

Rega 2020 with Annual Report 2019





## Contents

### Rega 2020

Editorial	5
News	6–15
In brief	16–19
Missions	20-21
Patronage	22-23
History	24–25
Conditions of Patronage	38

### Annual Report 2019

Activities in 2019	28-31
Mission Statement	32
Foundation Board	33
Governance and Compliance	34-35
Rega in 2019	36
Management Board	37



# "Rega needs people who have the courage to break new ground"



Michael Hobmeier



Ernst Kohler

The year 2019 has once again confirmed that Rega and its services are very much in demand and form an integral part of the Swiss healthcare system. Last year, Rega helped more than 11,000 people in distress and organised around 17,000 missions. The Swiss people are fully behind Rega, a fact that is reflected in another very pleasing net increase of approximately 70,000 new patrons. Rega's entire workforce is delighted with this ongoing popularity – but at the same time, it also brings with it a huge obligation and correspondingly high expectations.

One of Rega's most important tasks is to continually improve air rescue services in Switzerland and to ensure that in 20 years from now we will still be able to fulfil our core purpose of helping people in distress in the customary reliable and professional manner. We are determinedly implementing measures to achieve this: in recent years, for example, we have invested over 300 million Swiss francs in all-weather rescue and in state-of-the-art aircraft and infrastructure, as well as in staff training and collaboration with our operation partners.

We are convinced that standing still means taking a step backwards. The rapid advances in technology should have a positive impact on patient care. Good ideas or simply the will to become better are not enough to implement new, innovative solutions. It takes persistence, endurance, expertise and above all hard work. Not just by Rega, but also on the part of the partners with whom we work closely on major projects. Rega needs people who have the courage to break new ground and pursue a vision.

The fact that these efforts are coming to fruition was demonstrated last year, for example, when we were able to present to the general public the Rega drone – a world first that was designed by Rega together with various innovation partners. Another example is the very first AW169-FIPS all-weather rescue helicopter, which we are developing in collaboration with the Italian manufacturer, Leonardo (see page 6).

However, despite all the fascination with innovation and cutting-edge technologies, people will always continue to be at the centre of Rega's activities in the future. Innovation must not become an end in itself. Ultimately we have to ask ourselves just one question: Will it help a person in distress? Because in the end, Rega, too, is measured by its results – in our case, by the missions we perform in the service of our patients.

Rega's work is only possible thanks to the financial contributions of its over 3.5 million patrons. We would like to thank them from the bottom of our hearts. This enormous support is an incentive for us to resolutely continue along our chosen path – for the benefit of our patients and the entire Swiss population.

Michael Hobmeier Chairman of the Foundation Board

**Ernst Kohler** CEO/Chairman of the Management Board

## More space, more possibilities

In 2021, three all-weather rescue helicopters of the type, AW169-FIPS, will join the Rega fleet. While engineers from the manufacturer, Leonardo, are currently working flat out to develop and test the world's lightest de-icing system (see page 8), an interdisciplinary project team at Rega is drawing up new solutions for the largest cabin in a Rega helicopter to date.

Every project to procure new aircraft gives Rega the opportunity - based on the experience gained from performing thousands of missions - to make improvements to the cabin and interior outfitting and to incorporate technical innovations. With the last two helicopter acquisitions, Rega was already operating the predecessor models, which had a similar amount of space, and could therefore draw on a wealth of experience. However, it is a different matter with the current procurement of the AW169-FIPS: the new cabin is considerably larger than those in all of Rega's previous helicopters - and thus opens up completely new possibilities.

#### As flexible as possible

To ensure that the space in the cabin is optimally used for providing patients with medical care, over the last two years or so, an interdisciplinary team made up of Rega emergency physicians, paramedics, pilots and engineers have been working with the Swiss company, Aerolite, on the cabin layout and the medical interior fittings. The main brief for the project team: the new rescue helicopter is to be used for both primary missions (transport from the accident site to the hospital) and secondary missions (transport from one hospital to another). Starting with a blank sheet of paper, the team began with the planning and research.

## Visits to other air rescue organisations

As part of their research, the members of Rega's project team visited two air rescue organisations in Italy and Sweden, both of which operate an AW169 rescue helicopter. During these visits, they learned how an AW169 cabin can be equipped and how the air rescue crews make use of this on a mission. It transpired that Rega's requirements in terms of fittings and equipment are rather more varied, as it intends to use the AW169-FIPS for primary missions in rough terrain or in the agglomerations, as well as for special intensive care transports between hospitals. As a result, from the very beginning, the focus was placed on achieving the most flexible cabin layout possible. A further requirement was that the crews at the Rega bases should be able to guickly change all the configurations themselves without the assistance of mechanics or tools. This means that the crew members do not waste any time before a mission.

#### The right configuration for every mission

Subsequently, the project team defined one standard and seven special configurations of the cabin layout in the course of various workshops. For these eight configurations, they stipulated where and in which direction the patient stretcher beds and the crew seats should be installed. For example, there is one configuration for special intensive care transports, where additional specialists accompany the Rega crew – such as on flights with premature babies in the transport incubator and a two-person neonatology team from a main hospital on board. Or for the transport of patients who are connected to a mobile heart-lung machine (ECMO) and need constant monitoring by a cardiac surgical team. Another configuration provides for eleven passenger seats, which can be used for evacuations in the event of a disaster.

#### Practical tests using a wooden model

While various configurations and solutions can be accurately replicated with the aid of computer simulations and 3D visualisations, it is not possible to test work procedures in this way. In order to get a realistic idea of the available space and the practicality of the defined positions of the fittings and equipment, Aerolite built a model of the AW169 cabin out of plywood (see picture on the right). This model enables the Rega crew to, for example, check if the monitors of the medical machines are positioned in such a way that the displays can be easily read and if important items of equipment and medicaments are quickly to hand. It is also possible to test how easily the stretcher can be loaded into the aircraft in various configurations.

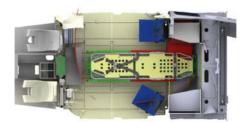
#### **Protected environment**

The more generous space available in the cabin will be particularly beneficial on flights with patients that are in a critical condition. This is because the patient can be attended to from both sides at the same time – by the emergency physician and by the

#### **Possible configurations**

The patient stretcher bed is positioned lengthwise in the cabin, with the head section towards the front. The emergency physician sits on the slightly angled seat on the left side of the patient. A second seat on the right of the litter allows the paramedic, who normally sits on the left side of the cockpit, to assist the physician if necessary.







How can the patient be provided with the best possible medical care? The Rega flight physician and paramedic test one of the configurations in the model cabin.

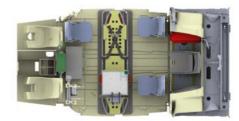
paramedic, whose seats are positioned to the left and right of the patient. Under difficult external conditions, too, such as adverse weather or inhospitable terrain, there is more room in the new cabin to provide patients with medical care in a protected and constant environment during the flight to the hospital.

#### Gaining operational experience

Production of the first helicopter will start in June 2020, with delivery to Rega scheduled for summer 2021. Until then, Aerolite and helicopter manufacturer Leonardo will fit out the cabin according to Rega's specifications. Thanks to the new solutions that the project team has devised for the interior, the new rescue helicopter will not only expand Rega's range of operations thanks to its de-icing system, but also offer new possibilities in terms of medical care for patients on board a Rega helicopter.

With this configuration, the patient stretcher bed is installed horizontally in the cabin. This allows the patient to be loaded into the cabin directly from the rescue hoist without having to make an interim landing. This configuration is designed for use with, for example, search and recovery flights.





## "Icebird" undergoes extensive tests



The future Rega helicopter, the AW169-FIPS, is the world's first allweather helicopter with a maximum weight of less than five tonnes. In order to obtain the necessary certifications, it is required to undergo stringent testing before delivery – including with countless test flights in an artificially generated ice cloud.

The procurement of the AW169-FIPS is central to realising Rega's vision of all-weather air rescue. While Rega crews are already able to fly on a number of predefined instrument flight routes in poor visibility under instrument flight rules (IFR), such flights are impossible in so-called icing conditions, which can occur in clouds and fog at temperatures below 4 °C. Ice forming on the helicopter can have a severe impact on its flying behaviour. The additional weight, as well as altered aerodynamic properties and iced-up measuring instruments that deliver inaccurate or no data, can all pose a significant danger. These problems can be avoided by means of a de-icing system, such as the "Full Ice Protection System" (FIPS) produced

by the helicopter manufacturer, Leonardo. The FIPS heats the critical components of the helicopter and prevents ice from forming on the rotor blades or windshield, for example. Protective devices on the engines stop ice particles from being ingested and air intakes from becoming clogged up. In addition, detectors warn against special weather conditions with an increased risk of icing.

#### The first of its kind

Until now, only very large and heavy helicopters have been equipped with a de-icing system. However, these are not suitable for Rega's missions, which require the helicopters to land on hospital rooftop helipads or in residential areas. As a result, over the last four years, helicopter manufacturer Leonardo has been designing on behalf of Rega the world's first de-icing system for a helicopter with a maximum weight below five tonnes as part of Rega's "Icebird" project.

#### Certification process under way

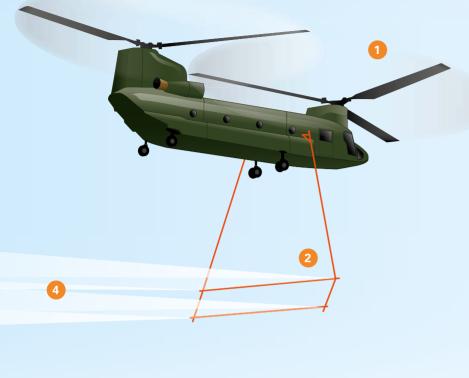
In order for Rega to be permitted to fly the AW169-FIPS under icing conditions

in future, it first needs certification by the European Aviation Safety Agency (EASA). This is issued to Leonardo if it fulfils all the requirements of a prescribed certification process – in the same way that a car manufacturer needs certification for a new car before it is allowed on the road.

#### **Test flights in North America**

The certification process for the AW169-FIPS includes countless test flights - initially under artificial and later under real icing conditions. At the end of February 2020, Leonardo performed the first of a total of three series of test flights in the Great Lakes region in North America, where generally temperatures are consistently low during the winter months. This is necessary in order to create artificial icing conditions. The test flights in the ice cloud provide the engineers and test pilots with important information about the performance of the new de-icing system. Test flights will be performed under natural icing conditions in winter 2021.

The project is being closely monitored by three Rega pilots who have



#### Test flights in the artificial ice cloud

To create an artificial ice cloud, a CH-47 Chinook 1 helicopter equipped with a special water spray **system** 2 flies in minus temperatures approximately 40 metres in front of the **AW169-FIPS** (3) prototype. The low temperatures cause the fine water droplets in the air to cool down considerably or even turn into sleet. The AW169-FIPS flies into the artificially generated ice cloud 4 that is created behind the large helicopter. On board are two test pilots and a test flight engineer, who use various sensors to check whether and how well the de-icing system prevents ice from forming on the helicopter. Flight characteristics and parameters such as engine performance are also recorded. An accompanying aircraft 5 observes the helicopter from the side, records measurements and watches for visual signs of ice formation. In an emergency, the ice cloud can be deactivated at any time or the test pilots can avoid it by descending to a lower altitude.

already been retrained to fly the new helicopter type. If everything goes to plan, Leonardo will be granted certification for the AW169-FIPS in spring 2021. Delivery of the first helicopter, which will then be used to train additional Rega crews, is scheduled for summer 2021. The all-weather AW169-FIPS is a development project; accordingly, challenges are bound to arise in the final stages, for which the manufacturer and the project team will have to find solutions. So far, however, the project is on track and Rega expects the first all-weather helicopter in its weight class to take off on its first missions at the beginning of 2022.

#### One of many puzzle pieces

Until then, Rega will continue to work intensively on various accompanying projects that also need to be implemented if it is to be less dependent on the weather when called out on missions. Further expansion of the instrument flight routes linking the various regions of Switzerland even in poor visibility is one of them. However, on doing so, Rega is constantly confronted with bureaucratic obstacles – for in order for Rega to also be able to fly to various hospitals all over Switzerland around the clock in poor visibility, the relevant procedures require certification from the Federal Office of Civil Aviation (FOCA). Unfortunately, this process is laborious and progress is slow. Nevertheless, Rega is making every effort to realise its vision of all-weather air rescue step by step – in the conviction that subsequently these endeavours will pay off for the Swiss population.

#### The locations of the two new Rega AW169-FIPS helicopters

One AW169-FIPS will be stationed at the Wilderswil base (EBBO), in addition to the rescue helicopter that is already deployed there. Therefore, in future two Rega helicopters will be based in Wilderswil. A second AW169-FIPS will replace the current Da Vinci helicopter at the Locarno base (EBTI). The third AW169-FIPS will be used for training purposes or as a reserve when one of the others is undergoing maintenance. Besides the geographical location, the existing infrastructure was a determining factor when deciding where to station the AW169-FIPS. This will be continually reviewed during the first operational stage, based on the experience gained in the field.

News

## How bits and bytes help Rega on its missions

In order to provide professional medical assistance by air around the clock, nowadays not only specialised staff and state-of-the-art aircraft are required, but also reliable solutions in the field of information and communication technology.

How can cutting-edge technology be used safely to help even more people and further improve patient care? This guestion has been the driving force behind Rega's activities ever since it was founded. The pioneering achievements of earlier Rega generations, such as the first direct rescue from the north face of the Eiger using a rescue hoist or the first civilian use of night vision goggles, were perceivable and easy to explain. However, many present-day developments that open up new possibilities for Rega crews and support them on their missions are less tangible. This is because they stem from the use of the latest information technology. For example, the satellite-supported instrument flight procedure, which enables helicopters to fly along predefined flight routes in poor visibility, is based on digital data. The use of IT solutions pervades all areas of Rega - from the cockpit of the rescue helicopters and ambulance jets to the medical care of patients, to the Operations Centre, hangar and administrative offices. The following examples illustrate how IT supports Rega employees in their everyday work.

#### Digital tools in the hangar

In the Rega hangar, automated and digitalised processes support the aircraft mechanics in their work and help to minimise the downtime of the Rega fleet. They also make maintenance and repair work safer and more efficient. So what does this mean in concrete terms? It is rather like servicing a car: 15 years ago, a car mechanic solved many problems "by hand" with a spanner and the necessary dexterity. Today, in the workshop, a modern car is first of all connected via an USB interface to a diagnostic laptop, which reads the data and enables errors to be analysed. Something similar happens with the new H145 rescue helicopter: at the end of a day of missions, the pilot removes a tiny memory card from the aircraft and inserts it into the laptop at the helicopter base. A programme reads the data and stores it on a server. This automatically available digital data provides information on the helicopter's current "state of health". In this way, it is possible to identify the wear and tear on the material, as well as the helicopter's maintenance requirements, and to determine when, for example, a rotor blade needs to be changed.

Or another example: in future, Rega helicopters will be automatically connected to the Rega network via Wi-Fi as soon as they have been towed into the hangar at one of the 12 Rega bases. Thus the software will be able to automatically update the navigation system in the cockpit with the latest information on aeronautical obstacles, which pose a serious threat for the helicopter crews when out on a mission. Currently, this update still has to be done manually. In future, this automation will not just save time, which the crew can use for other tasks, but also increase safety, for the crew will automatically always have access to the very latest data relating to aeronautical obstacles.

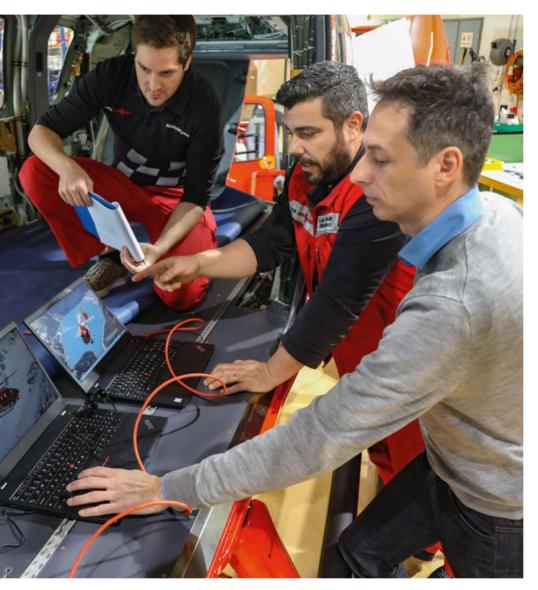
#### The "heart" of Rega

Another example of how ultramodern information and communication technology helps Rega to fulfil its core task is the complex linking of various systems and IT solutions in the Operations Centre, the "heart" of Rega. It is here that the flight coordinators take emergency calls around the clock and organise around 17,000 missions in Switzerland and abroad every year. For nine years now, the Rega app has provided a means of raising the alarm based on the transmission of digital data. The app helps save invaluable time in an emergency and has proven itself in thousands of cases: the location of the person raising the alarm is transmitted directly to the dispatch system at the Operations Centre and displayed on the digital map.



#### Coordination of the Rega helicopters

Generally speaking, the countrywide coordination of Rega helicopters places different demands on a dispatch system than it would to deploy ground-based rescue teams. After it is called out, an ambulance operates almost completely autonomously and usually within clearly defined regions or cantons. However, this is not the case with air rescue: the helicopters know no cantonal borders and operate over several regions. The crews are guided through their missions and continually supplied with information by the Operations Centre. Thus Rega's flight coordinators can



Digitalised processes in the hangar: function check on the maintenance laptops in the H145 rescue helicopter.

ensure a greater degree of flight safety, particularly at night – by informing the crew about other airspace users, for instance, or by providing them with up-to-the-minute meteorological data from Rega's own weather stations.

#### The helicopter dispatch system

Last year, the dispatch and communication systems at Rega's Helicopter Operations Centre were modernised. Thanks to the combination of a standard solution and components that have been specially developed for Rega, the helicopter flight coordinators are now better supported in their demanding work than ever before. Diverse information that is particularly useful to the flight coordinators can now be displayed directly on the digital map - meadow or locality names, hiking trails, paraglider landing sites or bike trails can all be shown quickly and easily on the map. The coordinates of the accident site, the reason for deployment and the contact person for the crew are then transmitted directly into the cockpit with a mouse click. In addition, thanks to the newly developed communication system, flight coordinators can now easily and intuitively listen again to specific parts of an alarm call - for example, to make sure that they have understood everything correctly. Rega's

nationwide radio network is also seamlessly integrated into the modern communication system, allowing crews to be contacted direct at any time. Close collaboration with the various operation partners involved, such as the cantonal ambulance call centres, is of key importance for treating patients swiftly. Particular attention is already being paid to interfaces that allow the various dispatch systems to be interlinked, so that in future the rescue services can work even more closely together for the benefit of their patients. In particular, Rega regularly invests in the latest technology relating to raising the alarm and deploving the rescue crews because it is convinced that these investments will have a direct impact on improving the provision of medical care by air.

#### Doctors also use apps

Software is used not only in the Operations Centre, but also outside at the accident site. Mobile applications support the Rega emergency physicians in caring for their patients. For example, if necessary, it can be used to look up special drug dosages, such as for the treatment of very young children. Another app for Rega's physicians is currently undergoing intensive testing and is scheduled to be introduced this year: the electronic patient report. What used to be written by hand on a piece of paper will now be able to be done digitally using an optimally designed user interface. The physician documents the situation on location and the treatment carried out by the Rega crew. The advantage of the digital report is that the electronic data is available immediately and in a clearly legible form - for further treatment of the patient in hospital, but also for invoicing and archiving.

### Expansion of the scope of operations

Many of the digital solutions in use at Rega optimise existing systems and equipment. They help to simplify processes and heighten security. However, there are also solutions that expand Rega's scope of operations and thus enable it to help more people in need. It is thanks to the latest IT and communication technology that Rega is able to realise its vision of all-weather air rescue, step by step. For the satellitesupported approach to a hospital helipad is only possible because an instrument flight route can be calculated on the computer and redundant, highprecision navigation instruments in the helicopter "know" where it is in threedimensional space at any given time.

Rega pilots can call up the current weather data, which is a prerequisite for flying under instrument flight rules, directly via a special weather app for pilots, which has been developed on behalf of Rega. At what altitude is there a risk of icing? How low is the cloud cover? What is the visibility range at the destination hospital? Regardless of whether the pilots are at the helicopter base or checking the data on the move before directly heading off on another mission - they always have to hand the necessary information to prepare and conduct the flight efficiently and safely. Information technology also plays a key role in the development of the Rega drone, which in future will be used as an additional tool to search for missing, injured or sick persons.

#### The highest of demands

With all the possibilities and opportunities that are offered by the rapid development in technology, the ever progressing digitalisation poses a huge challenge. For just as Rega makes the highest of demands on the safety of its aircraft, materials and staff, it must also critically examine and test new technical solutions before they can be put into use. Rega's activities in the fields of aviation and medicine do not tolerate any mistakes and they are highly regulated. The development and introduction of new technical solutions and systems in Rega's working environment is correspondingly complex. Here the 12 specialists in Rega's IT department are called upon to find sensible and proportionate solutions that at the same time meet the highest of standards in terms of security and availability and can be

implemented at a reasonable cost and effort.

#### People remain at the centre

All of Rega's further developments and innovations in the field of technology have one thing in common: it is not a matter of simply following a trend or overturning established practices. Technical advances should much rather have a positive impact on patient care. Many years ago, Rega's founder, Dr. med. Rudolf Bucher, formulated a guiding principle that still rings true today: "Complete assistance is only to be accomplished if the best staff training and the best material resources are successfully merged to form a highly effective whole". This statement may date back a number of decades, but its substance is as current and valid as ever. Nowadays, however, digital support should also be added to the "material resources" used by the Rega crews. Even if digitalisation continues to increase in importance, at Rega it will never push people into the background. On the contrary: only in collaboration with the crews, mechanics or flight coordinators can IT specialists ensure that innovative solutions support the crews on their missions - and thus help people in distress more quickly and reliably than ever before.

From analogue ...



... to digital



Thirty years ago, whenever Rega received an emergency call, the flight coordinator took a pen and noted the information on a sheet of paper. Based on the information provided by the person raising the alarm, he pinpointed the location on the map of the area where the emergency call was made. Meanwhile, a second flight coordinator was needed to mark out the flight path of the rescue helicopter on an overview map. Nowadays, emergency calls are received and recorded via app or phone, and the caller is localised using a comprehensive geodata system.

## Planning the unplannable

Only after Rega's medical consultants have decided that a patient needs to be repatriated on board one of the three ambulance jets can the organisation of the mission begin. Working closely together, the teams at the Jet Operations Centre determine the destination airport, flight route, jet crew and detailed procedure within a very short space of time. Standardised processes, a high degree of organisational skill, and flexibility on the part of everyone involved all play a part in finding the best solution for each patient.

Anyone suffering a medical problem abroad who is in need of help can call Rega around the clock via the emergency number +41 333 333 333. The flight coordinators take the calls and organise the next steps. Whether repatriation is necessary and the best option for the patient is decided by the Rega medical consultant on duty. To this end, they discuss the diagnosis with the doctor on location and talk to the patient, their relatives and their GP. In liaison with the Operations Centre, the medical consultant then decides when and how repatriation should take place. Seriously ill or injured patients are generally flown home in one of Rega's three ambulance jets. Once the decision to repatriate by ambulance jet has been made, the organisation of the mission can begin. The following examples show why Rega's ambulance jet operations are particularly complex and how the teams involved master the challenges together.

## As close to the patient as possible

The Rega ambulance jets do not regularly fly to the same destinations according to a predefined flight schedule, but land in a location as close as possible to the patient that requires medical transport back home. The Rega crews fly to around 400 very different airports around the world every year – including many small airports and military airfields. By way of comparison, the airline, Swiss, serves around 100 airports in its route network. The constantly changing destination airports considerably increase the amount of work involved in organising these missions: before each one, the flight coordinators need to clarify the operating and opening hours of the airport, the availability of customs facilities, the procedure at passport control and refuelling possibilities so that there are no delays during the mission with patients on board. A dedicated software solution supports the Operations Centre staff in this task. After entering the patient's location abroad, the nearest airport that can be flown to by a Rega jet is displayed on a map. Feedback from Rega crews relating to past missions, the official publications issued by the airports and approach charts, as well as contact details, are also stored in the software. This airport database now encompasses some 10,000 airports, as well as the contact details of around

1,800 handling agents, who look after the Rega jets at the foreign airports.

#### A new route for each mission

Once the destination airport has been determined, the dispatcher draws up the optimal flight route, taking into account the prevailing weather conditions and forecasts. With long-haul flights, they also need to schedule refuelling stops – always bearing in mind the limited time available. At smaller airports in particular, it is important to ensure that someone is on site to transport the kerosene to the Rega jet in a petrol tanker. It can happen that the kerosene can only be paid for in cash, which is why the crew sometimes carry a suitcase containing cash on board.

#### A permit for each country

An overflight permit is required for every country that an aircraft passes over on its way to its destination.

Rega crews fly to around 400 different airports all over the world every year.



A commercial airline receives such permits for the routes in its network for a whole year at a time - rather like a multiple journey ticket. However, this is not the case with Rega: for missions outside Europe, the flight coordinators have to obtain the relevant authorisations for each flight individually and with specifications, forms and procedures that vary from country to country - a demanding task, particularly under time pressure. For example, it can happen that an ambulance jet takes off from Zurich on a mission to Japan even though the overflight permit for India is still pending. If the permit is issued to the Operations Centre in Zurich before the aircraft enters the corresponding airspace, the flight can continue as planned. If the permit does not arrive in time, the dispatcher has to resort to an alternative route, which might

take a little longer but also ends up in the same place.

#### Jet crews on standby

Besides flight planning, the staff at the Jet Operations Centre are responsible for allocating the Rega crews to the various missions. As the duration of a mission varies greatly depending on the destination and several missions can also run parallel to each other, Rega works with six different standby and on-call models for the crew members on the duty roster. With the shortest standby duty, the crew must arrive at the Rega Centre at Zurich Airport within one hour. The duty rosters are drawn up monthly and - as with commercial airlines - are subject to various working and resting time regulations. With longer missions, for instance, two cockpit crews that are fit for duty are

required so that the specified rest periods can be complied with during the mission. Some eleven jet pilots, six flight physicians and five jet intensive care nurses are on standby per day. Together with the duty officers, the Operations Centre staff allocate the available crews in such a way that they can fly as many missions as possible during their duty hours. A tricky task that requires a great deal of experience and flexibility on the part of everyone concerned, for changes at short notice are very common.

#### Maintenance and Operations Centre staff work hand in hand

The entire organisation of a mission, including the planning of the mission procedure, flight route and crew, is of no use if the Rega jet is not airworthy at the scheduled take-off time due to

#### The Jet Operations teams



In the Rega jet

#### Flight physicians bear the medical responsibility during repatriation.

#### during repartitution.

Intensive care nurses work together with the flight physicians to provide professional medical care, and prepare the medical supplies and equipment

#### Jet pilots

for the mission.

ensure that the flights are performed safely and make operational and aeronautical decisions.

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#### In the Operations Centre

#### Flight coordinators

take the calls that come in on Rega's international emergency number and organise repatriations on board the Rega jets or scheduled aircraft.

#### **Medical consultants**

speak to the doctors on location and, based on the medical indication, decide whether, when and how a patient should be repatriated.

#### Dispatchers

plan the flight routes and schedule any refuelling stops.

#### **Ground operations staff**

conclude contracts with service providers that are responsible for handling the Rega jets at foreign airports.

#### Administrative office staff

ensure that the jet crews have the necessary visas, vaccinations and documents for their worldwide missions.



In the hangar

#### Jet mechanics and specialists plan and conduct the necessary checks and repairs on the three Rega jets and thus ensure their operational readiness.

#### Jet logisticians

make sure that sufficient medical supplies and medicaments are available at all times and that the jets' medical equipment is properly serviced.



#### **Responsible for safety**

#### Flight instructors, training instructors and experts

organise regular training sessions and checks for the jet crews.

#### **Flight safety officers**

plan and implement measures to further increase flight safety in the organisation process.

#### Security officers

continually assess the global political situation and advise the Operations Centre on safety issues relating to upcoming missions. a technical problem. Six specialists work in the in-house maintenance facility and meticulously implement manufacturer Bombardier's prescribed maintenance programme for Rega's three Challenger 650 jets. This describes, for example, the checks that need to be carried out after a certain number of landings or flight hours. The high level of operational readiness of the Rega jets can only be guaranteed if the Operations Centre and maintenance works are in constant contact with each other to make preparations for the necessary maintenance work. However, this does not stop at scheduled checks, for smaller checks or repairs may also become necessary after just one mission. This calls for a high degree of availability on the part of the specialists to ensure that the jet is fully operational again as quickly as possible.

#### More than 50 years of experience

The way in which the worldwide missions performed by the Rega jets are organised today is based on more than 50 years of experience in repatriating patients from all corners of the globe. The organisation of jet missions has become more and more complex in the face of increasing regulation in the fields of aviation and medicine. The fact that this complexity can be mastered anew every day and that the Rega ambulance jets land in the right place at the right time is all down to the competence, experience and flexibility of the staff in the Jet Operations Centre. It is they who find the best, tailor-made solution for every one of the approximately 1,000 patients each year who suffer a medical problem while they are abroad and are flown back home to Switzerland.

At the briefing, one hour before take-off: the flight coordinator and crew discuss the details of the forthcoming mission.



In brief

# Medical assistance by air

Swiss Air-Rescue Rega was founded in 1952 for the purpose of providing emergency medical assistance by air.

Thanks to wide-scale support from the Swiss people, it is able to meet the challenges posed by a country with extremely demanding topography. Rega is on call around the clock with its highly trained employees and state-of-the-art aircraft, finances the building and renovation of its dense network of helicopter bases, and constantly improves its air rescue services and procedures.

Rega provides assistance wherever a person's life or health can be preserved or protected through its intervention. Ambulance jets and rescue helicopters are swift, comfortable and efficient means of transport. Their targeted use helps reduce the subsequent costs arising from acute illnesses and accidents.

Rega is an autonomous, privately run, non-profit foundation. With its 3,552,000 patrons, it is firmly rooted within the Swiss population. Rega operates independently of political interests and is not subsidised by the State. Rega is an integral part of primary healthcare in Switzerland and with its work contributes towards improving the quality of life, the economy and tourism in this country.

### Key figures for 2019

Total number of missions organised	16,782
Helicopter	12,257
Fixed-wing aircraft	1,382
Other missions <sup>1</sup>	3,143
Patronage contributions and donations (CHF million)	107.2
No. of patrons (in millions)	3.552
No. of employees <sup>2</sup>	382
Operating revenue (CHF million)	167
Operating expenditure (CHF million)	173
Operating result (CHF million)	-6.1
Balance sheet total (CHF million)	579

<sup>1</sup> Other missions: transports by ambulance, missions on behalf

of the Swiss Alpine Club SAC, Spéléo-Secours, Redog, etc.

<sup>2</sup> No. of full-time equivalent employees at the end of December



Solidarity, empathy, professionalism, competence, Swissness You can rely on Rega.

## Locations

### **Rega's helicopter bases**

Rega aims to reach any location in its operational area within 15 minutes' flying time. Twelve Rega helicopter bases distributed throughout the country make this possible. They are located in Dübendorf, Basel, Berne, Lausanne, Untervaz, Locarno, St. Gallen, Erstfeld, Samedan, Wilderswil, Mollis and Zweisimmen. In addition, there is a partner base in Geneva and a training base in Grenchen.

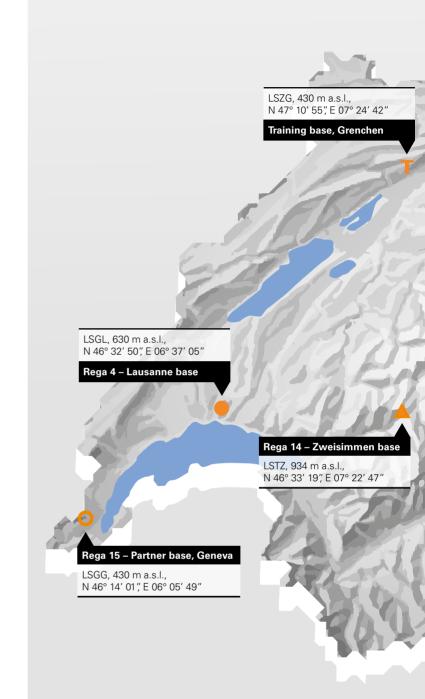
At each of the helicopter bases, a Rega crew comprising a pilot, paramedic and emergency flight physician are standing by at all times, ready to bring emergency assistance by air to people in distress as swiftly as possible.

### The Rega Centre

Rega's headquarters is located at Zurich Airport, with direct access to the take-off and landing runways. While the three ambulance jets take off from here to destinations all over the globe, the rescue helicopters only come to the Rega Centre for major maintenance work or servicing. In addition to the hangar and the maintenance works for the Rega fleet, the Rega Centre is home to the Operations Centre, the administrative offices and the large, central materials store.

### **Operations Centre**

The Operations Centre at the Rega Centre organises around 17,000 missions every year. It can be contacted around the clock – in Switzerland via emergency number **1414** and from abroad by calling **+41 333 333 333**.



## The Rega fleet

## Helicopters, lowland bases

#### **Airbus Helicopters H145**

Number of helicopters: Patient capacity: Rotor diameter: Length: Height: 2 engines, take-off power: Maximum flying speed: Rescue hoist:



7 1 lying, 1 sitting 11 m 13.64 m 3.95 m Arriel 2E, 2 × 894 HP 230 km/h 90 m cable length, 270 kg

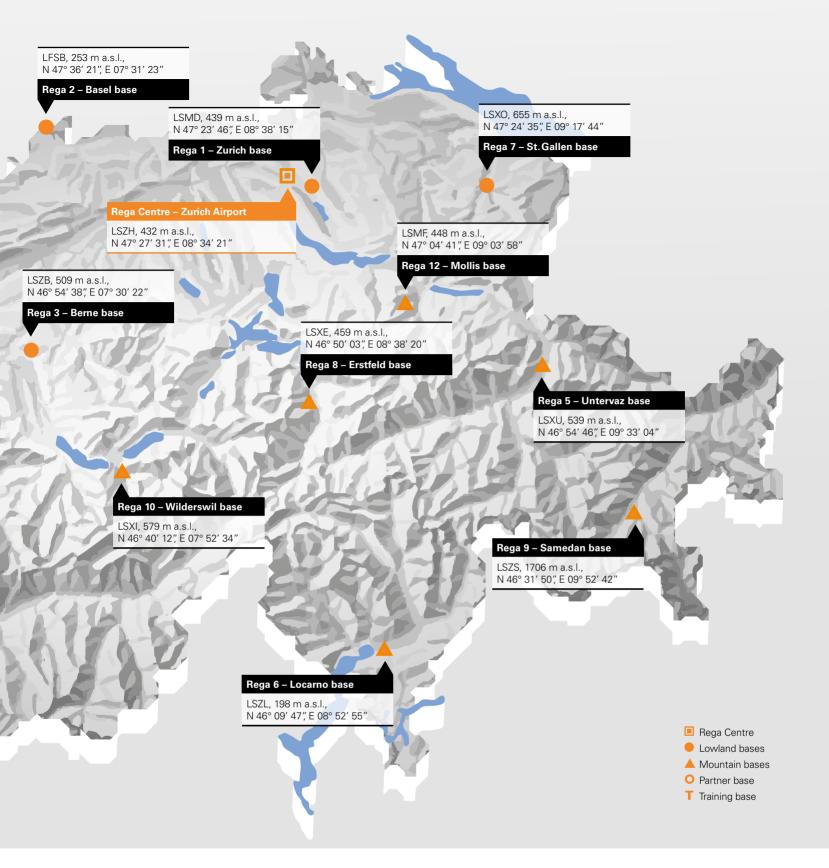
#### Helicopters, mountain bases

### AgustaWestland Da Vinci

Number of helicopters: Patient capacity: Rotor diameter: Length: Height: 2 engines, take-off power: Maximum flying speed: Rescue hoist:



11 1 lying, 1 sitting 10.83 m 12.96 m 3.40 m Pratt & Whitney, 2 × 778 HP 235 km/h 90 m cable length, 270 kg



#### Helicopter, flight school

### Airbus Helicopters H125

Number of helicopters: Rotor diameter: Length: Height: 1 engine, take-off power: Maximum flying speed:

1 10.69 m 12.94 m 3.34 m Turbomeca Arriel 2D, 860 HP 220 km/h

## Ambulance jets

#### **Bombardier Challenger 650**

......

Number of aircraft: Patient capacity: Wing span: Length: Height: Maximum take-off weight: Maximum flying speed: Maximum range: 3 4 lying 19.61 m 20.86 m 6.40 m 21,863 kg 850 km/h 6,500 km Missions

## Rega in Switzerland

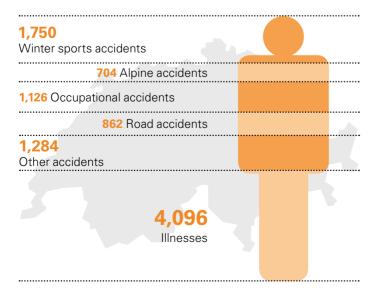


Rega's rescue helicopters are on call 24 hours a day, 365 days a year, in the service of the Swiss people. The 18 Agusta-Westland Da Vinci and Airbus Helicopters H145 helicopters transport state-of-the-art medical services directly to the casualty – not just in response to serious accidents or injuries, but also in cases of acute illness, such as cardiac problems.

The rescue helicopters are called out to deal with incidents in inaccessible mountainous terrain, as well as on motorways and in built-up areas. They are used to transport critical patients gently and reliably to the nearest suitable medical centre or to fly newborn babies to a paediatric hospital. A highly versatile and efficient means of rescue, the helicopter plays an indispensable role in the modern-day healthcare system.

Helicopter operations are divided into primary and secondary missions. Primary missions comprise rescue flights that transport emergency medical assistance directly to the scene of the incident. Secondary missions mostly involve inter-hospital transfers – for example, if a patient's condition has worsened and requires specialist attention. Almost a quarter of all Rega helicopter missions take place at night – a demanding task for the pilot, paramedic and emergency physician making up the crew.

#### Primary/secondary missions by helicopter in 2019 (9,822 patients in total)





## Rega international



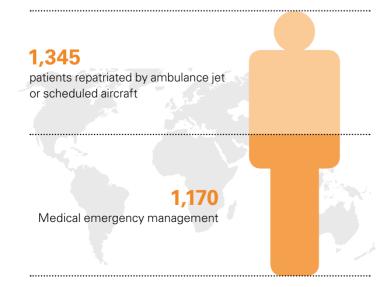
For people who become seriously injured or ill abroad, Rega represents a bridge to their homeland. Its three own ambulance jets are used exclusively for transporting patients. The crew always comprises at least two pilots, a physician and an intensive care nurse. Rega is equipped to transport patients who are in a very critical physical condition. However, as each transport involves a certain degree of risk, operations of this kind need to be closely supervised by experienced medical consultants.

The use of an ambulance jet is not always necessary. Often patients are repatriated on board a scheduled aircraft – competently and professionally attended to by a member of Rega's medical staff.

If travellers suffer serious medical problems abroad, Rega can also assist by providing them with expert medical advice by telephone as part of its emergency medical management. Medical consultants are on duty around the clock and, together with the doctors on location and the patients themselves, seek the best possible solution – such as informing them of the nearest suitable hospital.

Providing that it has capacity available, Rega also puts its knowledge and fleet at the disposal of clients abroad for patient transports. These missions help Rega crews to maintain and improve their operational and medical expertise, and also contribute towards covering costs.

#### Medical emergencies abroad in 2019 (2,515 patients in total)





Patronage

## No patrons, no Rega

Thanks to their annual contributions, Rega's patrons enable the continued existence of the air rescue organisation. They keep Rega in the air, as a public service for the Swiss people.

Professional rescue by air around the clock, 365 days a year, with highly qualified staff, state-of-the-art rescue equipment and a dense network of helicopter bases – it would be impossible to provide all this in a cost-effective manner. When, back in the 1960s, the fledgling air rescue organisation ran into serious financial difficulties, instead of relying on public funds, it set up a privately operated patronage system. Since then, the patrons have paid Rega's "deficit" with their annual contributions. At around 60 percent, these patronage contributions, together with donations, cover more than half of the total budget. The remaining costs are principally covered by cost bearers, such as health, accident and travel insurers, in the form of payments for missions carried out on their behalf.

In the meantime, this system has more than proved its worth. It gives Rega the freedom and independence to perform its duties as it deems best and allows it to fully focus on its patients' welfare.

As a token of thanks for patrons' support, Rega can waive the cost of any of the services it performs on their behalf, provided that the person's insurance company is not liable to pay them.

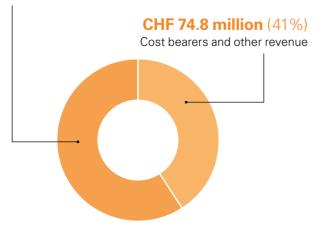
You can find the Conditions of Patronage on page 38.

#### Cost coverage in 2019

#### CHF 107.2 million (59%)

Patrons' contributions and donations

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A huge thank-you to all of our 3,552,000 patrons, whose financial contributions keep Rega in the air.

Secome a Rega patron: www.rega.ch

## Milestones

Swiss Air-Rescue Rega was founded in 1952 to provide emergency medical assistance by air. Since then, it has organised over 400,000 missions and rescued countless people in distress. Even back in the pioneering days, Rega's air rescuers succeeded in achieving the impossible. Rega has remained true to this credo to this day.





save Swiss Air-Rescue from financial ruin. Bell 206A, the first turbine-powered helicopter The Jet Ranger HB-XCU

However, a nationwide appeal for help

**Self-help by means of patronage** No funds from the Swiss government.

proves successful, 25,000 patrons

**helicopter** The Jet Ranger HB-XCU has a turbine, but no rescue hoist. In mountainous areas where the helicopter is unable to land, rescue is only possible using the fixed rope.



The organisation is founded Swiss Air-Rescue is founded as a sub-section of the Swiss rescue association, Schweizerische Lebensrettungsgesellschaft (SLRG), in the Hotel Bären in Twann.



Swiss Air-Rescue is ready to start operations On 25 December, Dr. Rudolf Bucher, the head of Swiss Air-Rescue, announces over Radio Beromünster that the parachutists and helicopters are ready for action.



**The first rescue parachutists** In winter 1953, Swiss Air-Rescue parachutists are used on a rescue mission for the first time.



Large-scale live demonstration During three days in March, over 300,000 spectators watch a live demonstration in the area around Zurich's lower lake basin, held to procure funds for air rescue services.



1957

1960



area in the Grand Canyon region.
The first helicopter of its own
A countrywide collection by the

**Emergency assistance in the USA** 

Rescue pioneers recover the bodies

of 128 persons from an inaccessible

After a plane accident, Swiss Air-

Association of Swiss Consumers' Cooperative Societies (now Coop) produces sufficient funds to purchase a Bell-47 J helicopter.

An autonomous organisation under Fritz Bühler Swiss Air-Rescue breaks away from its parent organisation, the SLRG. Fritz Bühler is appointed Technical Director.

#### **First repatriation**

For its first repatriation mission, the private Piaggio 166 aircraft owned by Dr. Armin Meyer flies a patient from France back home to Switzerland.

















First direct rescue from the Eiger north face What until now had been deemed impossible, suddenly becomes reality: using a rescue hoist, the crew from the Gsteigwiler base lift two climbers directly off the rock face.

**First Alouette III** The Alouette III SE 316 HB-XDF is Rega's first helicopter to be financed by patrons' contributions. The picture shows it in operation at the Engadin Ski Marathon in 1972.

Twin-engine helicopter The introduction of the Bölkow BO-105C – depicted here on the roof of the University Children's Hospital in Zurich – marks the beginning of the era of twin-engine helicopters at Rega.

**Operations abroad with its own aircraft** Rega's Learjet 24D HB-VCY is the first civilian ambulance jet in the world. It is fully equipped with medical apparatus and is on stand-by around the clock.

**Rega becomes a non-profit foundation** The Association sets up a Foundation. Fritz Bühler is appointed the first Chairman of the Foundation Board. In 1981, Rega also becomes a Corporate member of the Swiss Red Cross.

Long-haul ambulance jet The Challenger CL-600 HB-VFW is equipped to perform long-haul operations with several patients on board. In Geneva, it is christened "Fritz Bühler".

Helicopters with night vision

**goggles** Rega is the first non-military organisation in the world to equip all of its helicopters with night vision goggles, thus increasing the safety of night missions.

The Hawker 800 jets commence services Two new ambulance jets replace the pair of Learjet 35 aircraft. The larger cabin and longer range improve the services for patients.

24







**The new fleet is made up of Agustas** On 14 August, the Untervaz base in Canton Graubünden puts the first of the 15 new twin-engine Agusta A 109 K2 helicopters into operation.

The first round the world flight In a mission lasting 43 hours, the Challenger CL-600 transports three patients in consecutive legs, a journey that takes it all the way round the world for the first time.

**New Rega Centre at Zurich-Kloten** For the first time, Rega's hangar, Operations Centre, maintenance works, logistics operations, Patronage Centre and Administration Department are all united under one roof.

Three new Challenger CL-604 jets

Canadian manufacturer, Bombardier,

replace the 15-year-old air ambulance

Five Eurocopter EC 145 helicopters

Rega purchases five spacious

Tsunami in Southeast Asia

Rega is pushed to the limit. Over

are in operation. Within the space

The AgustaWestland Da Vinci is

**Rega's new mountain helicopter** Rega purchases from helicopter

11 rescue helicopters for use at its

manufacturer AgustaWestland

mountain bases.

and jets.

are repatriated to Switzerland.

of a week, more than 60 casualties

a period of ten days, 16 medical teams

rescue helicopters from helicopter

at its lowland bases. This is followed

manufacturer Eurocopter for use

Three identical aircraft from the

fleet

by a sixth.



2002







Mobile heart-lung machine on board For the first time, critically-ill patients can be hooked up to a heartlung machine in the Rega helicopters



navigation, Rega flies to the Inselspital University Hospital in Berne despite poor visibility, using the GPS-assisted approach procedure.

Flying "blind" to the Inselspital

27 July: thanks to satellite-based



State-of-the-art dispatch system The new interlinked systems allow alarm procedures to be largely digitalised and rescues to be coordinated more efficiently than ever.





















The flight simulator for the AW Da Vinci sets new standards in pilot training. Instrument flight and emergency scenarios can now be practised realistically and efficiently – in safety

and without harming the environment. Premiere for Rega's new transport incubator, which can be used in both the jets and the helicopters and

provides premature or newborn babies with the best possible medical care.

#### Rega orders three all-weather AW169-FIPS helicopters from Leonardo (formerly AgustaWestland), which are equipped with an anti-icing system and will go into operation

which are equipped with an anti-icing system and will go into operation in 2021.

Rescue despite poor visibility thanks to IFR flight route network In December, two routes of the Low Flight Network for helicopters, which is based on satellite navigation, are certified for daytime use.

Precise flight weather data 60 new or enhanced measuring stations and weather cameras now continually supply Rega's helicopter pilots with up-to-date meteorological information – a key prerequisite for IFR flights.

Authorisation for Low Flight Network Rega receives special authorisation to use key intersections of the nationwide network of IFR flight routes on missions virtually around the clock.

**Three new ambulance jets** The new Challenger 650 jets from Bombardier fly patients from all over the world back to Switzerland. The Rega jets replace the three CL-604s that have been in operation since 2002.

New generation Rega helicopters The first two H145 helicopters from Airbus Helicopters are stationed at the Berne and Basel bases as high-performance successors of the EC 145 fleet, which repatriated over 60,000 patients.

**The Rega drone,** which is to be used to search for missing or injured persons, is presented for the first time. The newly developed drone system will expand Rega's scope of operations from 2020.

More than 3.5 million patrons keep Rega in the air. Rega expresses its thanks by inviting its 3.5 millionth patron – representing all Rega patrons – to take a look behind the scenes.





### Annual Report 2019

Activities in 2019	28–31
Mission Statement	32
Foundation Board	33
Governance and Compliance	34-35
Rega in 2019	36
Management Board	37

## Activities in 2019

Rega can look back on a busy operational year: in 2019, its Operations Centre organised 16,782 missions (-2.0%). This is the second highest number after 2018 and is equivalent to an average of one mission every 30 minutes. In total, Rega's crews transported 11,167 patients (-3.6%) on board its rescue helicopters and ambulance jets. On average, they came to the aid of 31 people per day.

#### Helicopters

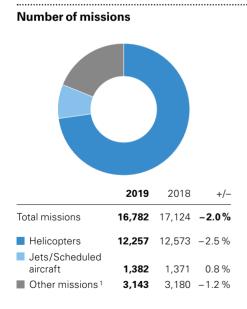
In 2019, the number of helicopter missions fell somewhat compared to the previous year (12,257, -2.5%). The amount of both secondary missions (2,381, -8.6%) and primary missions (7,362, -2.1%) registered a small decrease. The Rega helicopters were in the air slightly more often after dark than in the previous year (2,352, +0.9%): in 2019, every fourth mission performed by a Rega helicopter was flown at night. The amount of "Contadino" missions organised by Rega's Operations Centre totalled 1,254 (–3.6%): Rega commissions commercial helicopter transport firms to carry out these transports on behalf of mountain farmers to recover injured or dead cattle.

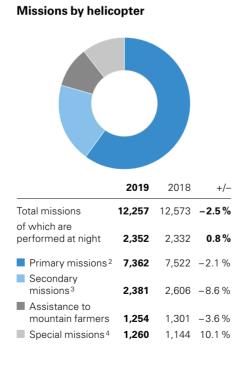
#### **Fixed-wing aircraft**

During the past year, Rega repatriated 1,345 patients from countries abroad, which was around the same as in 2018 (-0.7 %). Its three ambulance jets took off on 972 missions and flew 972 patients back home to Switzerland (-0.9 %). The Rega jets spent a total of 4,451 hours in the air, which represents a drop of -5.1 % in comparison with the previous year (4,690). This is the second highest number after that recorded in 2018.

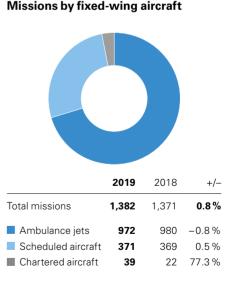
Rega repatriated almost the same number of patients as the previous

year on board scheduled aircraft (373, -0.3%). This economically and environmentally sound alternative to the ambulance jet is employed provided that the patient's medical condition is sufficiently stable, that this form of transport is not expected to have a negative impact on the patient or other passengers, and that enough seats are available on board the plane. Due to natural fluctuations, fewer patients (116, -4.9%) were repatriated on scheduled flights accompanied by a Rega flight physician or intensive care nurse. The amount of unaccompanied repatriations, on the other hand, rose slightly (257, +2.0%): in such cases, the Rega Operations Centre organises the return journey for patients who are able to travel without a medical escort.









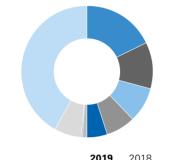
<sup>1</sup> Other missions: transports by ambulance, missions on behalf of the Swiss Alpine Club SAC, Spéléo-Secours, Redog, etc.

- <sup>2</sup> Primary missions: emergency missions directly at the scene of the incident
- <sup>3</sup> Secondary missions: inter-hospital transfers, neonatology, organ transports

<sup>4</sup> Special missions: non-medical Rega missions (search, route securing and reconnaissance flights on behalf of operation partners) and missions performed by other helicopters

#### Transported patients – primary/ secondary missions by helicopter

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	2019	2018	+/-
Total patients	9,822	10,224	-3.9%
Winter sports accidents	1,750	1,646	6.3 %
<ul> <li>Occupational accidents</li> </ul>	1,126	1,137	-1.0 %
Road accidents	862	862	0.0 %
Alpine accidents	704	821	-14.3 %
Sports accidents	498	534	-6.7%
Aviation accidents	102	137	-25.5 %
Avalanche accidents	s <b>38</b>	33	15.2 %
Other causes	646	823	-21.5 %
Illnesses	4,096	4,231	-3.2 %

#### Medical emergencies abroad

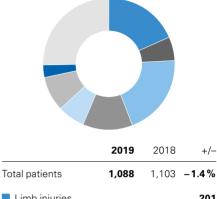
	2019	2018	+/-
Total patients	2,515	2,701	-6.9%
<ul><li>Medical advice</li><li>Repatriation</li></ul>	1,170 1,345		-13.1 % -0.7 %

.....

#### Repatriations

	2019	2018	+/-
Total patients	1,345	1,355	-0.7%
Rega ambulance jet	s <b>972</b>	981	-0.9%
Scheduled airlines accompanied	116	122	-4.9%
Scheduled airlines unaccompanied	257	252	2.0 %

#### Transported/accompanied patients – missions by fixed-wing aircraft



Limb injuries	201
Craniocerebral trauma	62
Other injuries	218
Cardiovascular diseases	134
Strokes	72
Gastrointestinal diseases	94
Malignant tumours	33
Other illnesses	274

## Medical advice and assistance by Rega physicians

Prior to each repatriation mission, thorough medical clarifications are carried out by one of Rega's medical consultants. In liaison with the Operations Centre, the physician on duty decides whether repatriation is necessary and sensible, and if so, how it should take place. As with the flight coordinators, Rega's medical consultants work in shifts around the clock. Last year, they provided a total of 2,515 patients (-6.9%) suffering from medical problems abroad with competent advice. In 1.345 cases. the medical clarifications led to the patient being repatriated on board a Rega ambulance jet or a commercial airline

Individual insurance companies ask Rega's physicians to clarify the medical condition of their policy holders who have become seriously injured or ill abroad, even if they are not Rega patrons. Rega makes a recommendation as to whether from a medical point of view the patient needs or is fit enough to be transported, and the insurance company then decides if and how repatriation should take place.

## Fluctuation in mission and patient numbers

The number of patients and missions do not always concur, as either several patients are transported at the same time or flights are performed without any patients at all – for example, if a search flight conducted by a Rega helicopter proves unsuccessful.

The mission statistics relating to the Rega helicopters are subject to natural fluctuations and reflect the meteorological conditions, as well as the leisure activities and travel patterns of both the Swiss population and foreign tourists in Switzerland. The number of repatriations and the missions performed by the Rega jets are also governed by natural fluctuations and reflect the travel activities of Swiss people abroad.

## Financial development and investments

In the 2019 business year, Rega's operating income totalled CHF 166.8 million, while the operating expenses came to CHF 172.9 million. This resulted in a negative operating result of –CHF 6.1 million. The annual result amounted to CHF 8.9 million.

Rega basically funds itself through two channels: 59 percent of the budget is covered by Rega patrons through their patronage contributions and donations, while the remaining 41 percent comprises payments by cost bearers for services rendered. In line with its strategic goals, Rega is almost 100 percent self-financed and does not need outside capital to finance its investments.

### For the first time more than 3.5 million patrons

Thanks to the solidarity contributions by its patrons, Rega is able to provide nationwide medical assistance by air – without receiving any subsidies from the State. This support allows Switzerland to benefit from an airrescue service that sets standards and enjoys recognition all over the world.

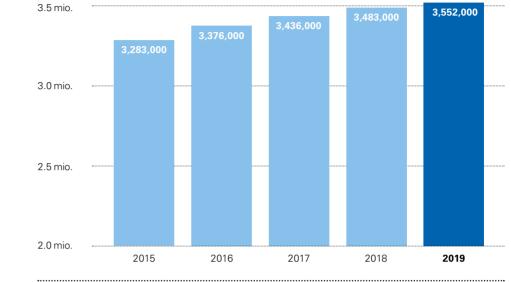
In the year under review, too, Rega registered a growth in this support: as of 31 December 2019, a total of 3,552,000 patrons were recorded on the computer system. This represents almost 70,000 additional patronages or a 2 percent net increase compared to the previous year. In 2019, Rega's patrons supported the air rescue organisation with annual contributions, donations and bequests totalling CHF 107.2 million (+4.0 %), corresponding to around 60 percent of the overall costs.

According to its Conditions of Patronage, Rega can waive the cost of part or all of its mission costs if these are not covered by the patrons' own insurance policies, as a token of thanks for their support.

## Network of instrument flight routes for Switzerland

For many years, Rega has been pursuing its vision of performing air rescues no matter what the weather. Together with the Swiss Air Force and the Skyguide air navigation service, it has set up the so-called Low Flight Network. This countrywide network of instrument flight routes aims to link airports, airfields, hospitals and Rega helicopter bases with each other.

In April 2019, the Federal Office of Civil Aviation (FOCA) granted Rega a special authorisation to also fly to the University Hospital Zurich and Winterthur Cantonal Hospital under instrument flight rules (IFR) in poor visibility. The network of instrument flight routes is planned to be continually expanded: however, additional permits, such as for IFR approach flights to the Swiss Paraplegic Centre in Nottwil, are still pending.



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#### Development in the number of patrons

## The new Rega helicopters prove themselves on missions for patients

With the putting into operation on 3 June of the seventh Airbus Helicopters H145 rescue helicopter, which is stationed at the St. Gallen base, Rega has successfully brought its plan to modernise its lowland fleet to a close. All the crew members and mechanics were retrained to work on the new Rega helicopter within the given timeframe and the base was supplied with the necessary operational and maintenance material.

The new rescue helicopter has already proved its worth in the course of thousands of missions carried out on behalf of patients. A home was also found for the six Airbus EC 145 lowland helicopters that had retired from service: in mid-November, they took off in the direction of Morocco, where they will continue to be used to provide emergency medical care, but from now on by the Royal Gendarmerie.

### New Rega training base opens in Grenchen

After a three-month construction period, Rega opened its new training base at the regional airport in Grenchen (Canton Solothurn) at the beginning of October 2019. In future, the Rega crews – each comprising an emergency physician, a paramedic and a pilot – will undergo training here. The Airbus Helicopters H125 training helicopter is stationed in the new hangar. Grenchen is an ideal location for conducting training flights; the airport's good infrastructure makes it possible, among other things, to practise approach flights under instrument flight rules (IFR).

### The Rega drone clocks up flight hours

In April 2019, Rega presented its drone project for searching for people in distress to the public for the first time. The newly developed Rega drone can autonomously scan large search areas and is equipped with various sensors, such as a thermal imaging camera. From 2020, it is to be deployed as a supplementary device to help search for missing, injured or ill persons – for example, when poor visibility prevents a helicopter from being used.

The various components of the system are currently being further developed and trialled in all kinds of different environments. The two-person crew, comprising a pilot and an operator, are performing numerous test flights in order to gain additional flying experience and knowledge as to the situations in which the drone can be used to the benefit of people in need. In addition, since the end of November 2019, the mobile ground control station has been in operation – an all-terrain vehicle from which the Rega drone is operated and monitored on location.

## New dispatch system for the Helicopter Operations Centre

Last year, Rega modernised its Helicopter Operations Centre: thanks to a mission control system tailored to Rega's specific needs, combined with a newly developed, integrated communication system, the flight coordinators now receive even better support when coordinating the approximately 12,000 helicopter missions every year. Various types of information can be displayed directly on the digital map - for example, which helicopters are currently available or which accident sites a rescue helicopter can reach within a given period of time. In addition, key address objects can be searched for quickly and easily on the map. The coordinates of the accident site, the reason for deployment and the contact person for the crew are then transmitted directly into the cockpit at the click of a mouse.

### Rega supports the emergency medical services in Canton Glarus

Since 1 September 2019, and initially for a period of one year, Rega has been in operation in Canton Glarus providing medical care not only by air, but also on the ground. This pilot project is being implemented in close cooperation with both the competent authorities and the rescue service from Glarus Cantonal Hospital. Since then, a vehicle has been stationed at the Rega base in Mollis, which is used to drive the Rega emergency physician to the scene of the incident - for example, if the rescue helicopter has to remain on the ground due to bad weather or if a mission is carried out very close to the helicopter base and the use of the helicopter does not save any time for the patient.

#### Rega app with new features

When the alarm is raised via the Rega app, the coordinates of the caller's location are automatically transmitted to the Rega Operations Centre, saving valuable time in an emergency. Since its launch nine years ago, the app has been downloaded more than 1.5 million times, and nowadays one in four emergency calls received by Rega's Operations Centre from a private person come in via the Rega app. In collaboration with in-house and external specialists, the app has now been further developed and expanded: since January 2019, in addition to the basic alarm function, app users have been able to share their position data with Rega's Operations Centre or with friends and also allow them to monitor their outdoor activities.

## Rega organises the 5th air rescue symposium

For the second time, Rega hosted the Central European Air Rescue Symposium, which took place in St. Gallen on 28 September 2019 with a record number of participants.

Rega attaches great importance to an exchange with other air rescue organisations, emergency physicians, paramedics and hospital specialists. In 2019, on the initiative of Rega's medical division, it held a training camp for the first time: in the run-up to the symposium, representatives from Air Zermatt, Air-Glaciers, the German ADAC, the Austrian ÖAMTC, Flugrettung Südtirol from Italy and Norsk Luftambulanse from Norway convened in Elm (Canton Glarus) for a period of three days to learn from each other.

They attended various workshops, including a rescue exercise: suspended on the end of the rescue hoist of the Rega H145 helicopter, participants from the various rescue organisations were set down one by one in rough terrain next to a casualty. The different working methods and the medical care provided to the patient were recorded and subsequently discussed together.

This annual event promotes the cross-border exchange of information between different rescue organisations and facilitates a valuable transfer of knowledge with key partners at the interfaces of preclinical medicine.

## Successful re-accreditation by CAMTS and IVR

In May 2019, Rega's accredited status was renewed by the Commission on Accreditation of Medical Transport Systems (CAMTS). As a result, Rega continues to be the only European organisation to be certified for aeromedical helicopter and ambulance jet operations as well as for medically escorted repatriations. Last year, Rega also renewed its certification with the Interverband für Rettungswesen (IVR), the umbrella organisation for medical rescue services in Switzerland.

#### New Rega website

Rega's Internet presence receives several million hits every year and plays a key role in the organisation's PR activities and contact with its patrons. A completely revamped website was launched at the end of October 2019. In addition to simplified user navigation, large-format images and direct access to the most frequently asked questions, a main focus is placed on Rega's Patronage Service. An "online desk" allows the more than 3.5 million Rega patrons to submit their queries and comments, as well as any amendments to their personal details, easily and efficiently online.

## **Mission Statement**



#### **Our purpose**

We provide an around-the-clock service offering swift, expert assistance by air. In particular, we transport medical care to the casualty and help in emergency situations.

This assistance also takes the form of medical advice and the use of our infrastructure.

Our operations are characterised by our highly qualified, professional members of staff and the very best equipment available in the fields of rescue, medical and flight technology.



#### **Our fundamental concept**

We are a non-profit organisation that is funded by its patrons. Our services are primarily geared towards the needs of the Swiss population.

We are financed by means of private funding. This enables us to operate independently in the service of our patients.

In the interest of the patient, we take an active stand against the commercialisation of air rescue.

Emergency missions and other operations carried out on behalf of the general public are not conditional upon whether or not the ensuing costs are covered.

Our rescue activities are based on the Fundamental Principles of the Red Cross.



#### **Our patrons**

Thanks to their annual contributions, our patrons enable us to build up and operate a suitable infrastructure to perform air rescue operations on behalf of the Swiss population.

The services rendered by Rega to its patrons are not of a contractual nature and are therefore not deemed to be insurance benefits.



We are fully aware of the importance of working in close collaboration with our partner organisations, and actively foster a successful working relationship with them.

We act as a fair and reliable partner.

We focus our activities on the fields of air rescue, air-ambulance repatriation services and medical advice.

In order to maintain and further improve the top level of expertise of our medical staff, we also perform medically indicated flights on behalf of international clients.

### Our staff

Our members of staff play a decisive role in fulfilling our purpose. The following factors are of particular importance in this respect:

- personal identification with the organisation and its purpose;
- independence and responsibility;
- willingness to perform, flexibility and motivation.

We aim to achieve this by means of:

- on-going training appropriate to the various hierarchical levels;
- progressive working conditions;
- appropriate salaries and attractive social benefits.

We foster a style of behaviour among our staff that is open, cooperative and characterised by mutual respect.



#### **Our values**

We strive to provide around-the-clock services of first-class quality and safety, as well as to cultivate a conscious, structured manner of dealing with risks.

Our organisational structures are characterised by a clear-cut delineation of tasks, competences and responsibilities. These are implemented and respected at all hierarchical levels, from ordinary employees right up to the members of the Foundation Board.

We act and communicate in an open and transparent way, both within our organisation and towards the outside.

We are conscious of a potential conflict between performing our work and protecting the environment, and take this into account in everything we do.

## Foundation Board

#### Foundation Board of Swiss Air-Rescue Rega

Michael Hobmeier, Bäch, since 2007, Chairman and Member of the Executive Committee

Christian Kern, Prof. Dr. med., Geneva, since 2009, Vice-Chairman and Member of the Executive Committee

Patrizia Pesenti, Zollikon, since 2009, Member of the Executive Committee

Gabi Huber, Dr. iur., Altdorf, since 2015, Member of the Executive Committee

Josef Meier, Wettingen, since 2013, Member of the Executive Committee

Heidi Hanselmann, Walenstadt, since 2010

Thomas P. Emmerich, Riehen, since 2011

Marco Maggiorini, Prof. Dr. med., Schindellegi, since 2011

Adrian Amstutz, Schwanden, since 2013

Franz Stämpfli, Innertkirchen, since 2015

Gerold Biner, Zermatt, since 2015

Thomas Holderegger, Waldstatt, since 2015

Markus Furrer, Prof. Dr. med., Felsberg, since 2019

Paul Hälg, Dr. sc. techn., Wollerau, since 2019

#### Resigned as of 31 December 2019

Anna Brunello, Dr. med., Haldenstein, 1 January–31 December 2019

#### **Medical Commission**

Christian Kern, Prof. Dr. med., Chairman

Marco Maggiorini, Prof. Dr. med.

Markus Furrer, Prof. Dr. med.

#### **Finance Commission**

Josef Meier, Chairman

Michael Hobmeier

Paul Hälg, Dr. sc. techn.

#### **Advisory Committee Partner Organisations**

Franz Stämpfli, Member of the Rega Foundation Board, Chairman

Thomas P. Emmerich, Member of the Rega Foundation Board

Françoise Jaquet, Dr. sc. nat., Swiss Alpine Rescue representative

Philipp Perren, Dr. iur., Canton Valais representative

Andy Scheurer, Spéléo-Secours representative

Markus Denzler, police commanders representative

Marc Ziegler, Swiss Cable Cars Association representative

Sibylle Frey, Swiss Air Force representative

Günter Bildstein, Medical Emergency Call Centres 144 representative

Renato Belloli, Swiss Helicopter Association (SHA) representative

Daniel Weisskopf, Swiss Fire Service Coordination (FKS) representative

#### Auditors

KPMG AG, Zurich

as of 1 January 2020



**Michael Hobmeier** 



Heidi Hanselmann



Gerold Biner



Christian Kern



Thomas P. Emmerich



Thomas Holderegger



Patrizia Pesenti



Marco Maggiorini

Markus Furrer





Gabi Huber



Adrian Amstutz



Paul Hälg



Josef Meier



Franz Stämpfli

## Governance and Compliance

The purpose of the Swiss Air-Rescue Rega Foundation is above all to help people in distress and in need of assistance, in accordance with the Fundamental Principles of the Red Cross. It provides its services without discrimination as to person, financial circumstances, social status, nationality, race, religious beliefs or political opinions.

Rega is fully committed to conducting its business according to the principles of good corporate governance. It upholds the guiding principles of non-profit governance: checks and balances, responsibility and efficiency, transparency, safeguarding the interests of patrons, and safeguarding the interests of donors. Rega's guiding principles relating to corporate governance are embedded in its Foundation Deed and Regulations, its organisation and management regulations, its Mission Statement and its Code of Conduct. The Foundation Board monitors these principles on a regular basis.

#### **Foundation Board**

The Foundation Board is Rega's supreme body. It lays down the guiding principles of the organisation in accordance with the Foundation Deed. It draws up the Mission Statement and pertinent regulations, and adopts the strategy and the budget. It approves the Annual Report and the annual financial statements. It defines the supervision and monitoring of the business activities. It also authorises the principles relating to the remuneration of the members of the Foundation Board and the Management Board.

The Foundation Board comprises a maximum of 15 members. The term of office is four years. Members are eligible for re-election up to their 70th birthday. There is no limitation on the length of service of the members of the Foundation Board. The Foundation Board elects from among its members a Chairman, as well as the five members of the Executive Committee, and also defines the Committee's tasks and competences.

## Executive Committee of the Foundation Board

The Executive Committee comprises five members of the Foundation Board: the Chairman, the Vice-Chairman, the Chairman of the Medical Commission, the Chairman of the Finance Commission, and one other member of the Foundation Board.

The Executive Committee of the Foundation Board is responsible for carrying out the tasks delegated to it. It coordinates the permanent commissions of the Foundation Board. Furthermore, on behalf of the Foundation Board, it supervises and monitors the Management Board and issues it with the necessary instructions.

The members of the Executive Committee also serve on the Board of Directors of the subsidiaries, Swiss Air Ambulance Ltd. and Airmed AG.

#### **Management Board**

The Chairman of the Management Board is charged with managing the operative business, implementing the resolutions adopted by the Foundation Board and the Executive Committee, and delegating the various tasks and competences within the organisation.

#### Tasks and procedures of the permanent commissions and the Advisory Committee

Each specialist body is governed by a set of regulations specifying its various tasks and competences, and is headed by a chairperson elected by the Foundation Board. The commissions meet on a regular basis to discuss specialist matters, which are specified by the relevant chairperson.

Prior to the meeting, the commission members receive the relevant documents so that they can prepare for the various items on the agenda.

#### **Medical Commission**

The Medical Commission comprises the Chairman, Prof. Dr. med. Christian Kern, and three physicians, all of whom are members of the Foundation Board. The meetings are also attended by the Chairman of the Management Board, the Medical Director and, where necessary, other specialists, who are present in an advisory capacity and have the right to propose motions.

The Medical Commission is an advisory body to the Foundation Board and the Medical Director. It deals with and considers specialist matters relating to emergency and rescue medicine that fall within the competence of the Foundation Board, prior to the latter taking any decisions. When drawing up medical guidelines and quality controls, the Commission is assisted by Rega's Medical Service.

#### **Finance Commission**

The Finance Commission comprises its Chairman, Josef Meier, and other members of the Foundation Board. The meetings are also attended by the Chairman of the Management Board, the Chief Financial Officer and, where necessary, other specialists, who are present in an advisory capacity and have the right to propose motions.

The Finance Commission is an advisory body to the Foundation Board. It deals with matters relating to financial planning, budgeting, investment policy and the internal control system, and periodically examines the form and scope of financial reporting.

#### Advisory Committee Partner Organisations

Under the chairmanship of Franz Stämpfli, the Advisory Committee comprises members of Rega's Foundation Board together with representatives from the following partner organisations: Swiss Alpine Rescue, commercial helicopter firms, the Canton of Valais Air-Rescue Service, the Swiss Air Force, the Swiss Cable Cars Association, police commanders, Spéléo-Secours Switzerland, Swiss Fire Service Coordination (FKS) and the Medical Emergency Call Centres 144.

The Advisory Committee is concerned with tasks relating to the collaboration between the partner organisations and promotes the exchange of information between the various network members.

#### Accounting and auditing

The financial statements of the Swiss Air-Rescue Rega Foundation and its subsidiaries are prepared in accordance with the principles of Swiss GAAP FER accounting and reporting recommendations (in particular, GAAP FER 21), and give a true and fair view of its net assets, financial position and earnings performance.

At Rega, the "four eyes" principle is applied. This means that fundamentally two joint signatures are required at all levels. The Foundation Board has drawn up a set of regulations governing competences and signatory rights. Both internal and external control bodies periodically check that these regulations are being complied with.

#### Risk Management – Internal Control System, IKS

The highly complex nature of emergency medical rescue, coupled with the strict requirements of aviation law and the demands of the Code of Obligations, make it necessary to take a structured approach to risks. Rega has combined demands from the Internal Control System and Safety and Quality Management to create integrated risk management in order to identify and view risks holistically and make use of available synergies.

As Rega's supreme body, the Foundation Board is responsible for risk management at Rega and all its subsidiaries. The key risks are systematically identified and evaluated every year, and appropriate risk control measures are taken. The identified risks are additionally monitored on an ongoing basis.

#### **Rega's interests**

Rega has interests in various companies domiciled in Switzerland. Strategic interests in companies and foundations in which Swiss Air-Rescue Rega directly or indirectly holds over 50 percent of the voting rights or which are controlled by the Foundation Board are consolidated in the annual financial statements. An overview of these interests is provided in Rega's consolidated annual financial statements.

Rega further holds operative and functional minority interests in helicopter companies, airfield companies and cooperatives, and assistance companies in Switzerland. This portfolio is maintained in order to fulfil the purpose of the Foundation.

Rega also has interests/investments which are managed by external asset managers according to a portfolio management agreement.

#### **Foundation Board compensation**

Compensation of the Foundation Board is based on the set of regulations approved by the Swiss Federal Supervisory Board for Foundations. Compensation (fixed sums, attendance fees and expenses) covers part of the expenses of Foundation Board members for preparing meetings, reviewing documents and attending meetings of the Foundation Board, Foundation Board Committee, specialist and ad hoc committees, Advisory Committee, partner organisations, pension foundations and other companies in which Rega has an interest. All compensation made to the Foundation Board and its Chairman is reported in detail in Rega's consolidated annual financial statements.

#### Foundation supervisory authority

As a non-profit foundation, Rega is subject to the supervision of the Swiss Federal Supervisory Board for Foundations in Berne, to which it is required to submit a management report each year. The last assessment and review by the Federal Supervisory Board was conducted on 29 January 2020; no objections of any kind were raised.

## Rega in 2019

**14 February:** Rega flies a patient connected to a mobile heart-lung machine from London to Kaohsiung in Taiwan on board its new ambulance jet. With a flying time of 14.5 hours, this is the longest flight ever made by an intensive care patient hooked up to a heart-lung machine. The successful mission was made possible by Rega's close cooperation with the University Hospital Zurich and its endeavours over many years to deploy high-tech medical equipment in its aircraft.

**8 March:** Rega's longest serving ambulance jet, the Challenger CL-604 with the registration number HB-JRA, is transported by water from Alpnach across Lake Lucerne to the Swiss Museum of Transport. During its 16 years of service, it flew more than 4,400 patients from all over the world back home to Switzerland. Since mid-April, the ambulance jet has been part of the permanent Rega exhibition at the museum. Here it can be viewed at close quarters and thus continues to be in the service of the Swiss population.

**15 March:** The Rega crew from the Zurich base present their new Airbus Helicopters H145 rescue helicopter to the general public in the main concourse of Zurich Main Station. Visitors have the opportunity to inspect the new Rega helicopter close up and gain fascinating insights into the world of Rega.

**12 April:** Rega presents a new device for searching for people in distress: the newly developed Rega drone autonomously scans large search areas and is equipped with various sensors, such as a thermal imaging camera. In future, it is to be used as an additional tool to help search for missing, injured or ill persons – for example, when poor visibility makes it impossible to use a helicopter. **28 April:** For the first time, a Rega crew flies to the University Hospital Zurich (USZ) in poor visibility under so-called instrument flight rules. The patient needed to be transferred to the main hospital as quickly as possible for an urgent heart operation. Just a few weeks earlier, the Federal Office of Civil Aviation (FOCA) had approved Rega's new approach procedures to the USZ and Winterthur Cantonal Hospital.

**14 September:** Numerous visitors watch as the new rescue helicopter prepares to land at the Olma exhibition site in St. Gallen. Since the beginning of June, the new Rega Airbus Helicopters H145 helicopter has been deployed at the St. Gallen base. Now the crew is presenting "their" new helicopter to the local population.

26 September: In the run-up to the Central European Air Rescue Symposium, for the first time Rega invites representatives from various air rescue organisations from Norway, Germany, Austria and Italy to attend a three-day training camp in Elm (Canton Glarus). During one exercise, the various crew members suspended on the end of the rescue hoist of the Rega H145 helicopter are lowered one by one to a casualty in rough terrain. The various methods of administering first aid to the patient are recorded and subsequently discussed. In addition to lively exchanges at various workshops, there are demonstrations of the new Rega drone in adverse terrain and a hoist operation at night.

**21 November:** Rega is more firmly anchored in the Swiss population than ever before and on this day welcomes its 3.5 millionth patron. It expresses its grateful thanks for patrons' support by inviting the new patron – representing all Rega patrons – to the Rega Centre. It is only thanks to the solidarity of its patrons that Rega is able to provide the Swiss people with basic medical care by air around the clock.

14 February



8 March



15 March





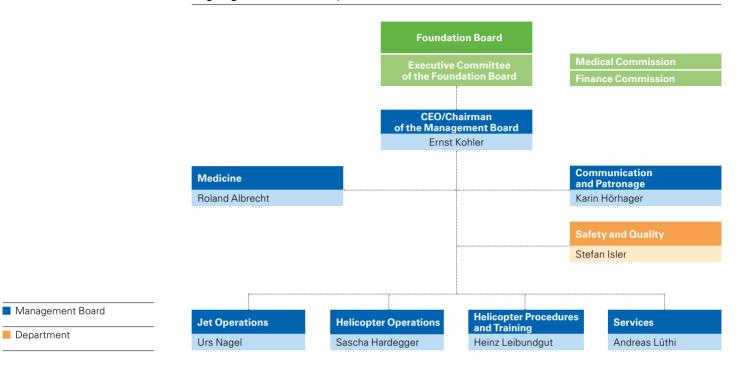
28 April



21 November

## Management Board

Organigram as of 1 January 2020



#### From left: Sascha Hardegger, Heinz Leibundgut, Roland Albrecht, Ernst Kohler, Urs Nagel, Karin Hörhager, Andreas Lüthi



## Conditions of Rega Patronage

In order to be able to provide a professional, round-the-clock and suitably equipped air rescue service in accordance with its purpose as a non-profit foundation, Rega is dependent on the financial support of its patrons.

You can become a Rega patron by paying the following minimum contributions:

- CHF 30.- for individuals
- CHF 60.– for couples (married/cohabiting couples or registered partners)
- CHF 70.– for families (parents with children who are under 18 years of age on the date of payment)
- CHF 40.– for one-parent families (single parents with children who are under 18 years of age on the date of payment)

Patronage is valid for the current calendar year and takes effect on the date of payment. If patronage is not renewed, it expires on 15 May of the following year.

In grateful acknowledgement of patrons' support, Rega can, at its own discretion and within the bounds of its resources, waive or reduce the costs of any emergency services listed below that it has provided or organised on their behalf, in the event that insurance companies or any other third party are not liable to pay and thus not required to reimburse the costs of the rescue operation, whether wholly or in part. In all cases, Rega provides its rescue services and also, where appropriate, waives or reduces the costs thereof without any legal obligation. Rega may be hindered or prevented from carrying out rescue missions in particular due to operational, medical or meteorological reasons.



#### **1. Switzerland and the Principality of Liechtenstein**

- Rescue flights and medically indicated transports
   by helicopter to the nearest suitable hospital
- Rescue operations conducted by rescue teams from the Swiss Alpine Club SAC
- Search operations in collaboration with the police and other competent organisations, provided that there is reasonable hope of being able to help missing persons
- Evacuations and preventive missions where a threat to life and limb exists
- Flights to recover dead persons, after consultation with the authorities responsible
- Flights to recover injured, sick or dead livestock and transport them to the nearest location accessible by another means of transport, provided that the owner of the livestock is a natural person and a Family patron

#### 2. Worldwide

- Medical advice by Rega's Operations Centre in the event of medical problems arising abroad
- Medically indicated repatriation flights to Switzerland for patrons domiciled in Switzerland or the Principality of Liechtenstein, as well as for Swiss nationals living abroad

Rega decides whether emergency assistance should be provided based on medical, social and operational considerations, and is responsible for determining how and when the mission should be carried out. Rega may commission other organisations to perform missions on its behalf. In order to have the required leeway in providing this assistance, the patron concerned authorises Rega wherever necessary to pass on personal and medical data to other parties directly involved (operation partners, physicians, insurance companies etc.), both in Switzerland and abroad.

Rega's Operations Centre (emergency number from within Switzerland 1414, from abroad +41 333 333 333) is available around the clock to anyone in distress and in need of assistance due to a serious accident or acute illness.

#### Rega Centre Postfach 1414 8058 Zürich-Flughafen Tel. 044 654 33 11

Rega 1, Zürich Überlandstrasse 299 8600 Dübendorf Tel, 044 802 20 20

Rega 2, Basel Postfach 4030 Basel-Flughafen Tel. 061 325 29 66

Rega 3, Bern Flugplatzstrasse 1 3123 Belp Tel. 031 819 65 11

Rega 4, Lausanne Route de Romanel 33 1018 Lausanne Tel. 021 644 22 66

Rega 5, Untervaz Postfach 7204 Untervaz Tel. 081 300 09 99

Rega 6, Locarno Via Aeroporto 15 6596 Gordola Tel. 091 820 50 00

**Rega 7, St. Gallen** Postfach 320 9015 St. Gallen Tel. 071 313 99 33

Rega 8, Erstfeld Reussstrasse 40 6472 Erstfeld Tel, 041 882 03 33

Rega 9, Samedan Plazza Aviatica 6 7503 Samedan Tel. 081 851 04 04

**Rega 10, Wilderswil** Bönigstrasse 17 3812 Wilderswil

Tel. 033 828 90 30

Rega 12, Mollis Flugplatz

8753 Mollis Tel. 055 614 55 55

Rega 14, Zweisimmen Postfach 210 3770 Zweisimmen Tel. 033 729 10 30

Training base, Grenchen

Airport Grenchen Flughafenstrasse 117 2540 Grenchen Tel. 032 654 90 00

#### Partner helicopter base

Rega 15, Genève Hôpitaux Universitaires de Genève Base hélicoptère 1217 Meyrin Tel, 022 798 00 00

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#### **Patron Service**

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#### Media Service

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