



GET IN TOUCH

World Leaders in
Human-Machine Communication



RAFI – GET INTOUCH

As the Managing Directors of RAFI, a medium-sized enterprise that combines a down-to-earth philosophy with international innovations, we would like to take this opportunity to extend our warmest greetings. Our products provide you with special moments at the push of a button. And you'll be astonished to discover just how often you come into contact with our products on a daily basis. Find out for yourself. Simply browse through this brochure to discover a world full of RAFI moments.



Albert Wasmeier,
Managing Director



Gerhard Schenk,
Managing Director



Controls from a slightly different perspective

Whenever someone presses a key, flicks a switch or operates a joystick, he or she is triggering a reaction, causing an effect. In most cases, people don't give these fleeting moments a second thought. At RAFI, we do. In fact, it's fair to say that we think about almost nothing else. That's because we develop, design, manufacture and distribute the components and control systems involved in virtually every moment of human-machine communication. Either as standard solutions or to the individual specifications of our customers.

A broad field for innovations

RAFI – one of the world's leading providers of powerful solutions for human-machine communication. From the company's beginnings to the present day, a great deal has happened – both on the machine side and with regard to controls. The development ranges from simple keys all the way to highly innovative touch screens. And it is these in particular that are currently finding their way into a wide variety of applications and markets.

Every press of a finger changes the world

Here, we tell the stories of these products and systems – and explain what goes into them: expertise, know-how and a high vertical range of manufacture. Above all, each story

reveals where you'll encounter solutions by RAFI in everyday life. They reveal moments on which sometimes almost nothing and other times absolutely everything depends. Either way, the world is always a little different afterward. And in many cases, a little better.

The fleeting nature of a moment

It is a completely new perspective for small objects that we generally don't notice because our contact with them is so fleeting. However, it is this barely perceptible resistance, the quiet click or even the flashing that makes every actuation a unique experience. Take a closer look the next time you operate a device – it could be a RAFI moment.

FRITZ!BOX – A JOURNEY AROUND THE WORLD



Fifteen SMT lines – are in operation at RAFI, making it one of the ten largest contract electronics manufacturers in Germany. In many cases, we are an audited supplier. Flexible, quick and absolutely reliable, we transform our customers' ideas into perfectly populated, functionally tested circuit boards. Some are the size of an A4 page, while others are small enough to fit into a hearing aid. This is made possible by numerous areas of expertise – from procurement to logistics and from layout consulting to after-sales service. Just as you are entitled to expect from a global player.

Powerful points of contact in a new world

It's a snowy winter's evening. The roofs of the town are covered with fine powdery snow. A dark silence descends over the town. On closer inspection, the lights from screens are discernible through a few windows. In front of them are people making connections. A virtual journey around the world. Their luggage consists of pure emotions. And the ticket? A box that can go the distance – the FRITZ!Box.

This box puts a smile on the face of a German business man in Singapore. A mother whose child is traveling across Australia is moved to tears. It opens up new worlds that are accessible to everyone in a matter of seconds. And it can take people on an emotional roller coaster – simply by bringing the entire world to your living room.

Quality delivered to your front door

To enable people all over the world to enjoy these experiences, RAFI manufactures, tests and packages the complete FRITZ!Box for its customers and delivers it directly to the retailer. With the exception of a few components, the entire production process takes place in Berg in Upper Swabia, Germany.

This optimizes the processes, increases quality and shortens distribution channels. In this way, we have established partnerships with customers that have endured for over 20 years.

Today, almost one in every two German households owns a FRITZ!Box. And every one of them uses it. Everyone wants to be part of the unique adventure that enables them to make new contacts and communicate with each other. RAFI helps them do this – with high-quality, reliable electronics and manufacturing expertise that brings people together. One thing's for sure: As soon as the screens light up again, everyone knows immediately that the virtual journeys into far-off worlds have begun.

Everyday upheavals

Since early morning, work has been piling up on your desk. The telephone has not stopped ringing. All the orders arrive at the same time. There's just enough time to answer the call before it's time for the next meeting. Your reserves of energy are gradually being depleted, and your concentration is slipping. What a day! A quick recharge and a moment's relaxation are just what you need right now.

And it's only a tap away

The desire for a little downtime leads to the break room for some coffee. You've scarcely placed a finger on the illuminated button before the lovingly roasted coffee beans are being transformed into a creamy black treat. Even before the last drop sinks silently into an ocean of perfectly brewed coffee, the first hint of rich aroma reaches your nose. It's a moment shaped by the beautifully balanced combination of aroma and tactile finesse. Feelings of anxiety and stress evaporate in an atmosphere of relaxation. The hum of the coffee machine and the calming blue light of the control panel banish any remnants of stress and bustle. Your body's sense of inner equilibrium is restored.

It's a small action – with major effects

You raise the cup to your lips, savoring the first drops as they trickle

down and awaken every taste bud. What your nose and eyes interpreted as relaxation a moment ago is now transformed into an adrenaline-fueled experience by the taste buds. Your pulse increases; new ideas start to permeate your thoughts. Tasks that seemed impossible beforehand suddenly seem to solve themselves. Your body shifts into high gear, and your mind joins in. The break room becomes a center for ideas, creative interaction and solutions.

Freshly invigorated for peak performance

Back at your desk, refreshed and inspired, your work seems almost effortless. You deliver solutions, answer calls and hold meetings bursting with energy. And all thanks to a machine that provides a tangible multi-sensory experience – the coffee machine, triggered by RAFI GLASSCAPE.



1980 – the company develops an input unit that is subsequently incorporated into the standard range as RG85. The button has three characteristic features: an abrasion-resistant surface, a sealed design and uniform ring-shaped illumination.

At the start of the 1990s, a flat data entry control system is developed in response to demand in the self-service area.

It is fitted with the most modern and smallest RAFI short-travel key-switch at the time, the RACON. The indexing mechanism built into the control system became a milestone in the coffee industry.

It was followed in 2004 by the introduction of a new technology driven with and by customers – the capacitive key system. At the INTERNORGA trade fair in the same year, the capacitive control system captivated an enthusiastic audience. With multifunction touch systems, RAFI once again set new benchmarks.

A LITTLE DOWNTIME





MOMENTS THAT MAKE YOUR HEART BEAT FASTER

Touches that save lives

The telephone receiver is scarcely put down before the ambulance pulls around the corner. The recently retired electrician lies on the ground, his left arm pulled tightly against his body. Today of all days, he wanted to enjoy a relaxing, low-energy afternoon. Just a short shopping trip, nothing more. And now, he's being lifted onto a stretcher by the paramedics. Beside him stands the panic-stricken supermarket sales assistant. She was the one who called the ambulance. The doors are closed as it sets off directly to the nearest hospital.



Heart attack. But all the indicators are in the normal range. The patient is thoroughly examined. What could have caused this collapse? The nurse prepares the ultrasonic device. A light tap on the user interface is all that's required. The patient is astonished and fascinated in equal measure. In response to his question as to whether it is an iPhone for the heart, the nurse explains the control panel to him with pride. GLASSCAPE, an innovative RAFI product, leads the market and has no competitors to date. The user interface uses capacitive glass technology with an integrated protective

touch screen. This makes it intuitive to operate and, thanks to the sealed glass surface, very easy to clean.

Hearts and minds at work

The ultrasonic gel is applied and his heart is scanned. Here too, everything seems normal. The patient will remain in hospital for the next few days for observation. What started out as a shock ends with relief. The patient is endowed with a healthy sense of humor. With a wink of the eye, he answers, "I actually only wanted to experience the latest RAFI technology up close."

GLASSCAPE — RAFI enters a new era and captures a market-leading position with the innovative GLASSCAPE product that has no competitors to date. It can already be seen in the "Sparq" ultrasonic system by Philips. GLASSCAPE is a complete user interface, consisting of capacitive glass technology with an integrated protective capacitive touch screen. It offers the advantages of intuitive operation, guaranteed hygiene and controls that remain stable under the glass for the service life of the device.



A photograph showing a person's hand holding a glass of beer in the foreground. In the background, there is a window with horizontal blinds and a metal grid structure, possibly a balcony railing. The scene is brightly lit, suggesting an indoor setting near a window.

STARTING MARRIED LIFE IN RADIANT WHITE

Trust reassures

Just one more night until the wedding. The nerves of the bridal pair are on edge. The engraving on the rings are wrong. The floral decorations are already half withered. And now, a red wine spot has gotten on the wedding dress during the fitting. And it's coming up to midnight. Every dry cleaner is closed at this time. What does fate have in store for them? Luckily, there is still hope – and switches by RAFI.



The bridal dress is hastily put into the washing machine and the gentle cycle selected. Even as the start switch clicks into place, the initial panic starts to abate. The washing machine starts up, quietly humming as normal. Any remaining doubts are dispelled. As the bride sits down in front of the drum in the reassuring light from the blue LED, all her remaining nerves are calmed. A short time later, the wash cycle has ended. The dress is carefully removed from the drum and closely inspected. After turning it over several times, the outcome is clear: The red wine stain has completely vanished.

Ready for the big day

One day before what is perhaps the most important date in her life, the switches, drum illumination and the temperature control suddenly take on the leading roles on which the perfect entrance depends. It doesn't always have to be a wedding. Sometimes, it's a job interview, a business meeting or an important presentation. On these occasions in particular, everything depends on the performance of the washing machine – and its controls. RAFI ensures that these function reliably so the big day can arrive and a new phase of life can commence. In its own small way, RAFI is helping partnerships endure into the future – and not just in relation to marriages.



Customer-specific components and thousands of standard components —

RAFI keeps pushbuttons, keyswitches, signal components, signal lamps, PCB keyswitches, short-travel switches and full-travel switches in its portfolio. In short, whenever you need something that reacts to a gentle push, we'll see if we can help. Otherwise, we will manufacture it for you. Be it development, production, materials management or distribution – we have the necessary in-house expertise. It's one reason why our components turn up in countless everyday consumer goods – and not just in washing machines.

SMART OPERATION





Ground-breaking contact

Components are welded, removed, tested, deburred, bonded, mounted, checked, bolted, sorted. Imposing figures that perform intricate movements while rooted to the spot – delicate and powerful all at once. From the smallest particles and the most meticulous tasks all the way to loads weighing several thousand kilograms. This is where high-precision work is performed under the most extreme loads.

A global trend

All the talk is about robots. They are used in industry to perform tasks that would push humans to the limits of their abilities: repetitive, hazardous or even highly complex tasks. The ever-increasing capabilities of robots mean that their control requirements are increasingly complex.

More intuitive, faster and more efficient

As standards are set, RAFI delivers the solutions. With an intuitive panel in the form of a smartPAD with a touch screen offering full graphic support. Advantages for the user include ergonomic handling and the robust design. The system is programmed to display only the controls that the user actually needs at each particular moment. By removing any unnecessary distractions, it makes the user's work more intuitive, easier, quicker and more efficient.

The device delivers on its promise.

Even if dropped from a height of one meter onto a concrete slab or soiled with lubricants and solvents, it will generally remain undamaged.

Fantastic visions of the future

What was previously rejected by industry is now increasingly in demand since the introduction of the iPhone: the intuitive interface in the form of a touch screen.

A thousand grams of efficiency by RAFI versus one hundred and twelve grams of finesse from the world-famous Apple. Both brands share the same passion – continuous progress. Most importantly, however, the current state-of-the-art technology means that we can only imagine what the future will hold. One thing is certain: It will be even more spectacular.

From start to emergency stop – In addition to operating units for robots, RAFI supplies control components for numerous other industrial applications. These include metal and wood processing machines as well as paper or printing machines, rubber and plastic machines. Even in the office, with data processing, in addressing machines or reproduction equipment, it's often a RAFI button that gets the job done.



THE QUIET HUMMING OF THE ELEVATOR



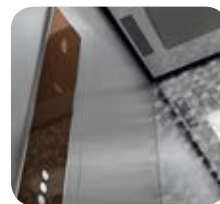
Making new connections with RAFI

The doors open – and with them, a new world far from our familiar surroundings. Those who enter are open to surprising encounters. Sometimes, ideas will be explained here in two minutes. Other times, careers, contacts and decisions are made. All of this takes place when someone, somewhere presses the call button for an elevator.

RAFI supplies the individually manufactured input panels for the elevator control system. Since every building contains a different number of floors, RAFI produces custom solutions. This involves working with the customer to develop a unique design that guarantees brand recognition. And one of these customers is so important that RAFI has set up a dedicated production facility in its vicinity. This shortens the distribution channels so that a complete control system can be manufactured and delivered within ten days.

The fleeting press of a finger

The ring-shaped illuminated buttons by RAFI send the right signal. Regardless of the floor from which the journey starts, it takes just a few seconds until the doors open to allow access to the elevator. Inside, the control panel prompts the occupants to take action and to make a decision. Where should this journey lead? People enter and leave the elevator. Fleeting contacts, glances that meet, the interchange of perfumes and words. For such a short journey, it could hardly be any more intense. And it all starts with a light touch of a finger – on buttons that often activate more than just the elevator. Humming quietly, it is set in motion.

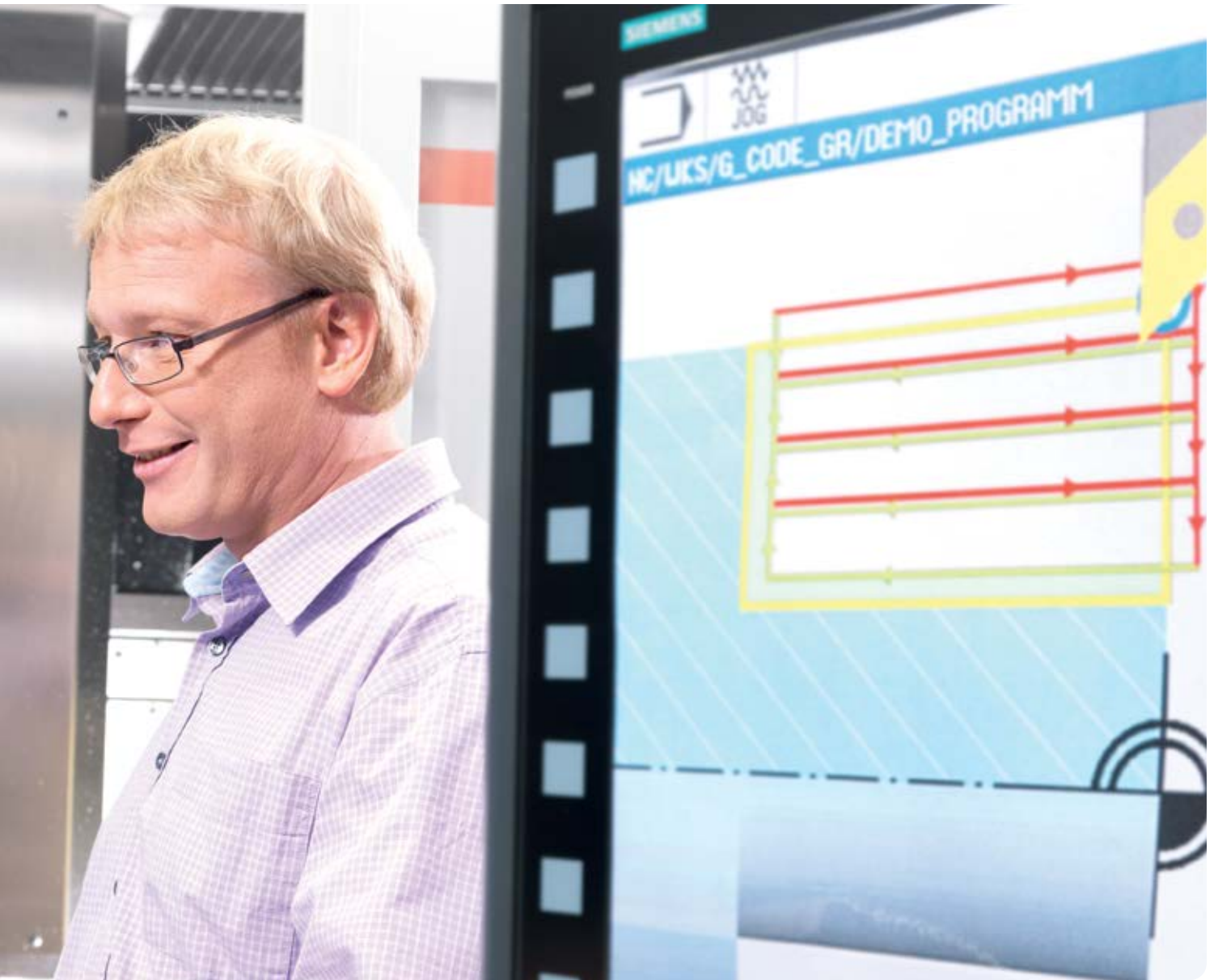


Every building is different — and the same is true of elevators. RAFI supplies the panels, switches and elevator floor displays. On request, we can also offer digital printing with the end customer's choice of designs. When it comes to the variety of choice, the possibilities are endless. The display panels with short-travel switches are even available in vandal-proof versions: You never know who is using the elevator.



Harsh environment, high standard

The noise is deafening. The machinery is running at full capacity. Robots are rearing up. Articulated arms reach into one another. Motors are spinning. This is a harsh environment in which control, regulation and measurement tasks are carried out. This is done using control units whose panels are constantly exposed to dirt, oil and aggressive lubricants.



This is industry at work. Live and in color. In the midst of these scenarios, control units from RAFI must function reliably. And they must frequently withstand loads that cannot be anticipated in advance. For example, rough operation using a coarse work glove or smearing the display with oil. Even at extremely high electromagnetic interference frequencies and significant climatic differences. The technology operates flawlessly, which is why customers increasingly insist on RAFI control systems equipped with a touch screen.

Resistant, robust and reliable

In general, RAFI developers have proved themselves to be exceptionally solution-oriented – and that's before

a possible problem even occurs. Even the slightest probability of a malfunction is analyzed in advance. This intensive engagement with the machine and all foreseeable misuse thereof benefits the customer, who receives verified and thoroughly tested products that meet the highest quality standards.

These solutions are always developed in close cooperation with the customer. From time to time, this process can blur the boundaries between the respective development departments. This has an effect. And a positive one at that with regard to the length of customer relationships, some of which have endured for well over 40 years. It's a record to which not many marriages these days can lay claim.

Major steps — In 1965, RAFI developed the first customer-specific switch for measurement and control applications. The mid-1980s saw the release of the short-travel switch protected by film. Most recently, after the fully illuminated membrane keyboard, RAFI unveiled the first GLASSCAPE touch screen for industrial use: a powerful unit that is highly durable and all but eliminates the possibility of incorrect operation.

OPEN TO NEW IDEAS



Letting in the sunshine

The bags are packed and ready to go. The engine is running, everyone is set – the journey can begin. Escaping from the North to the South. “Bella Italia” is the destination. As the Alps fade into the distance behind, the thermometer climbs with every passing kilometer. The sun beats down on the roof of the car. Between pine and cypress trees, the sea comes into view. It’s hot – and it will only get hotter.

Now, it’s time to enjoy the blue sky in the car as well: The sliding sunroof opens smoothly and quietly. At the press of a button, you can feel the sun’s rays on your skin. A gentle breeze blows through your hair while the scent of the salty sea air fills your nose. Suddenly, all your worries and thoughts are forgotten. It’s a moment that enlivens all the senses – a feeling of freedom.

And it’s all triggered by the electric sliding sunroof. Customized to the car, the RAFI control unit integrates seamlessly with the rest of the vehicle’s equipment. The finished actuators are manufactured and supplied by RAFI entirely. This includes the injection-molded components as well as all of the electronics. This is quality that pays off. And thanks to its cross-sector expertise, RAFI has estab-

lished long-standing partnerships with many of the leading automotive brands.

Savor the moment

The journey continues along the sea, passing through small coastal villages bursting with color and full of life. The waves break on the rocky shore, the wind picks up. Yachts sail past in the distance, while pedal boats ply the waters close to the shore. Isolated cirrostratus clouds pass overhead. With just a few kilometers before the destination, the cloud cover thickens. The sky darkens into an overcast shimmering gray. The first drops of rain scatter across the windshield. However, this doesn’t dampen the mood. A brief click, and the sliding sunroof closes. What could be more delightful than a summer thunderstorm?

Fully equipped – A typical roof control unit contains up to 20 MICON short-travel switches. Open, close, tilt, light on, light off – they are used to control these and many more functions. However, RAFI supplies numerous other solutions to the automotive industry: multi-function switches for passenger car steering wheels, vehicle keys, panels and electronics for commercial vehicles, watercraft and railway vehicles. These are solutions that must sometimes cope with harsh environments. And control units whose tactility and haptics are specially adapted to the vehicle. And to the brands that want to convey a very particular feeling: exclusivity.





**NOT FOR
THE FAINT-
HEARTED!**

Mastering the challenges

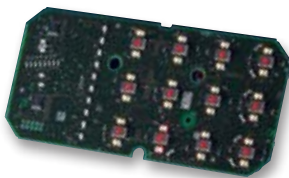
One moment, the tip is towering against the sky, and the next, it is plunged deep underground. Heavyweight giants that move slowly and deliberately but perform their tasks with the utmost precision. Construction, agricultural and transport machines are used to build houses, plow fields, transport goods, and construct and produce machines. They are designed for use outdoors. Here, nature is both friend and foe: Weather conditions are entirely unpredictable. Wind and water, heat, cold, dust, sand, dirt and mud all become a burden and make work more difficult.

To operate machines under these conditions, you need controllers that can withstand extreme loads. Automated intelligence based on precision and reliability as well as exceptional control and safety. RAFI meets these challenges and scores highly with the operating station for electronically controlling concrete mixer trucks. Integrated LED displays, intelligent memory functions and an optional second controller that allows for operation directly from the driver's cab – here too, RAFI components form the basis for reliable operating systems.

Safety and reliability

Beneath each switch is the RAFI MICON 5 short-travel keyswitch featuring a sealed contact system and

gold-gold contacts that guarantee absolutely reliable switching and optimized sensory feedback. In addition to an impact-resistant plastic housing, the operating station impresses with abrasion-resistant, two-tone injection-molded keycaps and a customer-specific lever that uses a contactless switching system. And if something does go wrong, the RAFIX 22 FS emergency stop shuts everything down reliably. Another special feature is that both RAFI components sit on a shared circuit board and are therefore cost-effective to produce. Value, quality and innovation go hand in hand; enhanced operating comfort, input safety and precise control speak for themselves.



Functionality and aesthetics –

MICON 5 and RAFIX 22 FS – an unmistakable combination. And rightly so: In addition to its unique contemporary design, the RAFIX 22 FS series offers the safety required to meet tough environmental challenges. The MICON 5 short-travel keyswitch guarantees a long service life, reliable switching and outstanding tactility. Together, they guarantee reliable service for many years.

Mobility is a basic right

From one moment to the next. Without having to think about it, without the need for meticulous planning, without notice, without anyone else's help. Playing an active role in society again. Up and away, taking charge of one's life. Getting on with things, being independent and free. A feeling of limitless possibilities opens like a book whose pages are crying out to be read. Stories need to be experienced and adventures are waiting to be discovered. Taking control, unfettered and fancy-free. This is where that mighty word "freedom" comes into play.

To this day, freedom and mobility are inextricably linked because mobility is freedom. Mobility is a fundamental principle of human life. We are constantly on the move and are naturally equipped to travel long distances of our own accord. As time passed, we developed technologies that significantly increased our speed and range, that is, our radius of mobility – initially, by harnessing muscle power more efficiently, and later on with the aid of various drive systems. However, mobility also incorporates the concept of free determination. But what about those who are unable to decide for themselves where they walk, drive or fly?

The current state of technology is opening up new possibilities, particularly for those who must live with disabilities. Whether it's evolutionary wheelchair systems, complete vehicle conversions or movement trainers that meet the strictest requirements – perfectly simulating sequences of

movement calls for the most delicate mechanical and electronic controllers. Precision and safety play just as important a role as reliability and trust. As an electronics specialist, RAFI has contributed to this area for many years, for example, with the electronic control units for the Space Drive system. The modular system that enables motor-assisted operation of the brakes, gas pedal and steering along with all other passenger car functions also makes it possible for people with extreme physical disabilities to drive a car themselves. In short, this is the very finest in automotive technology and it truly fulfills its aim and purpose.

Actively participating in everyday life

Many people with disabilities share a longing to re-integrate themselves into normal social activities. Even when faced with severe physical disabilities, they still need to lead an independent life as far as possible.



Powerful control — The unique Space Drive system from PARAVAN, the world's leading manufacturer of customized vehicles for disabled drivers, represents a genuine breakthrough. How does it work? Microprocessor-controlled driving aids operate the brakes, gas pedal and steering and transmit the signals to two servo motors in nanoseconds. RAFI supplies the components required – from the electronics to the control units all the way to the input systems. Individual modules can be specially configured, and the software and hardware adapted on-site depending on the driver's symptoms and their progression.



A FURTHER STEP TOWARD INDEPENDENT LIVING



RAFI GmbH & Co. KG

Ravensburger Str. 128-134, 88276 Berg/Ravensburg, Germany
Tel.: +49 751 89-0, Fax: +49 751 89-1300
www.rafi.de, info@rafi.de

