ROSE

A Phoenix Mecano Company

AGRITECHNOLOGY

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Mecano Components Co. Ltd
Shanghai, China

In 1969 ROSE Systemtechnik GmbH was founded in Porta Westfalica, Germany. Today ROSE is one of the world's leading and innovative providers of industrial enclosure system engineering, employing over 350 people at the German headquarter.
In association with Phoenix Mecano AG, Switzerland, we develop and manufacture high-quality industrial enclosures and system solutions for areas such as mechanical and plant engineering, automation engineering, potentially explosive atmospheres, instrumentation, control and automation technology, as well as the foodstuff and beverage industry.

Our product range comprises the following:

- Standard industrial enclosures made of aluminium, stainless steel and plastics for individual installations of electrical connection technology and electronic components.
- Operating and display enclosures based on aluminium profile systems and stainless steel materials for HMI applications with industrial PCs, PLC control systems and visualization units, including suspension systems.
- Components for explosion protection with junction boxes and control stations for worldwide use in potentially explosive atmospheres, as well as the petrochemical and chemical industry in both onshore and offshore environments.

Our business success is based on a wide range of products, a high quality standard, constant innovation and an exceptional level of service. You decide the condition of delivery – the unmachined enclosure, a partial assembly or a completely assembled and tested customized system solution.

Digital agricultural technology that encourages imitation

Many are unaware that agribusiness is an important innovation driver. The agricultural engineering is a high-tech industry, in addition to tillage machines, tractors and harvesters as well as forestry technology, attachments and sawing and fertilization technology is included.

Germany as a traditional innovation leader with a high reputation

The innovative engineers in the agricultural sector deal with technologies that have a high digital content: about 30% deal with digital topics like sensor technology, satellite-based GPS orientation and other robotic technologies.

Smart farming engineered in Germany

The technicians and engineers in agriculture are happy to talk about smart farming systems. Not only production and food safety, but also environmental protection will be supervised with different systems. Germany can look back on a long agricultural machinery tradition and has become a real innovator here.

- Agricultural engineering is one of the 10 strongest fields in German mechanical engineering
- The topographic and climatic conditions in Germany are the best test area for the later global deployment
- New technologies in agriculture are increasingly in use, e.g. GPS technologies, sensors, drones and intelligent agricultural machinery
- Digital agricultural technology conserves resources, benefiting the environment and consumers
- In the agricultural sector, Germany has a renowned educational system with a high quality
- The excellent research infrastructure in Germany offers the best conditions to be flexible and to respond to customer requests

The intelligent factory - digitization in production

In terms of digitization, the agricultural sector does not have to lag behind the general trends in German mechanical engineering. The digitization progress, in terms of production and the value chain, is as advanced as the German national average.

In terms of resource scarcity (energy, water, etc.) and climate change, an efficient use of resources in agricultural engineering is essential. Also in regard to environmental protection measures, it needs the efficiency maximization.
Thus, the optimization of resource use pays off. The digital control and sensors contribute to this and conserve resources. An investment in modern agricultural machinery should therefore pay for itself quickly.

ROSE enclosures in use

- Modern milking equipment, mostly stainless steel components, requires sturdy control panels and suspension systems to ensure effective operation.
- Hygiene technology is used in the stable and in the processing industry, where also the use of low-maintenance stainless steel enclosures and suspension systems is essential.
- Polyamide enclosures are particularly resistant to ammonia and can be used for the control of manure removal plants and robots.
- Agricultural machinery not only needs a sturdy control enclosure in the cab, but also aluminium, polyester and stainless steel enclosures in the underbody and side area to protect sensitive electronics from external influences.
- Chain-driven inclined conveyors can be easily controlled with push-button and manual control housings.
- Precision seed drills ensure that seeds are randomly placed in the seedbed via a drive. Here you can easily connect drive, control and gear with an aluminium housing.
- Slurry trailers require multiple operations: flow measurement, pump control, control of the steering axes, tire pressure monitoring system, distribution of illumination and the control of the dragging hoses require electronic controls and therefore require sturdy enclosures.
- For a variety of applications in the agricultural and stable sector, users need robust and reliable electric control boxes.
- In the field of biogas plants, reliable explosion-proof enclosures are used. Here e.g. Ex d enclosures are needed.

Special enclosures are your guarantee for your individual application

For special demands on ambient conditions or special requirements on the installation space of your application, we also like to develop a customized special enclosure together with you and your team. Benefit from an enormous know-how transfer from Germany‘s largest enclosure specialist.
The specialists from ROSE Systemtechnik advise you on your specific application in the agricultural sector. Talk to us now, we are happy to help!

We offer:

Production

Own production plants with expertise in the processing of:

- Aluminium, plastics, polyester and stainless steel

Construction

- Tool-compatible construction of the required housing elements
- Adaptation of different materials
- Development / design according to certification parameters

Electronics / input units

- Integration of custom electronics / EMS
- Complete solution with membrane keyboard and display
- Pre-assembled system solutions

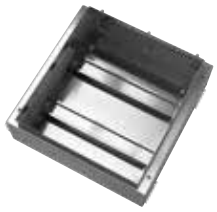
Certification / Laboratory

To carry out all IP protection type tests and environmental tests under standardized conditions ROSE Systemtechnik has a laboratory with a variety of test facilities.
These include:

- Heat and dust chamber
- corrosion test
- climate cabinets
- plunge pool

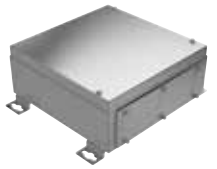
STAINLESS STEEL RMS – ROSE MODULAR SYSTEM

The basis of the new RMS - ROSE modular system is a uniform basic construction, as well as the high standardization of individual components. The cleverly conceived system is highly variable thanks to 25 base sizes with more than 40,000 possible combinations, allowing the user to configure an optimum stainless steel housing for his requirements.



- Flexible mounting options in the base and mounting holes for wall mounting
- Optional screwed or hinged lid design
- Take advantage of our extensive product services:
  - mechanical machining
  - Surface finishing
  - Assembly

Material	1.4301/304
Surface	grain 320, grinded
Ingress protection	screwed IP66 / IP69 hinged IP66
Accessories	External mounting bracket Flanges Mounting plates DIN rails



EX EQUIPMENT

In all areas where explosive atmospheres occur, special safety guidelines are effective which prescribe the use of specially tested components. Within the EU, the ATEX directive, which determines the safe operation of plants and systems in potentially explosive atmospheres, is effective for this purpose.

Other countries and continents have different safety guidelines in this area (IECEx, TR-TS, NEC etc.) - often these are derivatives of European ATEX legislation.

ROSE Ex enclosures made of aluminium, polyester and stainless steel, as well as Control Stations, provide reliable protection for electrical distribution systems in hazardous areas. The products are used for gas explosion protection in zones 1 and 2 and for dust explosion protection in zones 21 and 22:

- Ex e Increased safety
- Ex ia Intrinsic safety
- Ex db Flameproof enclosure
- Ex tb Protection through enclosures

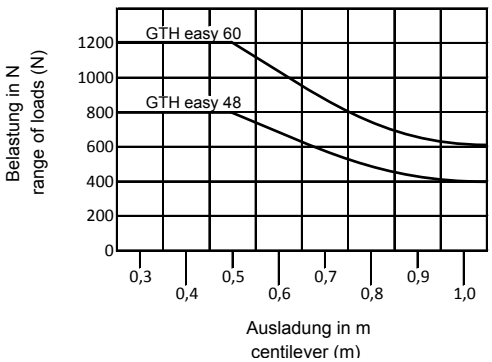
Typical areas of application are:

- Chemical and petrochemical industry
- Process industry
- Paint processing industry
- Mining
- Silos

		
	Aluminium Standard (PG 01)	**AluFormPlus** (PG 64)
Product highlights	• Robust aluminium enclosure for mechanical engineering and automation technology • Fixing options for DIN rails and mounting plates • Usable in wide temperature area	• Aluminium die-cast enclosure for electronic applications • Integrated hinge and covered lid screws • Rectangular arrangement of the bosses in the base and lid
Technical data		
Material	DIN EN 1706 EN AC-AlSi 12 (Fe)	DIN EN 1706 EN AC-AlSi 12 (Fe)
Ingress protection	IP66 to EN 60529 higher protection on request	IP66 to EN 60529 higher protection on request
Impact resistance	IK09 to DIN EN 60068-2-75	
Painting	Powder coating	Powder coating
Colour	RAL 7001, silver grey Special colour on request	Enclosure RAL 7035, light grey Profile RAL 7015, slate grey Special colour on request
Temperature range	PU-(Polyurethane) seal: -40 ºC to +90 ºC	PU-(Polyurethane) seal: -40 ºC to +90 ºC
Other versions on request	EMC SBG, SBGL, SWB Silicone lid seal (-60 ºC to +130 ºC) CR lid seal (-40ºC to +100ºC)	EMC SWB Silicone lid seal (-60 ºC to +130 ºC)
Approvals		
Dimensions (H x W x D)	50 x 45 x 30 mm to 600 x 600 x 202 mm	86 x 121 x 60 mm to 173 x 299 x 90 mm
Accessories	Mounting plate DIN rail External mounting brackets External and internal hinges	Mounting plate DIN rail Wall holder
Included in delivery	Aluminium enclosure consisting of lid, seal incl. captive +/-stainless steel screws, base with 2 or 4 earthing screws	Aluminium enclosure consisting of lid incl. seals and stainless-steel lid screws, base including earthing screws.

	Polyester Standard (PG 02)	**NoVoTronic** (PG 07)
Product highlights	• Robust plastic enclosure for automation technology and mechanical engineering • Fixing options for DIN rails and mounting plates • Universal configuration	• Aluminium profile enclosure system in 5 dimensions for data, PC and MCR technology • External screw channels guarantee internal area without splinter • Integrated guide grooves for PCB's • Variable length by profile system
Technical data		
Material	glass fibre reinforced thermoset polyester	Lid: DIN EN 1706 EN AC-AlSi 12 (Fe) Enclosure profile: DIN EN 573 EN AW-AlMgSi
Ingress protection	IP66 to EN 60529 higher protection on request	IP65 to EN 60529 higher protection on request
Impact resistance	from IK07 - IK09 to DIN EN 60068-2-75	
Disruptive strength	18 KV/mm, IEC 60243-1	
Insulation	fully insulated to VDE 0100	
Flammability	self extinguishing, UL 94 V-0	
Surface resistance	>10^{12} Ohm, IEC 60093	
Toxicity	halogen free	
Painting		Powder coating
Colour	RAL 7000, squirrel grey Special colour on request	RAL 3003, ruby red for the multi-functional profile, RAL 9005, jet black
Temperature range	CR-(Chloroprene) seal: -40 ºC to +100 ºC	-40 °C to +90 °C with transparent cover: -40 °C to +60 °C
Other versions on request	EMC Silicone lid seal (-60 ºC to +130 ºC) PU-(Polyurethan) Seal (-40 ºC to +90 ºC)	
Approvals		
Dimensions (H x W x D)	55 x 55 x 37 mm to 406 x 401 x 201 mm	106 x 49 x 120 mm to 233 x 121 x 350 mm optional andere Profillängen
Accessories	Mounting plate DIN rail External mounting brackets Wall holder	Wall holder, wall profile foot / connection element PCB profile adjustable Battery insert unit Transparent cover
Included in delivery	Plastic enclosure in glass fibre reinforced polyester consisting of lid, seal, incl. captive +/-stainless steel screws, base with 2 or 4 earthing screws	Enclosure with 2 Aluminium diecast lids and 2 multi-function profiles, not screwed

		
	Limanda (PG 27)	**Pilot 10/20/30 / Pilot 50** (PG 29)
Product highlights	• Polyamide hand held enclosure for MCR, automation engineering and data acquisition • For installations and command devices mobile and stationary applicable • Variable mounting depths	• Hand held enclosure for MCR- and automation engineering • Robust design (Polyamide or polyester) • Pilot 10/20/30: Version with handle and integrated cable entry (Pilot 10, 20 standard) • Pilot 50: Large fitting space and variable length using profile technology
Technical data		
Material	Enclosure: Polyamide border profile: NBR	Pilot 10/20: Polyamide Pilot 30: Polyester Pilot 50: Polyamide/PVC
Ingress protection	IP65 to EN 60529	IP65 to EN 60529
Flammability	UL 94 V-2	Pilot 10/20: UL 94 HB Pilot 30: self-estinguishing UL 94 V-0 Pilot 50: End covers: UL 94 HB
Surface resistance	10^{12} Ohm, IEC 60093	
Colour	RAL 7021, black grey border profile: RAL 9005, jet black	Pilot 10 and 20: RAL 1003, signal yellow Pilot 30: RAL 1021, rape yellow Pilot 50: End covers: RAL 1003, signal yellow PVC profiles: RAL 9005, jet black
Temperature range	-20°C to +60°C	Pilot 10/20/30: -40 °C to +60 °C Pilot 50: -20 °C to +70 °C
Other versions on request	EMC	
Approvals		
Dimensions (H x W x D)	270 x 248 x 64 mm to 311 x 281 x 97 mm	115/75 x 93 x 200 mm to 164/75 x 116 x 295 mm
Accessories	Holder Carrying strap Quiver Front plate Intermediate frame Inclining adapter	Cable gland with bending protection Wall holder Mounting plate
Included in delivery	Clam sheel enclosure with top and base, each with fixing domes incl. seals and border profile, 3 cover flaps for interface garages, screws and fixing materials for front panel mounting.	Pilot 10/20: enclosure with handle, including cable gland M 20 x 1,5, front plate with fastening screw and wall holder Pilot 30: two-part Polyester enclosure with self-adhesive aluminium front plate, enclosure screws and wall holder Pilot 50: Enclosure system consisting of polyamide internal enclosure with end covers, two side PVC cover profiles, Alucobond composite front plate, rear wall, 2 external end covers, with M 25 x 1,5 threaded hole for cable gland

		
	Beluga (PG 27)	**GTH 48 easy / GTH 60 easy** (PG 57)
Product highlights	• Polyamide hand held enclosure for MCR- and automation engineering • Version with or without display opening • Prepared for acceptance of keypads/silicone switch mats • Optional EMC version with internal coating and EMC-seal	• Increased load range compared to GTH 48/60 • Significantly reduced assembly effort • Reduction of edges and columns of the system and less dead space • Alternative to self-made construction solutions - More sturdy - Safer - More cost efficient
Technical data		
Material	Polyamide	Tube: Stainless steel 1.4301 System components: Stainless steel 1.4301
Ingress protection	IP65 to EN 60529	IP69 to EN 60529
Flammability	UL 94 V-2	
Surface resistance	10^{12} Ohm, IEC 60093	
Surface		Tube: grinded, grain 240
Colour	RAL 7021, black grey	
Free cable passage		GTH 48: 41 mm GTH 60: 53 mm
Temperature range	-40 °C to +60 °C	-25°C to +60°C
Load diagram		
Dimensions (H x W x D)	106/75 x 187 x 50 mm to 380 x 117 x 68 mm	
Accessories	Cable gland with bending protection Wall holder Battery holder Hand strap	
Included in delivery	Double-skinned enclosure with top and base unit, each with fixing domes, fastening and enclosure screws.	

Chemical resistance

When assessing whether or not a enclosure is resistant to the influence of chemical substances, not only the enclosure material, but also the type of seals has to be taken into consideration.
The following tables only list the most important basic materials used for ROSE enclosures, and the most common chemical substances. These tables only contain information as to how far materials are typically resistant to such substances. Both the concentration and the ambient temperature must also be taken into account.
If several chemicals are encountered at the same time, we recommend to carry out an exact investigation to be able to correctly assess the chemical resistance of a material.

Chemical resistance of enclosure materials and seals

Chemicals	Alumi-nium	ABS	Poly-carbonate	Polyester	Polysterol	Polyami-de	Chloro-pren	EPDM	NBR	Pocan	Polyure-thane	PVC	Silicone
Acetone	+	-	-	-	-	•	+	+	-	+	-	-	•
Formic acid	•	-	30 %	10 %	•	-	+	+	-	10 %	/	< 50 %	•
Ammonia	+	-	-	-	+	20 %	+	+	+	10 %	/	•	+
Petrol	+	-	•	+	•	+	+	•	+	+	+	+	+
Benzene	+	-	-	+	-	-	-	-	-	+	+	-	-
Brake fluid	/	/	-	+	/	60°	•	-	/	+	/	/	+
Butane	+	/	+	/	-	+	+	/	+	+	/	50 %	-
Butanol	/	/	/	+	/	+	+	/	-	+	/	•	-
Calcium chloride	+	/	+	+	+	+	/	/	/	10 %	/	+	/
Chloral benzene	+	-	-	+	-	•	-	-	-	-	-	-	-
Diesel oil	/	+	•	+	•	/	•	•	/	+	+	•	•
Acetic acid	+	10 % •	10 %	40 %	+ max. 50 %	-	-	/	-	10 %	/	25 %	-
Formaldehyde	+	+	/	30 %	+ max. 40 %	+	-	/	+	/	/	40 %	+
Freon 113	/	/	+	+	/	/	+	/	+	+	/	/	/
Fruit juice	/	/	+	+	/	+	+	+	/	+	+	+	+
Glycerine	+	+	•	+	+	+	+	+	+	+	+	+	+
Fuel oil	+	•	•	+	•	+	•	•	+	+	+	•	•
Hydraulic oil	/	/	+	+	•	+	+	/	/	+	/	/	•
Caustic potash solution	/	/	-	-	+ max. 50 %	-	+	/	/	10 %	/	+	/
Potassium chloride	•	/	+	+	+	+	+	+	+	10 %	+	+	+
Potassium hydroxide	-	+	/	-	+	/	+	+	+	-	-	/	•
Linseed oil	+	/	+	+	+	+	+	+	+	+	+	+	•
Methane	+	/	-	-	+	•	+	/	•	+	/	/	+
Methylene chloride	+	/	-	-	-	-	-	/	-	-	-	-	-
Lactic acid	+	+	10 %	+	+ max. 80 %	10 %	+	+	+	/	/	10 %	/
Mineral oils	/	+	+	+	+	+	•	•	+	+	+	+	+
Motor oils	/	/	+	+	+	+	•	•	+	+	+	/	+
Sodium carbonate	•	/	+	+	+	+	/	/	/	10 %	/	/	/
Sodium chloride	•	/	+	+	+	10 %	+	+	+	10 %	+	+	+
Sodium hydroxide	+	+	/	-	/	/	+	+	•	-	-	•	•
Soda lye	/	-	-	40 %	+ max. 50 %	10 %	50 %	/	-	/	/	60 %	-
Nitric acid	+	30 %	10 %	10 %	+ max. 25 %	-	•	+	•	10 %	-	30 %	-
Hydrochloric acid	/	10 % •	20 %	+	+ max. 10 %	-	+	+	< 65 % •	10 %	-	30 %	/
Lubricating oil	+	/	+	+	/	+	•	•	+	+	+	+	+
Carbon bisulphide	+	/	-	-	-	•	-	/	-	+	/	•	-
Sulphuric acid	•	30 %	50 %	70 %	+ max. 50 %	-	50 %	/	25 %	10 %	/	80 %	25 %
Suds	/	/	•	+	/	+	+	/	+	10 %	•	•	+
Cleansing agent	/	/	+	/	/	/	+	•	/	+	•	/	+
Terpentine oil	/	/	/	+	-	+	-	/	+	+	/	+	-
Carbon tetrachloride	+	-	/	+	-	•	-	-	-	+	-	•	-
Toluene	+	-	-	+	-	+	-	-	-	•	-	-	-
Trichlorethylene	+	-	/	-	-	-	-	-	-	•	-	-	-
Water (dest. water, river, tap or seawater)	/	+	+	+	+	+	+	+	80 C°	+	+	40 C°	+
Tartaric acid	/	/	10 %	+	+	+	+	+	+	/	+	10 %	+
Xylene	+	-	-	+	-	+	-	-	-	•	-	-	-
Zinc sulfate	•	/	+	+	+	/	+	+	+	/	/	40 %	+
Citric acid	+	10 %	10 %	+	+	10 %	+	+	+	10 %	/	10 %	+

Explanation of symbols

+ resistant against all concentrations
% resistant against maximum % concentration
C° resistant to maximum C°
• limited resistance
- not resistant
/ no information

Unless otherwise quoted, the investigation was conducted at ambient temperature. If several substances are encountered, the resistance factors could change. For this reason, we do not assume any liability for the above information.

Machining potentials

We can perform the most diverse range of machining operations for our metal and plastic enclosures, including, for example:

Milling:
We mill industrial, operating and display enclosures individually to conform to our customers‘ specifications. Our modern CNC machines permit ultra-precise filigree machining. The machine scans the enclosure and permits extremely fine milling of the surface, for preparatory accommodation of a membrane keypad with no projection, for example.

Drilling, thread-cutting and back countersinking:
We have a broad range of machining options, in order to adapt our enclosures precisely to our customers‘ requirements: from standard thread-cutting, up to and including more complex back countersinking using special tools.

Engraving:
Another important design option for our enclosures and operating and control equipment is individual engraving to the customer‘s requirements. Engraving can be performed simultaneously with machining. We can engrave images or texts in various typefaces, shapes and colours.

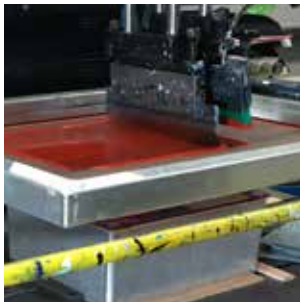
Laser machining:
We use the latest technologies – including laser machining of our enclosures, for example – to assure best possible service for our customers.

Surface finishing technology

Our customers‘ satisfaction and excellent service are our top priority at ROSE Systemtechnik. We can, on request, supply customised enclosures which harmonise with your company‘s Corporate Design. This will enable you to position your industrial enclosure conspicuously for PR effect. Our range of services includes:

- Painting, coating or wet painting
- Engraving
- Printing with screen or pad printing
- Special coatings






Main installation

ROSE Systemtechnik performs the equipping of all industrial enclosures and control cabinets as a standard procedure: this includes, on the one hand, installation of the lid, the cable connectorisation and the earthing (grounding) screws. Our services also include assembly and fitting of rating plates to our Ex and Ex d enclosures.

We also provide, in addition to our standard range, customised assembly and equipping of our polyester, stainless-steel and aluminium enclosures.

- All types of cable glands
- Fitting of/equipping with terminals
- Assembly of mounting plates
- Fitting of membrane keypads and final electrical testing

In order to provide our customers with optimum service down to the last detail, we also perform all wiring operations for terminal enclosures, electronics enclosures, and also for display and operating enclosures. Our range of services also includes the assembly of control cabinets, equipping of boards/cards, followed by functional testing.

All-in or partial wiring:
We can, on request, also perform for our customers, after pre-wiring, the connection of all cables to the mounting rails, operating and display elements.

Control-cabinet installation:
If required, we can also assemble our standard electronics or stainless-steel enclosures as control cabinets, wiring them correspondingly.

Equipping of boards/cards:
Equipping of boards/cards at ROSE Systemtechnik is conducted in accordance with customers‘ specifications and includes, for example, LEDs, plug connectors and soldering work.

Testing:
We can perform not only assembly/installation of membrane keypads, but also subsequent testing of these devices for complete functionality, including, in particular, display and operating enclosures.

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