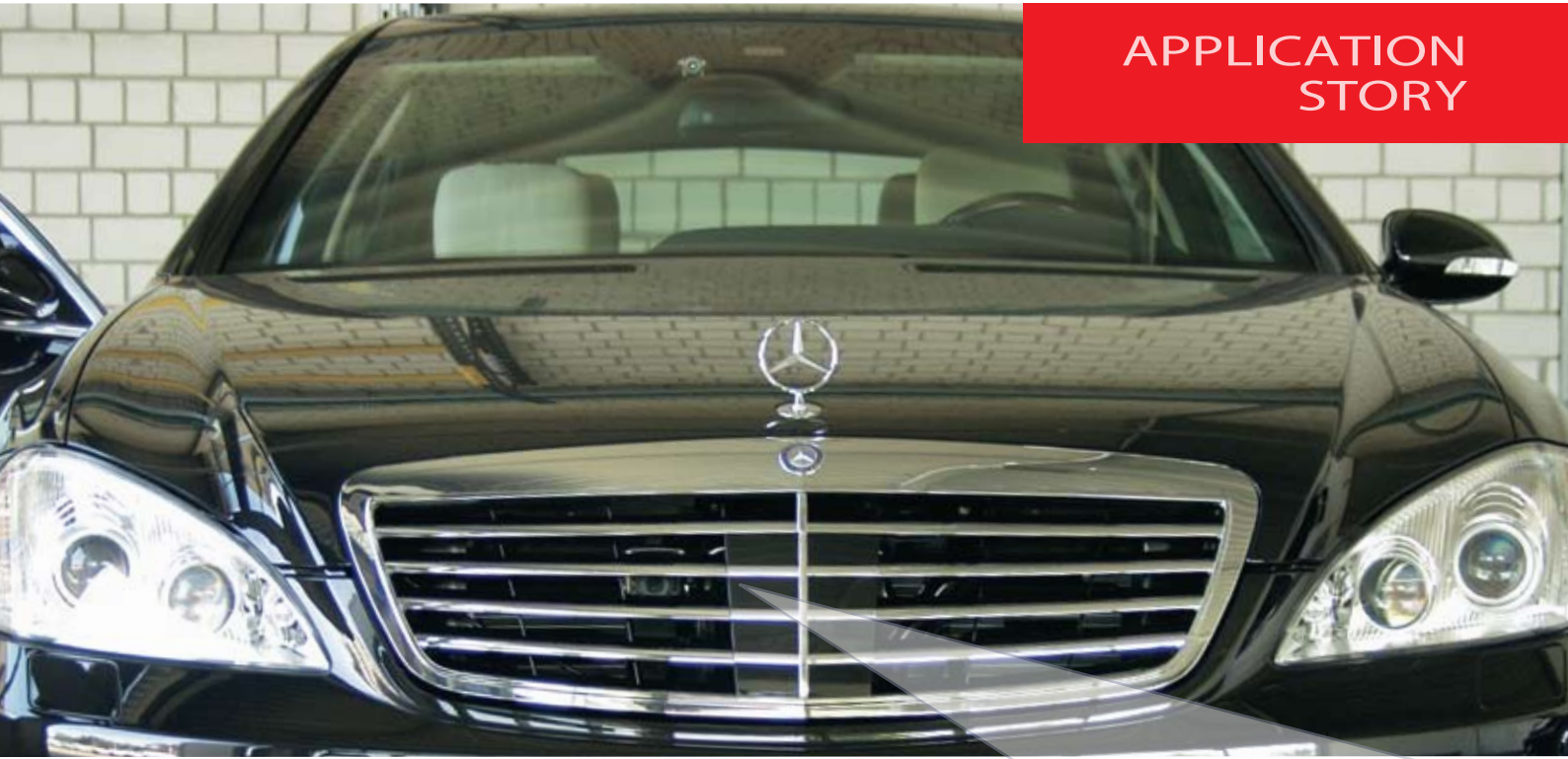




APPLICATION STORY



Extra protection for armored cars when driving at night.

FLIR Systems thermal imaging cameras for driver vision enhancement and increased situational awareness.

Stoof International (www.stoof-international.de) was founded in 1865 by Karl August Stoof in Busendorf / Kanin, Germany. Starting with one of the earliest means of transportation, Karl Stoof established a workshop for the production of horse drawn wooden coaches.

Today, Stoof International is located in Borkheide on the outskirts of the German capital, Berlin. Led by Mr. Fred Stoof, Managing Director, Stoof International is a worldwide-recognized leader in armored-vehicle production.

Civilian armored cars are in the majority of cases retrofitted versions of series cars. Windows are replaced with bulletproof glass and layers of armor are inserted under the outer skin of the car. Besides the armor itself, many other protective modifications are available: automatic fire extinguishers, run-flat tires, an explosion-resistant fuel tank, to name just a few. Therefore, armored cars are typically very safe for their occupants.

Stoof International: a full range of armored vehicles

Stoof International manufactures armored saloons cars including designs based upon the Mercedes-Benz S500 / S600, BMW-series, Rolls-Royce, Bentley and Maybach to name just a few.

All security limousines are manufactured to provide a level of resistance against modern day weaponry and technology incorporated into assault rifles, including hand grenades and Improvised Explosive Devices

(IEDs) used in urban warfare or kidnapping attempts by terrorists or criminal elements. A Vehicle Resistance (VR) level will allow the occupants adequate time and opportunity to escape and survive a planned attack.

Stoof International's armored security limousines are internationally recognized and available in various levels of ballistic protection. Their main applications are prevention of street-crime and kidnapping, and security in high-risk war zones.

Stoof International is also a leading manufacturer of cash-in-transit (CIT)/ money transporters. Customized vehicles can be built upon request for international central banks and security companies providing these particularly high-risk value services.

Finally, for international organizations on diplomatic missions; humanitarian aid organizations; NGOs; and Foreign Office / Ministry of Defence (MoD)



The FLIR Systems PathFindIR installed behind the vehicle grid of an armored Mercedes.



The thermal images generated by the PathFindIR can be displayed on any multi-function LCD display that accepts composite video. In this case on an LCD integrated in the Mercedes dashboard.



fleet requirements worldwide, Stooft International produces armored vehicles based on all-terrain 4x4s such as the Toyota TROJAN Land Cruiser and Hilux. The armored TROJAN offers a specially designed platform providing ideal mobile protection. TROJAN VR6-level armored Land Cruisers and Hiluxs are built beyond recognized ballistic standards and renowned worldwide for their quality, finish and proven track-record in saving lives.

Whether they are diplomatic, cargo, corporate, NGO or private customers, Stooft International has the abilities to adapt vehicles to the requests of the most demanding clients.

Improving safety

"It goes without saying that the first concern of our clients is safety and security," says Mr. H. Klostermann, Stooft International Research & Development Department. "But a lot of them are also looking for very luxurious cars. That's why we are using cars like Mercedes and BMW, to name just a couple, as a basis for our armored vehicles."

"We are constantly looking for new technologies that we can implement in all our types of armored vehicles. Everything that can help our customers to be even safer when driving their armored cars is evaluated."

"One of our recent innovations is the installation of a FLIR Systems PathFindIR thermal imaging camera in some of our models. The same module is today already being installed on selected BMW 5-, 6- and 7-series models."

Thermal imaging cameras need no light whatsoever to produce a clear image on which the smallest of details can be seen. They produce a comprehensive image based on the subtle differences in heat radiation of objects and people. Even when these temperature differences are sometimes minimal, a thermal imaging camera will detect them and transform them into a crisp image. Thermal imaging cameras are not affected by light and there is no risk that the driver is blinded by oncoming headlights or other light sources.

Thermal imaging cameras are excellent tools for driver vision enhancement. They produce a clear image in the darkest of nights and help the driver to see up to 5x further than with headlights. Other vehicles, pedestrians, animals crossing the road, it is all seamlessly detected by a thermal imaging camera.

"Also vehicles used by Non Governmental Organisations (NGO) can benefit from the power of thermal imaging," says Mr. Klostermann.

Driving at night: in normal and emergency situations

"Although we are producing armored vehicles, we always hope that our clients do not have to use the car's protective abilities. An armored vehicle is designed to protect its passenger in emergency or crisis situations which will hopefully never happen. But when clients are using the vehicle in a day-to-day environment, they also drive during the night. By detecting other vehicles, pedestrians, animals and other hazards from a far distance, the FLIR Systems PathFindIR helps to avoid accidents when driving at night."

"If an emergency situation should occur at night, the PathFindIR will help the driver to get away from the hazards as fast as possible. He will undoubtedly have an advantage over a car that does not have thermal imaging technology on-board," continuous Mr. Klostermann.

Increasing situational awareness

"But the PathFindIR can be used for more than driver vision enhancement only. It is an excellent tool to increase situational awareness. Installed in an armored luxury vehicle, but also in cash-in-transit (CIT)/ money transporters the driver can see a lot better what is happening around him. People can no longer hide in the dark since they become clearly visible on a thermal image. Even in daytime, if they are trying to hide in bushes or camouflage themselves, they will be clearly visible."

Easy Installation

"Installing a FLIR Systems PathFindIR is feasible in any vehicle and can be done by a car workshop without problems," says Mr. Klostermann. "The thermal imaging camera is installed in the front bumper. The PathFindIR is well protected against harsh driving conditions. Rain, salt spray, and small rocks hitting the front of the camera are not affecting it. The PathFindIR just needs to be connected to a power source and to a standard LCD display that accepts composite video. In a lot of cases we display the thermal image on the same LCD that is being used for the navigation system."

A small price

"The feedback we are getting from the users of the PathFindIR is very positive. They tell us that the display on which the thermal image is projected quickly becomes a natural checkpoint for the driver just like side-view or rear-view mirrors. It helps them tremendously when driving at night but also in rain, fog and other harsh weather conditions."



FLIR Systems PathFindIR can be easily integrated in all types of cars, busses and trucks.

"Compared to the total investment needed for an armoured car, the installation of a thermal imaging camera is a very small cost. A cost that can however help to save lives. Not only in emergency situations but also in every day driving conditions. I am sure that more and more of our customers will decide to install this excellent tool in their vehicle," concludes Mr. Klostermann.



Visual image



Thermal image



For more information about thermal imaging cameras or about this application, please contact:

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