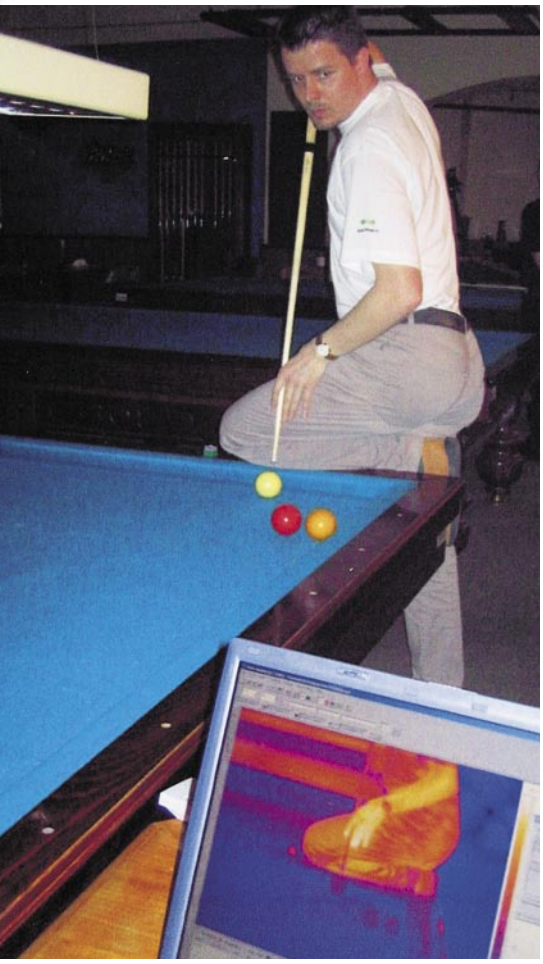
FLIR APPLICATION STORY

FLIR SYSTEMS

Infrared thermography: numerous, sometimes unexpected applications

ThermaCAM™ shows hidden billiards physics

Mozart, Einstein, kings and emperors, nobles and commons adored it. The earliest mentioning of billiards dates from the 15th century. Since then, the game has developed into local variations: billard, snooker, pool, carambol, pyramid, to mention just a few.



Andreas Efler, international three-cushions top player

Three-cushion billiards has become one of the most popular form of billiards in Europe, Asia and the US. The cue ball must hit at least three cushions (known in the USA as rails) before striking the second ball. This makes the game more of a geometric intrigue and there is a great skill required in order to score points.

When Andreas Efler from Austria, international three-cushions top player and former vice-European Champion, went on looking for pictures for his book and DVD about the art of three-cushion billiards, he was not able to find appropriate high-class picture material.

Andreas took a professional high-speed camera, which indeed gave a fascinating insight into the powerful yet delicate forces and torsions unleashed when a ball is hit by a cue. But the setup of the camera and its peripherical equipment proved to be a logistic and operational tour-de-force - and the required 3000 W lighting repeatedly burnt the billard table cloth, an expensive artefact in itself.

Billiards player Robert Leitner, a friend of Andreas, electrotechnician and Infrared Training Center (ITC) Level I Thermographer, suggested thermography as an appropriate tool able to visualize the game.

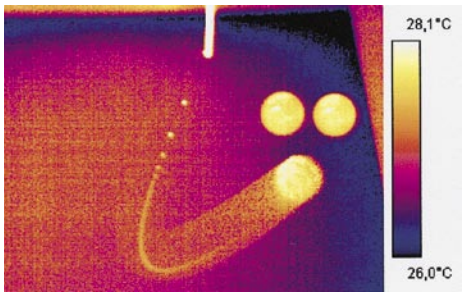
Infrared reveals secrets of threecushion billiards

They turned to Reinhold Stachl from NBN Elektronik, FLIR Distributor for Austria, who promptly provided them with a ThermaCAM S60 and a ThermaCAM Researcher Software package.

The results were overwhelming. The camera, thanks to its high image frequency, proved that the balls actually do not roll, but that they make jumps. In addition, the infrared pictures clearly showed the hits on the ball as well as the course of the ball on the cloth. The ThermaCAM S60, which has a thermal sensitivity of 0.08 °C, also determined the temperature of the friction heat at the moment of a normal stroke, which was climbing up to 80°C.

Another interesting finding proved to be the possibility to inspect the heat distribution on the billiards table's surface. Every tournament billiards table has a floor-heating-like system running 5 to 6 cm under the table cloth in order to keep the cloth surface dry. Considering the high-precision level of the three-cushion billiard game, an equal heat distribution is a prerequisite. An infrared camera hence allows to inspect the quality and distribution of the billiard table heating system.
Thermal imaging proved itself again in another sensitive and complex application. Not only billiards professionals like Andreas Efler, but manufacturers of cues, balls, and billiards tables can benefit from these findings and from the potential of thermography.

Robert Leitner with the FLIR Systems ThermaCAM S60



The infrared image clearly shows the course of the ball

For further information contact:

FLIR Systems AB
World Wide Thermography Center
Rinkebyvägen 19
SE-182 11 Danderyd
Sweden
Tel.: +46 (0)8 753 25 00
Fax: +46 (0)8 753 23 64
e-mail: sales@flir.se
www.flir.com