Solutions for AERIAL PHOTOGRAPHY – AERIAL VIDEO – INSPECTION





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IMPRESSIONS

Always the right perspective.













AERIAL PHOTOGRAPHY

Discover the possibilities.

Tourism

Let it be a swimming pool, resort hotel, golf course or leisure park, from heights of up to 150m, everything fits the frame. The AscTec Falcon 8 is operation ready in a few minutes.

Company profiles

Your customer can choose the best perspective live while you are operating your flying camera. Take aerial images of the object of interest from a range of heights and orientations in no time. Your customers will be impressed by your flexibility and efficiency.

Real estate

Maximize the available lighting to take the best possible pictures, regardless of the wind. With the AscTec Falcon 8, you can capture stunning photos that highlight the excellence of your marketing brochure and amaze your customers. Why don't you surprise your customers with new perspectives of the real estate?

Visualization

The property developer wants to see the view from the penthouse before construction? Should an architect convince potential investors, by rendering the planned office blocks in an aerial photo? The AscTec Falcon 8 allows you to generate the necessary data even without any prior R/C flying experience, as the operation is easy and precise.

Sports photography

Sports events can be captured dynamically and from an exciting 'birds-eye' view. Focus on the sportsmen or logos without hesitation!





References

www.skyshot.tv

- www.pht-airpicture.de
- www.aura.ch
- www.helinews.ch
- www.skylens.co.uk
- www.skyphoto.pt
- Ask us for sample pictures!



AERIAL VIDEO



Your camera crane without limit.

Documentary filming

The AscTec Falcon 8 can be operated at heights ranging from approx. 3m - 150m, which effectively bridges the gap between a dolly and a helicopter. By having this range, the system is perfectly suited to documentary videography. The patented V-shape of the octocopter keeps the rotors out of the camera's field of view, even when you face the camera directly up or when flying at high speeds. Thus reducing the amount of editing time.

Promotional video

As of now, a lightweight high quality Full-HD 1080i camera for the AscTec Falcon 8 system is available. The SONY NEX-5 camera is perfectly integrated into the system so that you have live video-feed of the camera onto your screen. The actively stabilized camera mount provides smooth video footage with minimal vibrations while always keeping level to the horizon. With some light post-processing you can create surreal videos for example for promotional campaigns.

Live events

When it comes to sports events, precise camera control is critical. The optional joystick camera control allows for a two-person operation with a dedicated cameraman. Camera tilt, panning of the complete system and zooming can be remotely controlled by the joystick. Thus moving objects can be easily tracked.

PHT Airpicture on water... PHTAirpicture 4 Videos S Abonnieren





References

www.youtube.com/user/AscTecVideos

Ask us for raw footage to evaluate the quality!



GEO SCIENCE



Flexible airborne image data collection.

High resolution up to date mapping

Rectified aerial images that were taken only minutes ago can be used to generate high resolution maps of for example construction sites. Several images can be combined to one single image by software to generate larger maps. Precise photo positions allow for a completely automated stiching.

3D modelling

Aerial images of the same object from different perspectives can be used to generate 3D models. Such models are used for visualization of building projects or calculating the amount of earth moved in gravel pits. This is an opportunity to work flexibly and efficiently. Many customers operate businesses gathering such data.

IR and NIR images

With NIR images of forests, specialists can evaluate the condition of the trees or the risk of fire.

Observing or counting animals hidden in foliage can be done with airborne IR cameras.

Observing flora and fauna without a trace

Without having a noisy aircraft or helicopter, you can easily observe sensitive areas such as national parks. New perspectives in aerial photography and filming become possible.





References

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INSPECTION

Your machine for aerial inspection.

Solar power plants

Identify defect on solar panels from a plant that are hard to reach, with a flying infrared camera. Largescale plants can be examined in semi-autonomous flight. The system can do row-by-row arrangements with predefined waypoints.

The exceptionally lightweight camera allows for flight times of up to 20 minutes. With the help of the live video on the Mobile Ground Station even small temperature differences can be clearly identified.

Construction sites and building structures

Whenever you have to inspect damage at high altitudes, the AscTec Falcon 8 is up for it. It can tolerate wind speeds of up to 10 m/s (5Bft), allowing for a safe and easy operation in almost any situation. Meaning in most cases you can do away with expensive and hazardous industrial climbing. With hardly any preparation, the condition of the building or plant can be observed. Small cracks on steeples or chimneys can be seen in the pictures.

The live video on the Mobile Ground Station with the precision of the AscTec Falcon 8 provides ground for the creation of perfect images. Straight after flight you have high-resolution images available from your camera for examination. Due to the unique design of the camera mount you can take pictures facing up or down without having rotors compromising the image.



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Let us discuss your planned scenario!



ASCTEC FALCON 8

The system.













OUR CONCEPT

A complete package direct from manufacturer

We offer you a complete package, consisting of the system itself with accessories, training sessions and assistance in getting permission or insurance. You can source everything from us to do a professional job independently. It is best to put your trust into a company with years of experience in this emerging market.

As a professional manufacturer of Micro UAVs, our systems are in series production giving consistent quality. All components are developed in-house making us independent from other parties. We manage the complete product chain ranging from development, production, testing, delivery and training of customers.

Invest in a completed system from one source!

Construction and design – PATENTED

Our AscTec Falcon 8 stands out from the crowd of the multi-copters. Our patented V-shape keeps the rotors clear from the camera's point of view. Regardless if you tilt the camera up or down, or fly at high speeds with steep angles of bank.

The system's structure consist of stiff and lightweight carbon composites. The modular design allows for a rapid exchange of components to reduce downtime to a minimum. To make your presence more professional, we have modified the design of the canopy for the AscTec Falcon 8 2011. It exhibits the dynamics of the system, even when not in flight. There is also a canopy without labeling available, if you want to place your own logo on.

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Mobile Ground Station – REVISED

In contrast to other available systems, our Ground Station is indeed mobile and can be carried around and operated by one person. The data link, camera control, video link, status display and the controls for system itself are all onboard and integrated into our Mobile Ground Station.





PAYLOADS

Highly integrated and ever so flexible.

We offer several different payloads for our system to be matching to your needs – cameras:



Camera with prime lens– NEW

We now offer a professional quality digital camera for the AscTec Falcon 8 system.

When released the Sony NEX-5 received a lot of attention. Sensors that where only available in DSLR cameras are now in a much smaller, lighter body: the Sony NEX-5. In combination with a lens with 16 mm fixed focal length, even in poor lighting and twilight conditions you can still obtain high quality images with low noise. With a customized video converter, external power supply and infrared trigger, the camera is perfectly integrated into the system. The camera can be triggered from the Mobile Ground Station. The live preview is also displayed on the Mobile Ground Station.



Camera with zoom lens

The Panasonic Lumix LX-5 digital camera has proven its reliability and image quality for a long time, much like its predecessor. It is unbeatable in its class of weight. The feature to operate zoom from the Mobile Ground Station has won over many customers. This is the camera for every day use in most conditions.



Infrared camera

For several years now, we have been using the high quality infrared cameras from FLIR. There remarkably lightweight and high resolutions of up to 640x480 pixels is outstanding. Even small thermal leaks or defects on solar power plants can be detected from long distances.

Further payloads

Besides the payloads you found in our pricelist, there is the possibility of integrating other payloads into our system, for example gas sensors. Simply contact us with your requirements.



SAFETY FUNCTIONS

Developed intelligent solutions.

At Ascending Technologies GmbH we place great value on safety and the usability of our systems. Aside from intensive and practical oriented training sessions, we offer a variety of safety features:



Data link

The connection between the Mobile Ground Station and system is critical. Hence why we use two completely separated data links to transmit, thus effectively giving double the amount of data transmitted. All commands are sent on two independent data links. Should one of the links be affected, the other can cover it. All data is transferred digitally, so the system can neither be jammed nor taken over by other pilots.

System check – EXTENDED

On start up, the AscTec Falcon 8 performs a system and environmental condition check to allow for safe operation. All functions are checked and a warning is given if a malfunction is found. Should a critical error be found, the system will not allow a take off. All sensor values and possible external disturbances are evaluated. The detected magnetic field is compared with the expected magnetic field for its current position. If the difference is out of the tolerance band, the electronics may be interfered with and a warning will be given to the pilot.



Alerts – REVISED

During flight, all relevant parameters are monitored. Critical values over predefined thresholds are brought to the pilot's attention immediately by acoustic and visual alerts. There is a permanent monitoring of the battery levels in the system, the data link and the quality of the GPS signal. The alerts have been revised by being more precisely defined. For example, if you use a half charged battery by accident, your Mobile Ground Station will give you a warning.



Coming home – NEW

Bring the AscTec Falcon back to its start position at the end of a regular mission with just a single click. In the status display you can define how your system should behave in case of an emergency. Depending on your mission, the system can either fly back to a predefined height or it can ascend to the highest flight level achieved during the mission and fly back to the start position. Some missions will only be possible with this safety feature.



TECHNICAL DETAILS

Making the system how you want it.



Flight stabilization – REVISED

The basic requirement for a reliable flight system is robust flight stabilization. Only if the system is able to keep stable and retain its attitude in turbulent conditions, then can you do your job and complete your tasks successfully. Our specialists in control engineering have put a monumental effort in revising the height control algorithm, giving smoother flight characteristics.

We utilize 11 different sensors to detect the attitude of the system and send 1000 control signals per a second to stabilize it. This is the fastest attitude control frequency in this field. Consequently, in strong winds we guarantee smooth flight characteristics.



🚺 Camera mount

Our systems use a universal camera mount for all our payloads. We combine the biggest mass in the system, the battery with the camera mount and separate them from the rest of system via dampers. This layout filters out most of the unwanted vibrations.

Besides the dampening of vibrations, the camera mount is actively stabilized in two axes. This means the camera is always leveled horizontally because the servomotors are actively compensating the movements of the system. Thus it is impossible for gusts of wind or the system itself to induce vibrations to the camera mount.

You can control the cameras tilt angle from the Mobile Ground Station in a range from 90° downwards to 90° upwards. The patented V-shape keeps the rotors from compromising the image, so you do not have to remove them in post processing, allowing you to use the images directly from camera.

Video link

The analogue transmission of the live video-feed is on a 5.8 GHz video link completely separated from the data link. The live video is displayed on a monitor of the Mobile Ground Station. Besides using an analogue video link, there is also the possibility to integrate a digital video link. Contact us for details.



OPERATION OF THE SYSTEM

Simplicity.



GPS flight mode

The information from the Global Positioning System (GPS) allows the system to hold its position without any input from the pilot. The positioning data not only allows for a position hold, but also for controlled flight paths with defined speeds and directions. In this mode, the pilot does not have to compensate for wind speed or direction of the wind and thus can concentrate on doing his/her task.

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Height mode

The second available flight mode is height mode, which is very easy to use. In height mode, the system retains its height and orientation allowing you to fly the system in plane at higher speeds e.g. for dynamic filming. The maximum stick input is limited, making it beginner friendly. So the AscTec Falcon 8 can be operated safely at all times.



Waypoint navigation – EXTENDED

The AscTec Falcon 8 is capable of flying semi-autonomously to predefined waypoints. With the help of our PC software, you can generate single waypoints or patterns of any size and send them to the system. By sending single waypoints instead of a complete mission, the pilot can always have control of the waypoints in flight. As the pilot needs to be in the range of the data link, this is an important safety feature often required by authorities.



Comfort package – NEW

To facilitate the pilot's daily work and make a one-person operation possible in complex situations, there are further options available for the Mobile Ground Station:

Teach in: with only a few selections in the Mobile Ground Station's status display, you can save the current position, height and orientation of the system. This exact position can be flown to later semi-autonomously. To keep it manageable, the waypoint list only shows current waypoints in a reachable distance. An excellent function to have, when for example documenting the progress on construction sites.

Panoramic photo: with just a few selections, you can perform 360° panoramic photos in the current position of the system without any further input.

Point of Interest (POI): the easiest way to photograph or film objects from all directions is with POI function. All that is required is to fly above the object, mark it in flight. The camera and the system will now always orientate itself towards the object. You do not have to control camera tilt or pan.



ACCESSORIES

Prepared right down to the last detail.



Joystick camera control – NEW

It is helpful to operate the camera separately from the Mobile Ground Station, especially when doing aerial videography. With the optional hard- and software package, a cameraman can control the camera's tilt angle, the slow yaw movement of the system (camera pan), trigger and zoom of the camera (if applicable). The pilot can always override the controls. With the help of the joystick, the cameraman can easily track moving objects. A cable connection between the joystick/laptop and your Mobile Ground Station is required.



Our batteries have BID-technology (Battery Identifier), which means our chargers recognize our batteries automatically and always set the correct charging parameters. Furthermore the life cycle of every battery is monitored and documented. So you can see when a battery is damaged or becomes weaker after prolong use. The charger has a special firmware that supports these functions.



Transport case – REVISED

The complete flight system including Mobile Ground Station, batteries and charger fit into the transport case. The extremely robust case can be easily carried by airfreight, so it is not a problem to operate your system internationally. The interior of the transport case has been redesigned allowing for all components to be stored safely and give a professional appearance to your customers. The precisely precut foam matches the system perfectly. We can also put your company logo on the transport case to complete the package.



OTHER FEATURES

For safety and preservation.



Trainings – EXTENDED

We strongly recommend all new customers to partake in the intensive pilot's training course. Why not benefit from our extensive experience in the field? The knowledge of how the system behaves and performs in every day and critical situations certainly pays off!

In addition to the intensive training we recommend purchasing our trainer system. This small, robust and agile system helps you hone your reflexes. Mastering the system is crucial when it comes to demanding jobs.



Upgrades

Since many of our systems have been sold in the past few years and technology keeps on rapidly evolving, we ensure that all updates are backwards compatible. Making your investment future-proof.



Safety updates

Our systems are used in and designed for the most grueling conditions from around the world. Should we discover a safety problem with our system, we will inform all customers immediately with the correct solution - free of charge.



J Flight data logger

Our systems are in operation worldwide. With the help of the data logger, we can give troubleshooting assistance to our customers in remote locations. In addition to that, the pilot can also use the logged data for post analysis of the flights.



U Weather resistance

All electronic components are protected. The motor controllers are hidden in the motor rails and the electronics are shielded in the central unit. Furthermore, all PCBs are covered in a protective coating. Hence all our components are safeguarded from the weather and corrosion for a longer operating life.



PRICELIST – FLIGHT SYSTEM

Item	Order no.	Price in €	Description & key features
AscTec Falcon 8 2011 standard model	10142	10,499	 Flight system with the following functions: GPS Position Hold. Continuously regulated flight attitude in GPS mode. GPS Position Hold in wind speeds up to 10 m/s. Equipped with AutoPilot, compass, GPS and sensors. Flight data logger. System is fully programmed, calibrated and ready to fly. Payload and universal mount not included. Max. payload: 500 g. Flight time approx. 16- 18 minutes with 8000 mAh battery.
Mobile Ground Station	10040	3,499	 Completely integrated Mobile Ground Station including: Transmitter with tray. Video link with display. The live video from the camera is displayed on the Mobile Ground Station. 5.8 GHz Video transmission with diversity receiver. AscTec 2-channel 2.4 GHz diversity data link (2 completely separated transmitting/ receiving units). Status display of the relevant flight parameters. (e.g. battery voltage, GPS signal quality etc.; incl. voice output). Weight only approx. 2.5 kg.
Li-Po battery pack 8000mAh (BID)	10143	299	 Battery pack modified to AscTec Falcon 8 specifications. BID-chip (Battery IDentifier). "1-click" operation in combination with our battery charger. Flight time approx. 16- 18 minutes with 500 g of payload.
Battery charger Robbe	10049	199	 Battery charger "Robbe" including combined charging/ balancing cable with BID-chip (Battery IDentifier). Specifically designed battery charger to be used with our batteries. Pre-programmed and set up, ready to be used. Always charges with the right parameters. To be used on 12 V or 230 V. We recommend to purchase two chargers per AscTec Falcon 8 system so that you can charge two batteries at a time.
Transport case Peli * Case	10047	699	 Peli [®] Case approx. 85 x 72 x 46 cm, 19.5 kg Precisely precut foam fits the system perfectly. Upper part can be used separately as transport protection. Suitable for air cargo, robust and weather-proof. For postal delivery of an AscTec Falcon 8 system this option is required.



PRICELIST – CAMERAS

Item	Order no.	Price in €	Description & key features
Digital camera SONY NEX-5	10055	2,699	 Tested and proven to be ideal for AscTec Falcon 8. 14.2 megapixel APS-C sensor. JPEG/ RAW/ 1080i Full-HD video. Camera mount is actively compensated in pitch and roll axis. Functions: Remote triggering. Camera tilting of +/- 90° via Mobile Ground Station. Live video feed to the Mobile Ground Station. Package includes: Digital camera Sony NEX-5 with 16 mm lens. Modification of the camera to reduce weight. Mechanical and electronic integration into flight system. Video converter. Power supply. Actively stabilized camera mount.
Digital camera Panasonic DMC Lumix LX-5	10121	2,299	 Tested and proven to be ideal for AscTec Falcon 8. 10.1 megapixel. Focal length 24 mm – 90 mm. JPEG/ RAW/ 720p HD video. Camera mount is actively compensated in pitch and roll axis. Functions: Remote triggering. Camera tilting of +/- 90 ° via Mobile Ground Station. 3.8 x optical zooming via Mobile Ground Station. Live video feed to the Mobile Ground Station. In video mode: live video feed from CMOS camera. Package includes: Digital camera. CMOS camera. Actively stabilized camera mount.



Mechanical and electronic integration into flight system.



PRICELIST – CAMERAS

Item	Order no.	Price in €	Description & key features
Digital camera Panasonic DMC Lumix TZ-22	n.a.	2.299,-	 Tested and proven to be ideal for AscTec Falcon 8. 14.1 megapixel. Focal lengh 24 mm – 384 mm. JPEG/ RAW/ 1080i Full-HD video. Camera mount is actively compensated in pitch and roll axis. Functions: Remote triggering. Camera tilting of +/- 90 ° via Mobile Ground Station. 16 x optical zooming (usable ~7 x) via Mobile Ground Station. Live video feed to the Mobile Ground Station. In video mode: live video feed from CMOS camera. Package includes: Digital camera. CMOS camera. Actively stabilized camera mount. Mechanical and electronic integration into flight system.
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Our suggestion for cameras:

• The standard camera for aerial photography and aerial filming with the AscTec Falcon 8 is the **Sony NEX-5**. This camera offers the best quality in images and video for its size and weight.

Choose the Panasonic Lumix DMC LX-5 when you don't want to miss the flexibility of an optical zoom and still require an almost equal image quality of the Sony NEX-5.

• When a huge zoom range is required to capture detailed images of small objects, for example in aerial inspection, we recommend the Panasonic Lumix DMC TZ-22.





PRICELIST – IR CAMERAS

Item	Order no.	Price in €	Description & key features
Infrared camera FLIR Tau 320	10070	8,090	 324 x 256 PAL or NTSC video output. 8.3 Hz PAL / 7.5 Hz NTSC frame rate. 9 mm, 13 mm, 19 mm, 25 mm or 35 mm lens. Absolute and relative measurement of temperature. Isotherm can be displayed. Camera mount is actively compensated in pitch and roll axis.
Infrared camera FLIR Tau 640	10071	12,290	 640 x 512 PAL / 640x480 NTSC video output. 8.3 Hz PAL / 7.5 Hz NTSC frame rate. 13 mm, 19 mm, 25 mm or 35 mm lens. High resolution relative measurement of temperature (Hot-Spot). Camera mount is actively compensated in pitch and roll axis.

The FLIR TAU infrared cameras are tested and proven to be ideal for AscTec Falcon 8. Examples of application are inspection and surveillance for firefighters and police operations.

Available functions :

- Live video feed to the Mobile Ground Station.
- Camera tilting of +/- 90 ° via Mobile Ground Station.
- Switching between IR and RGB camera via Mobile Ground Station.
- Super lightweight: flight time up to 20 minutes.

Both packages include:

- Infrared camera with lens.
- CMOS camera.
- Actively stabilized camera mount.
- Mechanical and electronic integration into flight system.





PRICELIST – NIR CAMERA

Item	Order no.	Price in €	Description & key features
Near infrared camera (NIR) ADC Lite	10111	6,999	 3.2 megapixel CMOS sensor, single sensor. Captures wave lengths: 520 nm (visible) to 920 nm (near-infrared). Red, green and NIR bands provide information for extracting NDVI, SAVI, canopy segmentation and NIR/ green ratios.

The ADC Lite near infrared camera is tested and proven to be ideal for the AscTec Falcon 8. It is the ideal camera for remote sensing of vegetation or to judge the threads from fire.

Functions:

- Remote triggering.
- Camera tilting of +/- 90 ° via Mobile Ground Station.
- Live video feed to the Mobile Ground Station.

Package includes:

- NIR camera type "ADC lite" incl. lens.
- Actively stabilized camera mount.
- Mechanical and electronic integration into standard model.
- Teflon calibration tag for camera.
- External power supply for camera.
- Software "PixelWrench2" for Windows.





PRICELIST – OPTIONS

Item	Order no.	Price in €	Description & key features
Waypoint navigation	10041	1,499	Optional functionality not included in the standard model. This software has the following features: Waypoint navigation. Matrix flying patterns. Panoramic photo function. Mission planning (online and offline). Import and export of missions.
Comfort package	10145	499	 This is an optional software package, which can be executed directly on the status display. The following features assist you in your everyday work: Teach in: Memorize waypoints on the status display and fly to them at a later point in time. The exact photo position and camera angle is saved. Panoramic photo: Generate 360 ° panoramic photos with a few clicks via an automatic function. Point of Interest (POI): Mark a position in flight and lock the camera on that position. Available in all flight modes, when filming or taking pictures.
Photo tagger software V2	10110	299	 To geo reference your pictures even without waypoint navigation. For each picture the information about position, height, orientation and camera angle is saved. The flight path with photo positions can be exported for later evaluation in e.g. Google Earth[®].
Joystick camera control	10144	499	 This is an optional hard-and software package. The included joystick can be used to control the camera independently from the Mobile Ground Station. The following features are available: Triggering of the camera. Zoom (dependent on camera type). Tilting of the camera up and down. Slow yawing of the flight system. The joystick has to be connected to the Mobile Ground Station via PC (USB-cable).
GPS raw data logger	10119	1,999	 This is an optional hard-and software package. GPS raw data (L1 data: pseudo range, carrier phase and doppler value) is stored at 1 Hz in a separate file in the black box (*.ubx (*)). Item includes: Alternative GPS logging module that outputs GPS L1 values. Modifications on the AscTec Falcon 8 firmware. Integration of hard- and software.
Flight system without labeling	10146	0	We can deliver the AscTec Falcon 8 on request without labeling, if you want to put your own logos on.

(*) http://www.u-blox.com/en/evaluation-tools-a-software/u-center/u-center.html



SERVICES

Services	Description & key features
Pilot training	We offer one-to-one in-house pilot training for all our AscTec systems. The training program runs for usually 1 to 2 days (the program is matched to your requirements). We strongly recommend this program to any potential pilots of AscTec systems.
Insurance	You want liability insurance for your AscTec Falcon 8 System? We can provide you contact to the right insurance company. They will guide and help you find the right insurance policy for you.
Free briefing during pick-up	If you are picking up your system, you'll receive a briefing on the functions and the finer points of your new system from one of our engineers.
Delivery time The average delivery time of our AscTec Falcon 8 system is 6 weeks.	Address Ascending Technologies GmbH Konrad-Zuse-Bogen 4 82152 Krailling Germany

VAT

If you are located within the European Union, please make sure to tell us your Customer Tax ID.

IMPORTANT

- The price list is subject to change without prior notice.
- All prices excluding VAT.
- Changes and errors excepted.
- All content is copyright protected. Any duplication or use of objects such as images, diagrams or texts in other electronic or printed publications is not permitted without the author's agreement

Disclaimer

Even though the AscTec Falcon 8 is very easy and intuitive to operate, there are always situations where the pilot has to react in the correct manner. For example:

- A sudden increase in wind speeds over 10 m/s
- Magnetic fields of intentionally or unintentionally approached current carrying cables
- Shadowing or disturbance of GPS signals
- These situations can occur and require the pilot to react in a prompt and correct manner to the given alerts.

Ascending Technologies GmbH does not take responsibility for damages related to misuse of their products. You can learn how to operate the systems safely and responsibly in our training programs.

