

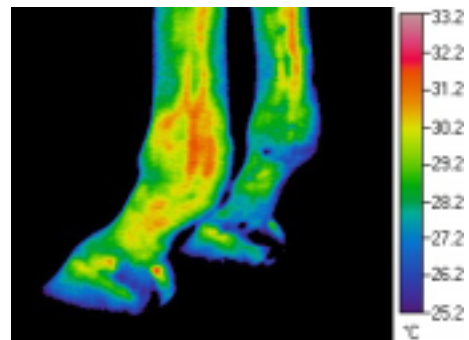
THERMOGRAPHY – Straight from the Horse’s Mouth

Thermography is becoming increasingly popular as an aid to assist with the diagnosis of musculoskeletal and neurological injuries in horses, particularly non-specific lameness. As thermography is completely non-invasive it allows the horse to be examined without being touched, thus causing no stress or discomfort to the animal. The latest generation of thermal cameras from NEC are small and hand held, enabling the examination of the horse to take place in its own environment eliminating the need for costly transportation to a veterinary clinic.

There are three main areas in veterinary medicine where thermography can play a major part:

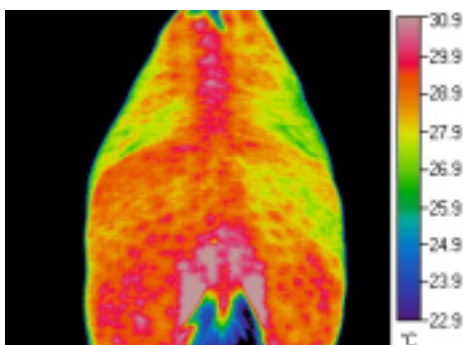
- **Preventative Medicine** - particularly effective for competition animals in detecting strains or areas of abnormal heat after an event
- **Diagnosis** - assisting the veterinary surgeon by quickly and easily locating the source of a problem
- **Treatment** - a visual method of monitoring the effectiveness of treatment allowing changes to be made as the case progresses.

Officially recognised and used at the 1996 Olympic Games to assess that the horses were not suffering from any strains or injuries that would affect their ability to compete, infrared thermography has proven to be an invaluable tool in the hands of an experienced practitioner. Peter Richmond, a well known and respected Yorkshire “horseman” has been using this method of examination to assist owners and veterinary surgeons for many years. Working on a consultancy basis, Peter is called in by horse owners and trainers from all over the UK to examine horses that are showing signs of lameness, stiffness or general malaise.



Horse showing lameness after exercise. Thermography revealed localised inflammation at the bottom of the tendon.

Using the NEC TH7102Mx Infrared Thermal Imaging camera, supplied by Metrum, the horse is scanned and a real time image is shown on the LCD. Sensors within the camera convert infrared radiation (heat) emitted from the surface of the skin into electrical impulses that are shown on the image as areas of colour. White represents the hottest temperature and is found on areas where there is major blood flow including parts of the face and the coronary bands,

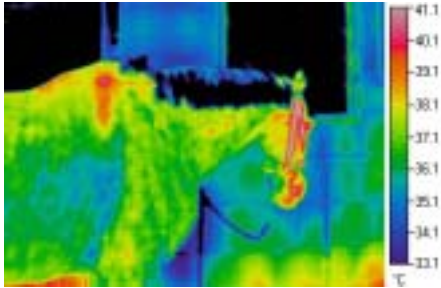


A dressage horse was experiencing problems working through from behind. The image showed that the muscles on the right side had developed unevenly. Once identified the problem was rectified by working the horse primarily to the right.

down through red, yellow, green to blue and finally black which represents the coldest areas. As there is a high degree of thermal symmetry in the body, abnormal or asymmetrical changes which are usually indicative of a problem can be easily identified.

An experienced operator can interpret these images and advise the owner or trainer where there is an area of abnormal temperature, allowing the veterinary surgeon to diagnose and treat the problem. A blue streak indicating a lack of temperature can indicate pinching or pressure for example on a nerve root in the neck, while a pink or white area can indicate soft tissue, muscular or tendon damage.

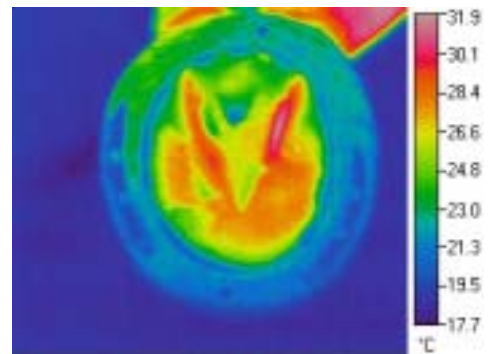
The NEC TH7102MX camera has the facility to save the thermal images to an internal memory card and they can then be downloaded to a PC. This ensures that a permanent record of the problem is available for the veterinary surgeon to refer to and allows subsequent scans to show the effectiveness of treatment.



This horse had a sore back and thermography showed inflammation over the thoracic vertebrae in the wither. This was traced to a badly fitting saddle.

The idea of using a thermal camera was originally suggested to Peter by a friend who worked with racing greyhounds and had found the method of examination to be invaluable. Still in their infancy, thermographic “cameras” consisted of a large, heavy unit, that had to be operated in a temperature controlled environment. However, due to advances in technology, the latest generation of cameras are hand held, portable and battery operated. The sensors which were originally developed for military use can detect changes in temperature of 0.08° which can prove invaluable in locating the exact source of the problem.

One of the benefits of thermal imaging is the speed with which an entire examination of the horse can be carried out. It is very often the case that a symptom that shows up as pain in the back for example actually has its root cause somewhere else for instance the foot. The horse will very often compensate for the injury by transferring its weight to the other leg, causing twisting and undue stress along the spine. Traditional methods of diagnosis would be to treat the back, give physiotherapy treatment or rest the horse. By doing a scan of the entire body, areas that are showing abnormalities in temperature can be easily identified and the relevant areas of the horse given suitable treatment. This often alleviates the secondary symptoms, in this example the pain in the back.



This horse which was being treated for Navicular disease had suddenly gone lame. An thermal scan showed inflammation in the foot centred on the right part of the frog. Investigation revealed an abscess which was subsequently treated.

Farriers are also starting to use thermography to look at the changes that occur in a horse's foot, and are developing methods of balancing and shoeing based on these results. Research based on thermography findings will also allow further understanding on problems in the feet caused by laminitis which has profound effects on the blood flow to the foot.

While nothing can replace the experience of vets and traditional “horsemen” gained over many years of working with horses, Thermography is now being recognised throughout Europe, the USA, Asia and Australia as an effective method to assist veterinary diagnosis. Many larger practices are purchasing their own cameras and smaller practices with limited budgets are grouping together to purchase a joint camera. With thermographic consultants like Peter Richmond, working together with veterinary surgeons, this should ensure that horses can be diagnosed and given the relevant treatment without undue stress on the horse or a large bill for the owner.



For further details about the range of Thermal Imaging Cameras and Services that Metrum can offer, please contact:

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