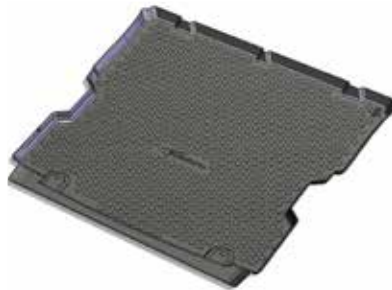


CalixKlippan



Welcome to CalixKlippan AB

**- An engineering and manufacturing group with
headquarters in Sweden and with global ambitions -**

THIS IS CALIXKLIPPAN AB ("CKAB")

CKAB is a privately owned Swedish group, which in particular provides the automotive industry with high quality products improving safety, comfort and styling. The major business is supply of components and sub-systems to the car, truck and bus OEMs supplemented with aftermarket accessories.

The OEM projects are carried through from product development via industrialization and advanced manufacturing processes to commercial supply.

The products and accessories for the aftermarket are mainly distributed under the Calix and Carbox trade-marks.

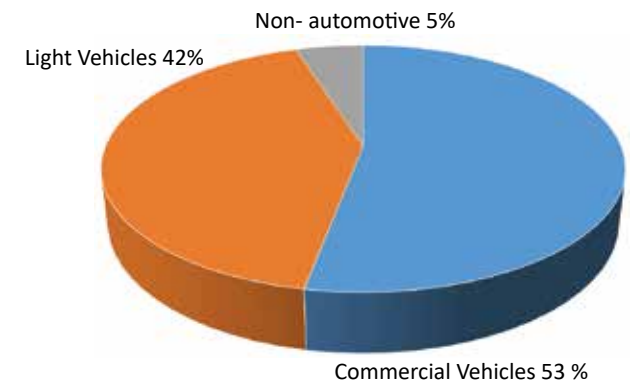


Facts about CKAB

Factories:

- Eskilstuna, Sweden
- Gothenburg, Sweden
- Klippan, Sweden
- Malung, Sweden
- Veddige, Sweden
- Broby, Sweden
- Stargard, Poland
- Munich, Germany
- Achim, Germany
- Sao Paulo, Brazil

Market split:



Quality and environmental systems:
IATF 16949 and ISO 14001

BEDS AND CARGO STORAGE SYSTEMS

Comfort and safety

Klippan Safety is a system partner for the automobile manufacturers with highly unique competence in the fields of safety and comfort.

The company develops and manufactures complete bed and cargo storage systems such as integrated occupant restraint systems for truck cabs.

For passenger cars and vans, the products consist of various cargo storage solutions, restraint systems and seat belts.

The organization is an advanced partner for OEMs and Tier ones in safety and comfort solutions for automotive applications.



Truck cab upper beds



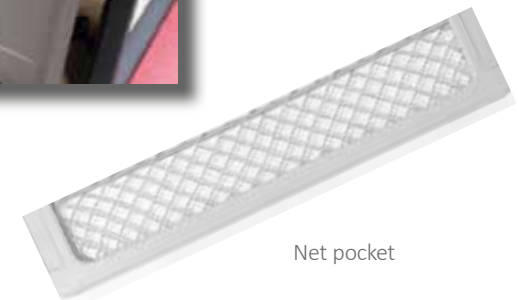
Seat belt



Truck cab interior



Truck cab storage system



Net pocket



Luggage room divider/bed extender installed in a car



Cable bag



Safety net

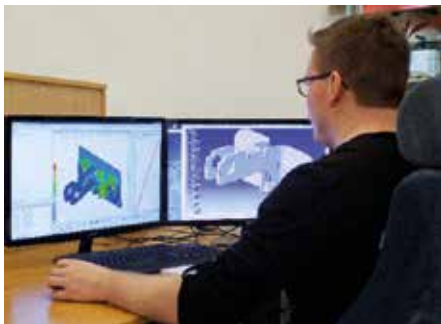
Development and pre-production

The design process creates the best possible solution optimizing cost efficiency and attractive styling and still meeting all technical demands on the system. System performance is verified by CAE analyses and functional testing, including testing in our own crash test track. This facility is also used by external customers.

The Product Development System is a well-defined and structured methodology to take products from the design phase all the way to implementation of the industrial manufacturing process.

Manufacturing

The manufacturing process is trimmed to meet all expectations from the automotive industry such as zero failure rate regarding quality and a high delivery precision. This is achieved by engaging highly skilled employees in combination with substantial investments in modern production methods.



CAE station



Crash test track



Factory interiors

METAL PROCESSING AND PLASTIC MOULDING

Products and applications

Preciform's major activities are metal sheet processing, welding, injection moulding, and assembly. Preciform is a specialist in combining these processes in order to create the most cost-effective components for its customers, especially when there is also a demand for decorative and sustainable surfaces.

Tread and Scuff plates

Decorative Tread and Scuff plates for passenger vehicles are fitted on the sill. Tread and Scuff plates typically consist of an injection moulded plastic carrier and a metal plate assembled on top of the carrier. A logotype or text can be applied on the metal plate and surface treatment ensures the correct appearance of the product.



Tread plate



Metal endpipes



Side scuff plates

Skid plates and door styling

Skid plates for passenger vehicles are fitted in the front and in the rear of the car and consist mainly of injection moulded parts and decorative stainless steel plates. Door styling components are injection moulded and assembled mostly using vibration or ultrasonic welding. A door styling part can have a grained, painted or chrome surface or be covered with a decorative stainless steel plate.



Skid plates



Lower door styling

Storage systems and cab components

Preciform is a system supplier regarding storage solutions and interior cab components. In general the projects include technical development, testing, validation, component production and system assembly. Cab components include applications such as cup holders, trays, tables, covers, speaker grills, hatches, sun-visors etc.



Truck interior

Injection moulding

Thermoplastic components are produced in machines with a clamping force from 50mt to 1300mt. All machines are equipped with robotized cells for component handling and assembly. The vibration and ultrasonic welding machines create thin shell-formed and rigid components.



Injection moulding machine



Plastic components

Sheet metal processing

Sheet metal components are made in mechanical and hydraulic presses in a range from 60mt - 500mt press force. The degree of automation depends on the complexity and serial volumes of the final products.

Deep drawing enables thin sheet casings to be produced without welding. The method allows manufacturing of products with an advantageous relation between strength and weight. Sheet metal manufacture is carried out with either progressive or single punch tools. Post-treatment processes for metal components include welding, blasting, grinding, polishing, washing and laser marking.



Metal components



Tube bending and welding

VACUUM-FORMED PLASTIC COMPONENTS

System partner

Andrénplast is a specialist in vacuum-forming of thermoplastic parts that facilitates the design of multi-functional and high quality components used in trucks, buses, cars and many other applications. Components with large areas are particularly well suited for the process.

Requirements on complex components such as low weight, high surface finish, easy to assemble, recyclable and cost-effective are achieved by consulting our engineering and manufacturing expertise with more than 25 years of experience in e.g. using multilayer and reinforced materials.

As an example we supply to bus manufacturers pillar trims, driver's doors, ceilings, walls for the driver area and instrument panel structures.

Exterior parts for automobiles include liners for all kinds of vehicles, bonnets and roofs for construction vehicles and aerodynamic elements on truck cabs.



Dash board- bus



Aerodynamic front- truck



Front wall- caravan



Housing- lawn mower



Drivers door- bus



Bonnet- construction vehicle

Vacuum-forming

First and foremost vacuum-forming provides significantly lower tooling costs compared to other methods. In addition, this process saves cost thanks to quick tool changes.

The method also gives the end product outstanding finish, high quality and strength. The products receive a high precision and an aesthetic appearance.

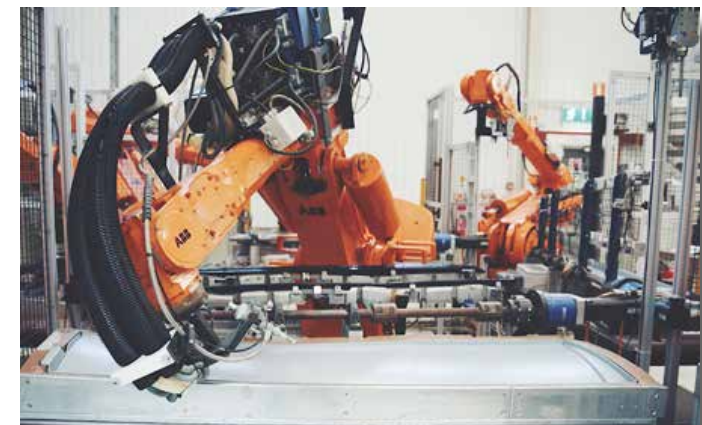
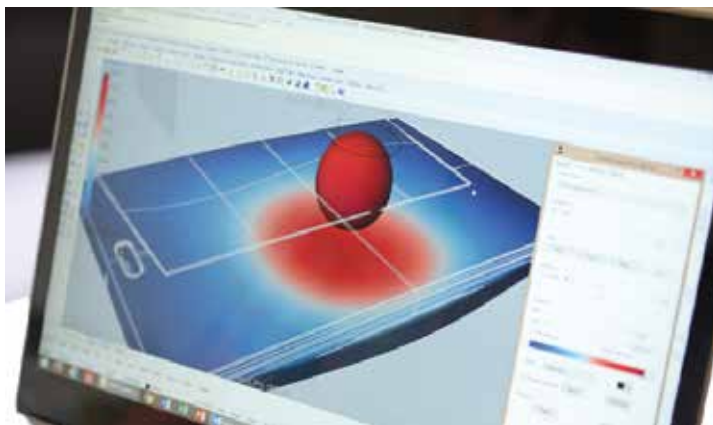
Using pre-coloured or multi-layer materials are just some of the process opportunities. All material used is 100% recycable which results in a cost-effective and environmentally sustainable process.

A leading position in vacuum-forming has been achieved by an optimum combination of material use, design and manufacturing process.

The innovative technical team takes the product ideas from our customers all the way to the best solution via design, prototyping, validation and industrial production.



Vacuum-formed interior component



Engineering and production capabilities

VACUUM-FORMING FOR LIGHTNING, FURNITURE AND INDUSTRIAL ENGINEERING

Formplast's major production methods consist of vacuum forming, high pressure precision forming, milling and assembly of thermoplastic components. The specialty is to meet demanding product requirements with innovative solutions and high production efficiency, in small to medium series.

Formplast has a broad range of customers across northern Europe and supplies several industries, all with high requirements on styling, design and function.

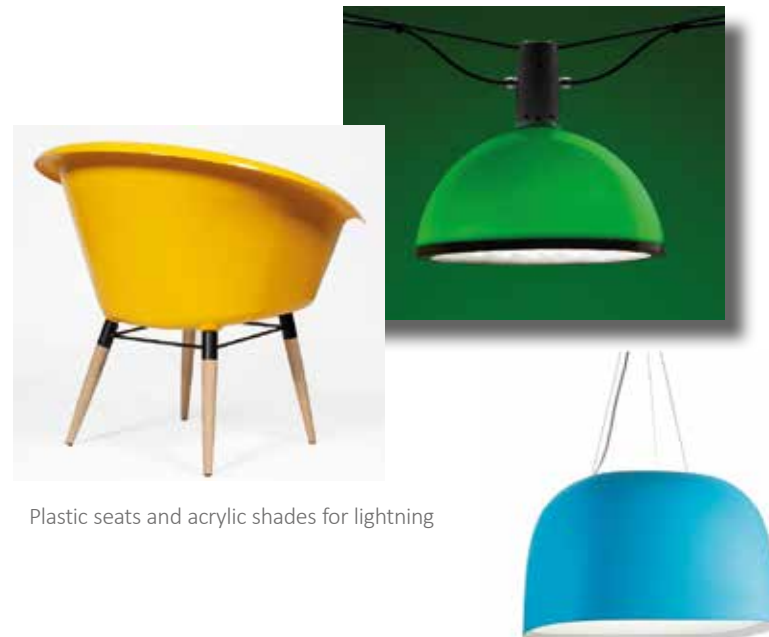
Formplast is a young member of CalixKlippan AB but is the oldest vacuum-forming operation in Sweden, founded already in 1955.

Functional Industrial Components

The industrial applications supported by Formplast technology covers several industries such as automation, material handling and water management. Common for these applications are that the requirements on precision and function are very high.



Industrial applications and load carriers for health care



Plastic seats and acrylic shades for lightning

Lightning and Furniture Solutions

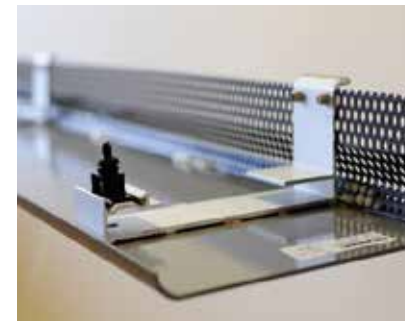
Styling of lamp shades and furniture components in plastic materials offers unlimited possibilities. The processes at Formplast have been refined to meet high design requirements such as sharp edges and even material thicknesses and also high quality requirements.

Precision forming

Stand-alone forming with high pressure equipment serves as a unique complement to the standard vacuum-forming technology. With accurate precision and outstanding surface characteristics, the design limits are challenged with pressure forming.



Interior parts and covers



Production with advanced gluing technology



Felt forming

Thermoforming of a variation of polyester felt materials. Either as a stand-alone material, or in combination with thermoformed plastics layers.



Shields for public communication



VACUUM-FORMED TRUNK LINERS AND ROOF BOXES

OEM trunk liners and other storage solutions

Autoform is the leading manufacturer of trunk liners in Europe. The product range also includes trunk and tool boxes as well as frunk liners (for the front storage area in electric vehicles).

The trunk liners have a perfect fit for each vehicle model and are designed according to specifications from the OEMs. Any market need can be met thanks to experience of all types of recyclable materials, even Bio ones, and the disposition of modern production equipment including completely automatic lines for higher volumes.

Autoform has in-house design and manufacturing of tools, which enables quick, flexible and cost-effective supply. All materials used are recyclable and will gradually be supplemented with Bio materials under development together with The Royal Institute of Technology in Stockholm ("KTH")

Autoform is certified according to IATF 16949, ISO 14001, CCC and ISCC.



Trunk box



Trunk liner



Trunk liner with dividers

Roof boxes

A roof box is the very best way to increase a vehicle's loading capacity. Calix and Carbox roof boxes, produced by Autoform, are available in various models from short city boxes to long ski boxes, to meet all possible requirements.

All roof boxes from Autoform are developed and manufactured in Sweden by recyclable ABS plastics, which are durable and temperature- and UV resistant. All boxes have central locking and Dual Opening (possible to open from both sides).

The premium product, The Nordic Loader, has a streamlined design that follows the contour of the vehicle and gives the impression being integrated with the vehicle. The double shell construction gives a rigid and solid feeling and creates, together with the patented Safety Nose, superior load restraint characteristics.

The Urban Loader is intended to be constantly fitted on the vehicle when folded and vertically expanded when loaded. It is slim and stylish in its compact version. It holds up to 500 liters and can take almost all types of child carriages on the market. Why not add an Urban Loader instead of changing to a bigger car when the family grows?

The H-family consists of a series of boxes with various measures and volumes. All Autoform boxes are equipped with safety nets for securing of luggage and easy loading.

Autoform also produces advanced components for e.g. the construction equipment and recreational vehicle industry.



Customized roof box



Roof box H22



Urban Loader

VACUUM-FORMED TRUNK LINERS AND FLOOR MATS

Carbox - a brand for car accessories

Since 1908 Carbox has provided preferably the automotive market with innovations and quality products.

Carbox develops and produces car accessories, particularly trunk liners, in large quantities for car manufacturers and also in small batches for the after market sector, mostly in Europe.

In addition to OEMs and individual car owners, typical customers are builders of special vehicles and companies with fleets of service vehicles.



Individual production in detail



Vacuum-forming production for OEMs



Quality control of each shipment



All products and moulds are internally developed

Trunk liners and floor mats for over 1,000 different models of vehicles

All Carbox products are made by materials that are 100 % recyclable.

The products are sustainable and supplied with a 10-year warranty and manufactured in accordance to the latest environmental regulations. New BIO-materials are continuously being scrutinized and gradually introduced into the product range.

Carbox has recently upgraded its mould capability and holds now state-of-the-art milling capacity in this area. Moreover Carbox has since long up-to-date vacuum-forming facilities including adherent processes as milling, gluing, assembly etc.



Precise fitting and stable



Acid-resistant and oil-resistant



Heat-resistant from -40° C to 80° C



Extra high edges up to 46cm



Car floor mats

Carbox Floor for floor protection for driver, front passenger and rear seat passengers.

Carbox Floor Highline for floor protection with edges up to five centimetres high so that dirt will remain on the mat.

A range of products for improved protection and comfort:



Carbox Classic – high edged trunk liner

Protection with edges up to 46 cm preventing liquids and moisture to dirty the interior of the trunk. Ideal for craftsmen.



Carbox Form – low edged trunk liner

Available in black, beige or grey in order to match your vehicle's design and also in long versions for folded-down back seats.



Carbox MultiMat – protects the loading sill

Handy protection of the bumper and trunk sill during loading, made of slip-proof and washable material.

ENGINE HEATING AND POWER SUPPLY

Calix is one of the world's leading companies in electric thermal management and intelligent power handling for automobiles. Since more than 50 years Calix has been a development partner with producers of cars, trucks, buses and off-road vehicles.

Thermal Management

Calix provides innovative electric heating solutions of power-trains, compartments, cabs and batteries for all types of vehicle applications.

Intelligent Power Handling

Calix offers solutions for on board charging of 12, 24 and 48 V batteries and power conversion between 12, 24 and 48 Vdc.

Calix cable system

Calix plug & play cable and connector system is the interface between the different components such as engine and compartment heaters, battery chargers, converters and inverters. This flexible power distribution system is approved for permanent installation in all types of vehicles, even for military and emergency applications.

Traditional or app-based smartphone timers can be added to manage automatic operation of the devices.



Development, design and production are co-located in the same facilities in Eskilstuna, Sweden, ensuring efficient process and quality control and short lead times.

The R&D laboratory is equipped with a climate chamber, operating between -40° C and +60° C, third-party certified by Intertek. The chamber is designed to enable R&D work on cars, light-duty trucks and cabs for heavy-duty trucks.



Connecting cable connected to the installed Calix system



App-solution



Calix Dual cables are approved for both EU and North America



System overview- truck

Calix battery chargers

The electrical systems in all vehicles consumes electrical power drawn from the battery even in vehicle off-state. A fixed on-board charger mitigates this drain and assures a proper state-of-charge of the main battery at all conditions. A permanently installed battery charger from Calix is very convenient for the user – just plug it into a wall socket – and guarantees start of the engine. The broad and full range of Calix battery chargers and cable systems meets all legal and quality requirements.

Calix DC/DC converters

DC/DC converters are frequently used to convert and stabilize the input voltage for the attached devices. The Calix converters are highly efficient with minimum heat generation.



Battery Charger, BC 1205



DC/DC converter

Calix heaters

Pre-heating of the engine and the compartment results in a reliable start of the engine and an increased comfort for the driver and passengers. In addition the engine reaches its optimum temperature much faster which significantly reduces engine wear, fuel consumption/CO2 and hazardous emissions such as nitrogen oxides (NOX) and particles.

Calix offers solutions, individually designed, for almost all gasoline and diesel vehicles on the market.

The efficiency of a Li-ion battery in e.g. a hybrid is substantially reduced in cold temperatures, which can be improved by installing Calix pre-heating systems. The range of the vehicle in fully electric mode can be dramatically increased with a proper pre-conditioning of the battery. In pure electric vehicles there is also a need to pre-heat e.g. the passenger compartment. Calix has in close cooperation with leading OEMs developed different types of pre-heating solutions and some are already in serial production.



ESS Heater

Example of different models
of engine heaters



SEAT COVERS

Tailor made solutions

The original seat cover in a vehicle experiences often a tough treatment from e.g. dirty clothes and tools and may have a high frequency of usage. The effect may be that the cover tears apart and that the upholstery is being destroyed, which leads to a costly replacement of the complete seat.

The solution is tailor made seat covers from PeBe preferably mounted already when the vehicle is brand new. In addition to the protective effect the interior look is improved and you can make your own combination of fabrics and colours. All solutions permit the side air bags to function properly.

Perfect fit

In order to stand tough conditions for many years the covers must have a perfect fit. Careful measuring and testing of every seat cover guarantee precise fitting. Each seat cover is supplied with a specific and time-saving mounting instruction.

Quality

- Non-stretchy fabrics
- Martindale value against wear up to 196.000
- Flame retardant in accordance with VCS 5031.19
- Certified Oeko-tex standard
- Artificial leather certified Reach



Without protecting seat cover - damaged original seat



Design and combinations of different fabrics



Interior with seat covers, design Stark NG

Customized Seat Covers

Requirements from customers for one and same vehicle model vary due to different fields of application of the vehicle and affected by:

- Need of temporary or permanent and extent of protection of the seat
- Complexity and frequency of installing and removing the seat cover
- Air bag configuration in the seat
- Cost-benefit analysis

PeBe has a unique experience and competence of working closely together with its customers during more than 25 years in order to find the optimal solutions.

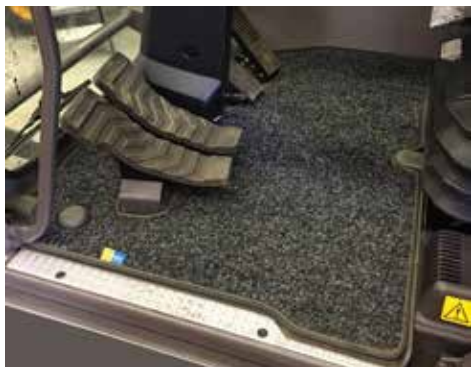
Tailor made textile floor mats

PeBe designs, produces and markets a wide range of textile floor mats for cars and commercial vehicles.

For construction machines each mat is unique for each cabin type, e.g. with regard to the position and number of pedals.



Customized seat cover with easier installation and that not affect side airbags.
Unique fitting for this car model.



Textile floor mat in an excavator



Textile luggage mat in a station wagon

Other PeBe Activities

PeBe distributes the Calix roof boxes, the Lazer Lamps products, MiM transport cages for dogs and a great variety of other car accessories on the Swedish market.

WELCOME TO CONTACT US AT THE CALIXKLIPPAN GROUP

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CalixKlippan