulakis, Manager of Operations and Technical Support for Silver and Baryte praised 'the quality of the work' which 'validates the outstanding working efficiency that this structure can provide.'

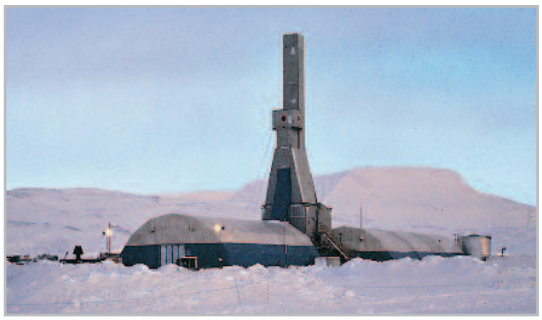
Case study: Marshall Industries, Canada

Labrador City, Labrador is located 53 degrees north of the equator and some 930 miles north of Rubb, Inc's factory in Sanford, Maine. With a harsh climate and average snowfall of 12' (3.66m), Labrador is home to some of the worst weather in North America.

Marshall Industries, a mining support contractor based in Ontario, needed a flexible structure for a truck maintenance and assembly facility. The types of vehicles to be housed in the structure are very large mining dump trucks and, because of their sheer size, the building had to meet very specific design criteria including the ability to move.

Rubb's engineering team went to work designing a 60' (18.3m) wide x 117' (35.7m) long BVE structure with a sidewall height of 26' (7.9m). In addition to the extreme design loads (primarily ground snow load), the structure needed to move along an I-beam foundation utilizing Hilman Rollers. Accessory items included a full insulation package with inner liner, personnel doors and a large Cookson roller shutter door measuring 34' (10.4m) wide by 28' (8.5m) tall. Only seventeen weeks elapsed from placement of the order to project completion.

Oil and gas structures



Right: **Aker Solutions, Stord, Norway**
Aker Solutions land-based insulated Thermohall workshops near Bergen, Norway. The Thermohalls provide fully functional, forward-based maintenance facilities for Aker's North Sea Oil and Gas extraction activities.

Left:
Spitsbergen, Arctic Circle
Oil drilling and storage facility on the Norwegian island in the Arctic Ocean north of Norway.

Above: **Apply Oil and Gas AS, Forus, Stavanger, Norway.** 49.2' (15m) x 157.4' (48m) with 16.4' (5m) sidewalls FX insulated 'Thermohall' building with ventilation and dehumidification. The customer wished to have part of the building dehumidified and Rubb therefore supplied a separation wall to ensure that this was possible.

Left: **Baker Hughes, Norway.** Oil residue recycling facility near Stavanger, Norway. Insulated 'Thermohall' workshop 65.6' (20m) x 164' (50m).

Below: **Coast Center Base AS, Norway.** Oil and gas forward supply warehouse and workshop in west Norway. Rubb delivered four insulated 'Thermohall' buildings in use by contractors working on North Sea platforms.

Above: **Highland Fabricators, UK.**

Below: **Deutag Gmbh, Siberia, Russia.**
Used for the storage of compressors and large tanks which are used to separate sludge from oil products. The buildings are relocated from drilling site to site.

Bulk storage, nuclear and environmental structures

Rubb can provide flexible bulk storage solutions for the mining and energy sectors.

Rubb also has a proven track record within the nuclear and environmental industries, with structures preventing dust, gas and other forms of pollution escaping into the environment.

Left: **Bulk Storage, Workington, UK.** 82' (25m) span NV (Norway Vertical) type structure with intergrated concrete retaining walls to hold bulk material.

Below: **PON Equipment, Norway.** Equipment is being protected from the elements thanks to Rubb's insulated building system. The Thermohall facility is insulated to cope with the severe winter weather in the north of the country. PON Equipment is Caterpillar's agent in Norway, specialising in construction equipment from 1.5 tonnes to 256 tonnes.

Above: **Australian Nuclear Science & Technology Organisation, Australia.** Designed to work within the reactor building during routine maintenence work, then later reused within the site.

Below: **Zhagrus Environmental, Massachusetts, USA.** Rubb designed, fabricated and installed this custom built 14.8' (35m) wide x 209.9' (64m) long double skinned structure with 19.6' (6m) sidewalls on nuclear contaminated land. The contractor Zhagrus was required to completely contain any airborne pollutants during the excavation and packaging operation prior to transportation to a disposal site.

Below: **Decontamination of chemical tanks, USA.** Crane liftable, double skin structure.

ThermoHALL™

Insulation System

Introducing Rubb Thermohall structures

Innovative insulation system for the future

We live in an increasingly energy conscious world. The environmental choices we make now will have a great impact on our future. These concerns are reflected in the building industry as a whole and also in Rubb's relocatable structures. In this regard, Rubb is pleased to introduce Thermohall, a new and innovative means to efficiently insulate membrane buildings.

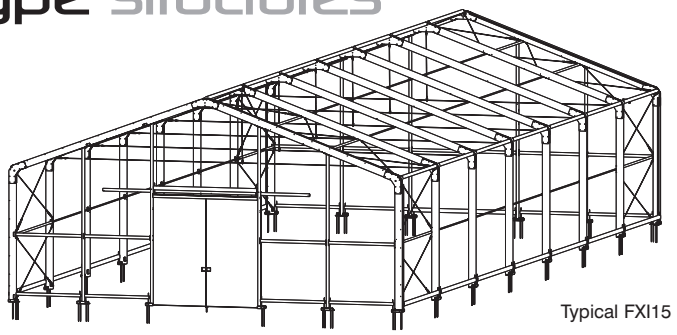
Development of the Thermohall concept began several years ago in Norway. The goal was to engineer a cost-effective, practical and eco-friendly insulation system for relocatable membrane clad structures. Thermohall is now fully designed, tested, field proven and features a number of innovative advantages.

The benefits of Thermohall

- Insulated panels include outer weather liner, integral glass fibre wool insulation and inner liner.
- System provides a full vapor seal, greatly reducing infiltration losses as compared to other insulation systems.
- Insulated panels completely cover the structural frame to virtually eliminate thermal bridging. This greatly reduces the opportunity for condensation on framing members and dramatically improves insulation efficiency.
- Roof and interior surfaces are provided as standard in high gloss white to reduce solar load on the outside and increase reflectance within the building.
- Factory pre-fabrication offers significant labor savings on site and greatly reduces installation time.
- The system leaves the structural frame exposed internally allowing for more efficient installation and service of electrical and mechanical equipment.
- The system is fully and easily relocatable.
- Vacuum packaging reduces shipment volumes.

Introducing Rubb FXI Type structures

FXI (Flexible Hall International) is a line of standard industrial buildings designed in 2011 by Rubb to meet the needs of our Energy and Mining customers, most of whom work in remote areas under difficult environmental conditions. FXI buildings, as the name suggests, are flexible in terms of their modular configuration and their ability to accommodate a wide range of wind and snow loads, simply by reducing or expanding the spacing of the frames.



Typical FXI15

The modular design ensures speedy delivery, and the documentation of the structural calculations are ready for submission to Local Authorities.

Rubb has applied 40 years of design and construction experience in the development of FXI, the result being a cost effective, rugged, and structurally proven product.

FXI is available in standard widths and heights, by any length:

FXI10: 32.8' (10m) width – 13.7' (4.2m) free height
FXI12: 39.3 (12m) width – 13.7' (4.2m) free height
FXI15: 49.2' (15m) width – 16.4' (5m) free height
FXI20: 65.6' (20m) width – 19.6' (6m) free height
FXI25: 82' (25m) width – 19.6' (6m) free height
FXI30: 30m width – 19.6' (6m) free height

Rubb FXI buildings can be fitted with any door and opening arrangement, as well as lighting, HVAC, and other ancillary systems.

All materials are packed and delivered in standard 40ft containers, ready for speedy assembly on site.

Dependability...

Rubb has the capability and experience to design, manufacture, deliver and install custom structures

With Rubb you can be sure everything is under control from concept to completion – including cost, quality and delivery. And while we generally have the right standard structure available to meet project needs, Rubb can also design custom solutions to meet special requirements. We have the in-house resources to provide a cost effective solution customized to our clients' needs.

- Design - Using proven engineering software we can tailor the project to the specific requirements of site, type of cargo and logistics needs.
- Production - Steel and membrane components are fabricated with 'first class' equipment and quality control.
- Installation - pre-engineered and pre-fabricated to make on-site installation by a Rubb crew, or your crew, go smoothly and efficiently.

Peace of mind when you choose a Rubb Structure...

Rubb structures are designed, manufactured, installed, serviced and warranted by the companies of the Rubb Group. Rubb's expertly engineered product design and the highest quality materials are backed by over forty years' experience worldwide. More importantly, Rubb has a reputation for accountability and for providing practical solutions to weather protection problems of all kinds.

Our buildings are designed, manufactured and erected to ISO 9001/2000 standards and meet international building code standards for wind, snow and seismic loads.

After-sales service includes repairs and any further adaptation, relocation or refurbishment work. So your peace of mind extends well into the future.

USA - CERTIFICATE No. US97/0897

UK - CERTIFICATE No. 95/6243

Norway - CERTIFICATE No. 144535A

www.rubb.com

RUBB

we will never stop innovating

Est. 1967

RUBB AS.
Sundvoldhovet, 3535 Krøderen,
Norway.
Tel: +47 24 048150. Fax: +47 24 048151
E-mail: post@rubb.no

Est. 1977

RUBB BUILDINGS LTD.
Dukesway, Team Valley Trading Est. Gateshead.
Tyne & Wear NE11 0QE, England.
Tel: +44 191 482 2211. Fax: +44 191 482 2516
E-mail: info@rubb.co.uk

Est. 1983

RUBB Inc.
1 Rubb Lane, Sanford Airport,
Sanford, Maine 04073 USA.
Tel: 1 207 324 2877. Fax: 1 207 324 2347
E-mail: info@rubbusa.com

Est. 2009

RUBB STANDARD.
122 East Pembroke Avenue
Hampton, Virginia 23669 USA.
Tel: 1-888-289-7822. Fax: 1-757-722-5443
www.rubbstandard.com E-mail: post@rubbstandard.com

Est. 2010

RUBB POLAND Sp. z o.o.
ul. Starowiejska 232/234
08-110 Siedlce/Poland.
Tel: +48 25 632 77 88. Fax: +48 25 632 88 99
E-mail: biuro@rubb.pl

Est. 2010

RUBB AB.
Eolsborg 533 73 Källby
Sweden
Tel: 0510-54 11 78. Mob: 070-990 34 35
E-mail: info@rubbhall.se

Est. 2010

RUBB PTE. LTD.
31 Toh Guan Road East,
#05-08 LW Technocentre, Singapore 608608
Tel: +65 64254134. Mobile: +65 97225016
E-mail: rfarrell@rubb.com

Est. 2011 Est. 2011

RUBB AUSTRALIA & NEW ZEALAND.
52 Charolais Crescent, Benowa Waters 4217
Queensland, Australia.
Mobile: +61 413 610 710
E-mail: cunger@rubb.com