TRANSPORT THE FUTURE

WWW.ROFA-GROUP.COM

ROFA
INDUSTRIAL AUTOMATION GROUP

ROFA
INDUSTRIAL AUTOMATION GROUP

TRANSPORT THE FUTURE

WWW.ROFA-GROUP.COM

THE GLOBAL MARKET – A CHALLENGE

The markets have changed profoundly over the past few years. The ongoing trend towards globalization has created intense competition and high pressure for innovations. This trend forces companies into a consequent international focus and into extreme efforts as for economic efficiency and productivity.

Even shorter life cycles and further individualization of the products require fast and flexible design and the realization of suitable production plants.

FIT FOR THE FUTURE

ROFA, which has been a medium-sized specialist for conveyor solutions for decades, has positioned itself well for these demands. We offer our customers from all areas of industry customized solutions from a single source: automated conveyor systems for flow of material and production, from the design via construction and simulation to the realization and turnkey handover.

International subsidiaries and cooperation partners secure worldwide presence and customer proximity.

OUR STRUCTURE IS FOCUSED ON THE CUSTOMER

A modern company concept with flat hierarchies, short decision making processes and customer orientated project teams enables us to fully serve our customers as a sound and financially strong supplier in a competitive environment.

We profit from the know-how of longstanding, experienced employees and the enthusiasm of young, highly qualified technicians and engineers. They develop product innovations tailored to suit their purpose, which is why ROFA is one of the leading producers of conveying technology.

Since the ability to response fast is one of our most important performance characteristics, order processing and short project lead times are our top priority. This combination provides us, together with our customers, with decisive advantages compared to the competition.

At ROFA you will find committed contact persons, who possess – apart from their consulting and technological competence – a distinctive quality awareness. Our engineers design the ideal solution for any material flow problem: They improve the existing, they invent the new, always bearing in mind efficiency and economic efficiency.

ROFA designs conveyor plants tailored to suit the customer's individual requirements. Flexibility to us means, that options always remain open when integrating systems, i.e. flexibility for the options as well as for the point of time. The capacities of the plants can be adjusted and they grow with the customer's needs at any time.

ROFA AT A GLANCE

IMPROVE WHEREVER POSSIBLE, INVENT WHENEVER NECESSARY

RANGE OF SERVICES

→ **Overhead conveyors**
Electrified monorail systems KB 240 (heavy duty)
Electrified monorail systems KB 180 (C1-profile)
Electrified monorail systems KB 135 (light weight)
Power & free systems (P&F)
Overhead wire rope conveyors

→ **Floor conveyors**
Inverted monorail systems (IMS)
Powered pallet conveyors (PPC)
Inverted power & free systems
Slat conveyors (steel | plastic | rubber)
Men rider belts | associate belt conveyors (plastic | rubber)

→ **Skid | container conveyor technology**
Roller conveyors
Belt conveyors
Chain conveyors (standard up to 2 tons)
Chain conveyors (> 2 tons & special designs)

→ **AGV systems**
AGV (inductive, pin guided)
AGV (inductive, inductive guided)

→ **Pusher systems**
Skillet systems
Friction conveyors

→ **Special solutions**
Heavy duty transportation > 5 tons
Scissors lifting tables < 4 tons
Scrap conveyors
Wheel conveyors
Vehicle transfer systems

→ **Control units**
Vehicle control units (EMS | AGV | skillet)

→ **Marriage stations**
Fully | semi automatic marriage stations

→ **End of line technology**
Test bay technology (brakes | vabration | engine test)

→ **Application technology**
Robot stations for various automated integrations
Special automatic storage and retrieval systems for loads up to 200 kg

→ **Warehouse technology**
Body in white / painted body storage (PBS)
High bay warehouses
Automatic small parts warehouses
Picking systems
Conveying and storage systems for freezer environments
Sorting systems
Radio data systems
Logistic centres

FLEXIBLE AT THE CEILING

These systems – designed according to VDI 3643 – convince due to their simple set up, the wide range of application possibilities and the full compatibility with the systems of other producers, which are built according to the same so-called C1 standard.

The modular design enables short assembly times as well as various load configurations. The plants work efficiently and rationally, at a low noise level and offer exact positioning accuracy and the highest degree of functionality. They can be individually adjusted to any conveying task.

EMS KB 135
load: up to 300 kg
speed: up to 120 m/min

EMS KB 180
load: 1,500 kg
speed: up to 150 m/min

EMS KB 240
load: 10,000 kg
speed: up to 60 m/min

ELECTRIFIED MONORAIL SYSTEMS (EMS)

SYSTEMS THINKING – AN ADVANTAGE FOR THE CUSTOMER

Compatibility is the keyword in connection with forward-looking technology.
For us this does not only mean that a high number of components, also a several producers, can be combined with each other, but also that it is reasonable with the economical point of view in mind.

The whole things should be more than the sum of its parts, namely a customized system solution for the transportation of valuable goods.

POWER & FREE SYSTEMS

FOR INDIVIDUAL REQUIREMENTS

ROFA's Power & Free systems are an ideal solution for transportation tasks which require flexibility when handling large quantities and using less complex load bearing vehicles. Here the loads can vary between a few kilograms up to several hundred kilograms.

The systems thinking of Power & Free is based on a dual-track system where a power chain operates in the above track. The individual vehicles, driven by the chain, run in the track below, the so-called free track. These vehicles can be target and time controlled according to individual requirements.

On request and according to the load range, our product range offers various chain programs: from a simple detachable chain to 4 inch and 6 inch chains.

OVERHEAD WIRE ROPE CONVEYORS

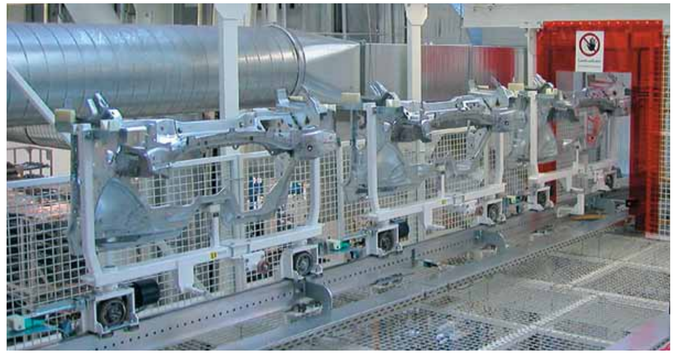
FLEXIBLE TRANSPORTATION OF HEAVY LOADS

Overhead wire rope conveyors represent, just like a P&F system, a combination of electrified monorail system and cablecar technology. The great advantage of these systems is that the vehicles can be connected and disconnected flexibly. Hence they can ideally be used in continuous conveying processes.

CHARACTERISTICS

- → Vehicles without self-drive
- → Flexible connection and disconnection
- → Continuously variable speeds
- → Centered drive unit
- → Cycle operation via transfer units possible (loading / unloading)
- → Cargo up to 3 tons, heavier loads on request
- → Upwards and downward slopes up to 30° possible

INVERTED MONORAIL SYSTEMS (IMS)



BIG SOLUTIONS FOR SMALL ROOMS

Basically, the inverted monorail system is an electrified monorail system (on the basis of the EMS KB180) erected on the floor.
This transportation system is designed as a single-track system and is used when the space is restricted. It is in particular suited for the transportation of compact or small components.

IMS (SINGLE-TRACK)
load: up to 1,000 kg
speed: up to 100 m/min

POWERED PALLET CONVEYORS (PPC)

PPC ON DOUBLE TRACK

The powered pallet conveyor disposes of a track-guided vehicle and is an extended version of the inverted monorail system on a double track. In order to be able to change over from the first track, e.g. in a longitudinal direction, to a second track on the same level, e.g. into a transversal direction, the vehicle's wheels are aligned in such way that they can be swiveled around a vertical axle.

The switch at the track crossing has four joint swivel-mounted part tracks corresponding to the swiveling axle of the vehicle. When the part tracks swivel, the wheels of this vehicle only are turned at the same time.

PPC (DOUBLE-TRACK)
load: up to 2,000 kg
speed: up to 100 m/min

express rotary switch
US patent 8,051,777 B2 of November 08, 2011

SLAT CONVEYORS | MANRIDER BELTS

(STEEL | PLASTIC | RUBBER)

FOR HEAVY LOADS

The various systems can be used for the transportation of medium to heavy loads as well as for the transportation of workmen. They can be designed as a standalone plant or as an integrated part of an entire plant in flow or cycle operation.

CHARACTERISTICS

- → Load: according to specification
- → Max. speed: 30 m/min
- → Length: up to 200 m, width: up to 6 m
- → Design: single- | double-tracked
- → Continuous transportation
- → Low noise level

SKID / CONTAINER CONVEYOR TECHNOLOGY

CHARACTERISTICS

- → Short installation times
- → Simple extension options
- → Heavy loads
- → Modular design
- → Large range of applications

SKID / CONTAINER CONVEYOR TECHNOLOGY

THE COMBINATION MAKES THE DIFFERENCE

Skid conveying systems are a combination of transport system as conveying element and carrier (skid or container) for the reception of the products. Here different variations are possible. They exist of modular system components and work flexibly, noise-less, fast and space-saving. If the option to quickly extend or alter the systems must remain open, these systems are the optimum solution.

CHAIN CONVEYORS

Chain conveyors can be employed for the longitudinal and traversal transportation of various goods (e.g. wire mesh boxes, pallets, skids or various frames).

Transportation load standard	up to 2,000 kg
Transportation load customized solution	up to 15,000 kg
Temperature range standard	up to 50° C
Temperature range customized solution	up to 240° C
Speed	up to max. 60 m/min

ROLLER CONVEYORS

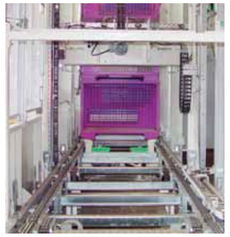
Roller conveyors are used for the longitudinal transportation of wire mesh boxes, pallets or skids, for example. Due to the modular design and the delivery as finished components, even very complex plants can be realized within a very short period of time.

Transportation load standard	up to 2,000 kg
Transportation load customized solution	up to 15,000 kg
Temperature range standard	up to 50° C
Temperature range customized solution	up to 240° C
Speed	up to max. 60 m/min
Length	according to specification

BELT CONVEYORS

Applications of belt conveyors are diverse and varied. They are characterized by noise-less operation and dirt robust surface.

Transportation load	up to 3,000 kg
Temperature range	up to 50° C
Speed	up to 24 m/min | 60 m/min
Length	according to specification



AUTOMATED GUIDED VEHICLE SYSTEMS (AGV)

AGV SYSTEMS ON THE ADVANCE

More and more often ROFA realizes the automatic floor transportation in the inner material flow and in the production connection with automated guided vehicle systems.
The characteristics of these systems are the low purchase and operation costs while using state-of-the-art technology.

AGVi

Load:	up to 3,000 kg
Speed:	up to 60 m/min
Power transmission:	induction

AGVi HEAVY LOAD

Load:	up to 20,000 kg
Speed:	up to 25 m/min
Power transmission:	induction

AGVii

Load:	up to 8,000 kg
Speed:	up to 60 m/min
Tracking and power transmission:	induction

CHARACTERISTICS

- → Power design optional via contact line, induction or battery
- → Steering optional via mechanical tracking, non-contact induction, laser, wireless or optical systems
- → Wide range of loads
- → Individual programming
- → Extensive combination possibilities with other conveying systems
- → Flexible routing

CHARACTERISTICS

- → Wide range of applications
- → Workmen can catch a ride to the assembly
- → Exchangeable product receptors
- → Infinitely adjustable speed

SKILLET SYSTEMS

PASSENGERS WANTED

The principle of skillet systems is based on interconnected work platforms, which move in the operation flow. Automated units, which work in cycle operation, might be positioned within one system. These plants are erected flush with the level of the hall floor, where the power is supplied via bus bars or via induction. The integration of lifting tables on platforms for the adjustment of ergonomic work levels is possible at any time. Our skillet systems offer a wide range of applications. Please contact our design engineers.

HEAVY DUTY ROUND TRACK

RAIL GUIDED TRANSPORT SYSTEM OF THE NEW GENERATION

The special feature here is that the wheels rest with two points on the so called „Gothic arch“ of a round track. The contact angle is approximately 30°. Thereby, compared to conventional crane gantries or rail tracks, the power transmission can be increased significantly, resulting in the ability to transport heavier cargos. Furthermore the combination of round track and running wheels also results reduced friction which minimizes the required thrust and reduces the wear of the drive components.

CHARACTERISTICS

- → Up to 70 tons load capacity
- → Conversion of the assembly process from insular to linear flow
- → Continuous assembly with automated continuous or cyclic operation
- → The time interval can be variably adjusted to production processes
- → Highly flexible in the event of expansions (e.g. increase in the production capacity)
- → Possibility to transport workers on the platforms
- → Coupling with other (higher) systems is possible (e.g. Andon, Visualization, MFR, etc.)
- → Maximum flexibility in the design of the layout
- → Rail can be designed traversable or flush to the floor (e.g. trafficable by fork-lift trucks)
- → Supplementary functions are possible at any time by additional power transmission (e.g. supply of lifting units, movable test units)

CHARACTERISTICS

- → No conveyor elements such as chains or belts
- → Speed: up to 60 m/min
- → Acceleration: up to 1 m/s²
- → Light design
- → Modular design
- → Flexible routing
- → High halt accuracy
- → Use of lifting stations to compensate height differences
- → Various operation types possible (continuous or cycle operation)
- → No busbar or running-along vehicle / carrier controls required
- → Simple electrical / mechanical design of the plants, no complex technology required
- → Cost effective operation and maintenance of the plants (easy to maintain)

FRICTION CONVEYORS

THE NEW GENERATION

Conveying technology with frictional wheel drive is the new generation of conveying technology. The driving force is transmitted directly onto a slide (skid, pallet, carrier) via a drive unit (frictional wheel). This technology offers advantages compared to conventional floor conveying technology, e.g. higher transportation speed, improved work environment, less noise, lower purchase and operation costs.

This conveyor system can be used as floor conveyor (replacing roller conveyor, slat conveyor, IMS and inverted P&F systems) as well as overhead conveyor (replacing EMS and P&F systems).

WAREHOUSE TECHNOLOGY

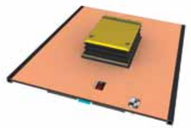
OPTIMUM USE OF SPACE ON SEVERAL LEVELS

Efficient warehouse technology, such as automated logistics systems, high bay warehouses, sorting and picking systems, consists of various components which harmonize with each other. To meet the requirements we plan and develop customized solutions based on innovative ideas and state-of-the-art technology. Our logistics experts ensure that your projects become a technical and economic success.

CONTROL UNITS

AGV CONTROL UNITS

LIFTING TABLE CONTROL UNITS

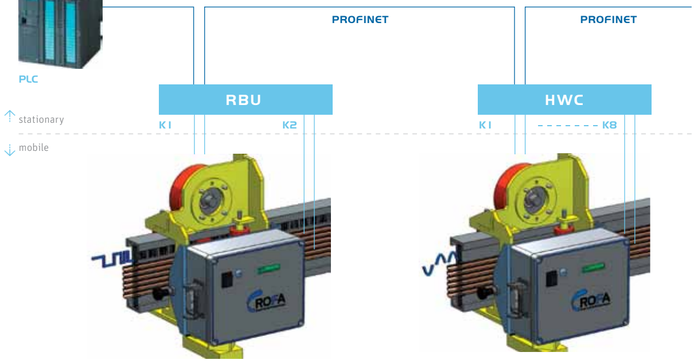


EMS CONTROL UNITS

HEAVY DUTY EMS CONTROL UNITS

ROFA CONTROLS

PLC

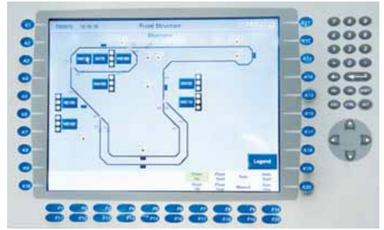


BUS COMMUNICATION

- Distance measurement without additional sensors
- Plant management is configured (minimum number of rail blocks)
- Very high positioning accuracy by absolute distance monitoring
- Profinet interface for communication with plant control
- Constant communication of the plant control with the vehicle control via Profinet

HALF-WAVE COMMUNICATION

- Simple operation commands by half-way signals
- Additional connection to electronic magnetic switch EMD4 is possible
- Profinet interface for communication with plant control
- Back signals by half-wave



ROFA CONROLS

For the first time it was possible to create a control platform meeting all requirements of a control system in the simplest form. The functionality extends from a control unit with simple half-wave transmission to communication by contact line bus. To meet requirements beyond the possibilities of our drive controllers, the standard offers an interface to frequency controllers of other producers. Therefore the range of applications of our control units is almost limitless.

To provide our customers with an optimum level of services, the new business unit „ROFA Controls“ was founded, covering all tasks from development to after sales. The control units are used for ROFA group projects and also offered on the free market.

For further information please visit our website:
www.rofa-controls.de

MARRIAGE STATIONS

CONNECTED FOR THE FUTURE

In the automotive industry the connection of drive unit and chassis is called „marriage“. Here, two conveyors (one overhead conveyor and one floor based conveyor) are ideally aligned to each other.

RANGE OF SERVICES

- Engine– and gear pallets, chassis frame, including the complete development
- Joining stations
- Complete tooling section for front- and rear axle, engine and cardan shaft (automatic / manual)
- Screwing station with torque – and angle control (manual, semi-automatic or with NC-technology)

CHARACTERISTICS

- Fully automatic / semi automatic
- Continuous / cycle operation

END OF LINE TECHNOLOGY

ALL IS WELL THAT ENDS WELL

Our test bench technology provides the ability to perform functional tests and rational control device parametrizations within the shortest time.

ROLLER TYPE DYNAMOMETERS

Characteristics

- Testing speeds up to 260 km/h
- Axle distance adjustment up to 2,000 mm
- Axle loads up to 4,000 kg
- Dynamic and static ABS test
- Sensor change checks
- Electronically simulated vehicle weights
- 4-engine technology
- Power recuperation devices

ABS-ROLLER TYPE DYNAMOMETERS

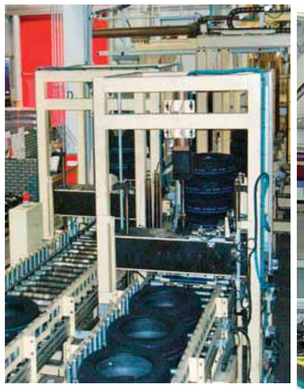
Characteristics

- Testing speeds up to 15 km/h
- Axle loads up to 3,000 kg
- Brake force per axle up to 6,000 N
- 4 pairs of driven rollers with slip rollers
- 4 brake force measuring devices
- Calibration with gauged equipment
- Electrically driven lifting beam

VIBRATION ROLLER- | DRIVING DYNAMICS TEST BENCHES

Characteristics

- Testing speed: 50 km/h (without paved surface 200 km/h)
- Single roller test bench with fixing roller
- Driving tests on different surfaces
- Individual surfaces of the rollers with an angular offset of the different rollers
- 4-engine technology; drive either by vehicle or test bench



SPECIAL SOLUTIONS

INDIVIDUAL SOLUTIONS ARE NOT TOO DIFFICULT FOR US

We offer the right solution for your demands. Special circumstances or the integration of a specific function is already considered during the design phase and put into innovative technology. Ever since the existence of our company, we have focused on optimal conveying solutions in the interests of our customers, whether it is a system suspended from the ceiling or erected on the floor.

APPLICATION TECHNOLOGY

EFFECTIVE SUPPORT

Choosing the right application technology is also important for the quality and efficiency of the production process. ROFA offers advice across all industries and provides from a single source.

CHARACTERISTICS

- Self-supporting subframe
- Bellow subframe guarantees fast and simple access to the mechanics
- Removal of motors without disassembly of winding shaft
- Low in maintenance due to bearing bushes with solid lubricant

protection of utility patents: 20 2012 003 063.9

ON A HIGHER LEVEL

The scissors lifting table TYPE MT is designed for mobile use (e.g. in skillet systems). However, it can be used stationary at any time. A customized lifting table control, which covers all safety aspects with the required performance level, is available besides the scissors lifting table itself to comply with an overall concept.

SCISSORS LIFTING TABLE TYPE MT

TECHNICAL DATA

Load capacity
- MT1000: 1,000 kg
- MT2500: 2,500 kg
- MT6000: 6,000 kg

Platform sizes and strokes
are adapted to the customer's requirements, whereas a minimum width of the platform (for loads below 1,000 kg) of 900 mm and a maximum lifting height of about half the platform length can be assumed.

Lifting speeds
- standard 50 mm/s and 100 mm/s

Models
- MT2500-1: winding shaft at scissor's movable bearing for a load up to 1,250 kg
- MT2500-2: winding shaft at scissor's fixed bearing for a load up to 2,500 kg





CERTIFIED QUALITY

Highest customer satisfaction has always been a top priority for ROFA. This is why all company sections work according to the highest quality demands. The dictum of a zero-fault-tolerance applies to standard solutions as well as to customer specific special solutions.
Our certified quality management monitors this.

However, product quality alone is not sufficient to secure customer satisfaction in the long run. The quality of consultation and service are just as important. ROFA continues the close contact with the client during the project phase even after commissioning of the plant – by means of intensive training and above all by offering first class service.

Thus we ensure the performance capability and the availability of the conveyor systems and hence the productivity of our customers.

ALL-CERT ISO 9001

ALL-CERT ISO 14001

DIN EN ISO 9001
DIN EN ISO 14001

SUCCESS WITH ROFA

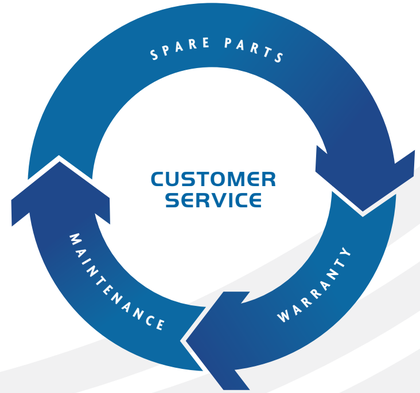
Our flexibility in thinking and acting enables us to realize customer specific special solutions at short notice.
Reputable clients rely on ROFA to erect a new production plant – parallel to the running production – or to exchange an entire conveying system in the shortest time possible.

Due to our thorough design and organization you can be assured that the start of your production will take place on the due date.
We can make a strong contribution to your success with our sense of responsibility and our performance capability.

THE MAIN PARTS OF OUR CUSTOMER SERVICE AREA ARE

- Supply of spare parts
- Modernization
- Maintenance service
- Plant audits
- Plant operation
- Warranty handling

The life cycle of a conveying plant can be maintained on a high performance level, if economically wise modernization and maintenance measures are spotted and scheduled in time



ROFA – ALWAYS CLOSE

HEADQUARTER OF THE ROFA GROUP

ROFA INDUSTRIAL AUTOMATION AG
Kolbermoor | Germany

WWW.ROFA-GROUP.COM

SUBSIDIARY COMPANIES

ROFA-LEHMER Förderanlagen GmbH
Bodenwöhr | Germany

ROFA-LEHMER Förderanlagen GmbH
Filderstadt | Germany

MOLL Automatisierung GmbH
Leiblfing | Germany

BSS Bohnenberg GmbH
Solingen | Germany

ROFA Nowa Tervező Kft.
Nyiregyhaza | Hungary

ROFA Művek Kft.
Timár | Hungary

ROFA Polska Sp. z o.o.
Rzeszów | Poland

ROFA Controls Romania S.R.L.
Timişoara | Romania

ROFA Sistemas de Movimentação e Montagem S.A.
São Paulo | Brazil

ROFA North America
Greer, SC | USA

ROFA Beijing Automation & Conveyance Technology Co. Ltd.
Beijing | China and Chengde | China

SUCCESSFUL COMPANIES TRUST IN ROFA

TRANSPORT THE FUTURE

ROFA INDUSTRIAL AUTOMATION AG
Geigelsteinstrasse 3 – 5
83059 Kolbermoor | Germany
Phone +49 8031 2960-0
Fax +49 8031 2960-60
rofa@rofa-ag.de
www.rofa-group.com