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Cold play

WHY LED LIGHTING AT
HELSINKI'S ICE HALL IS PERFECT
FOR MODERN TV CAMERAS

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EINDHOVEN, CAPE TOWN AND BERLIN

Cold

PLAY



Jussi Eskola

It is not just the audience and players who benefit from the new LED lighting at Helsinki Ice Hall. Photographers and TV camera crews are delighted with a scheme that helps them capture sharp, vivid images. **Nicky Trevett** reports.

The action in a typical game of ice hockey or basketball is fast and furious. Rapidly evolving TV and camera technology can capture every moment and replay it in dramatic slow motion.

But all too often the effort is wasted because traditional indoor arena lighting spoils the effect with flickering. The problem was top of the agenda when, four years ago, the Helsinki Ice Hall Organization started to investigate the possibility of upgrading its lighting arenas using LED lighting. Saving energy was a major consideration, but improving the lighting for the varied users of the space was equally important.

Under the new LED lighting photographers can now use much faster shutter speeds to capture the action

People with a sporting background described what was needed to provide a great playing experience. Photography professionals explained the requirements of TV and camera technology. Other considerations were how to provide a better audience experience, with more light in the stands and removal of excessive glare, and how to get more light to the team bench areas.

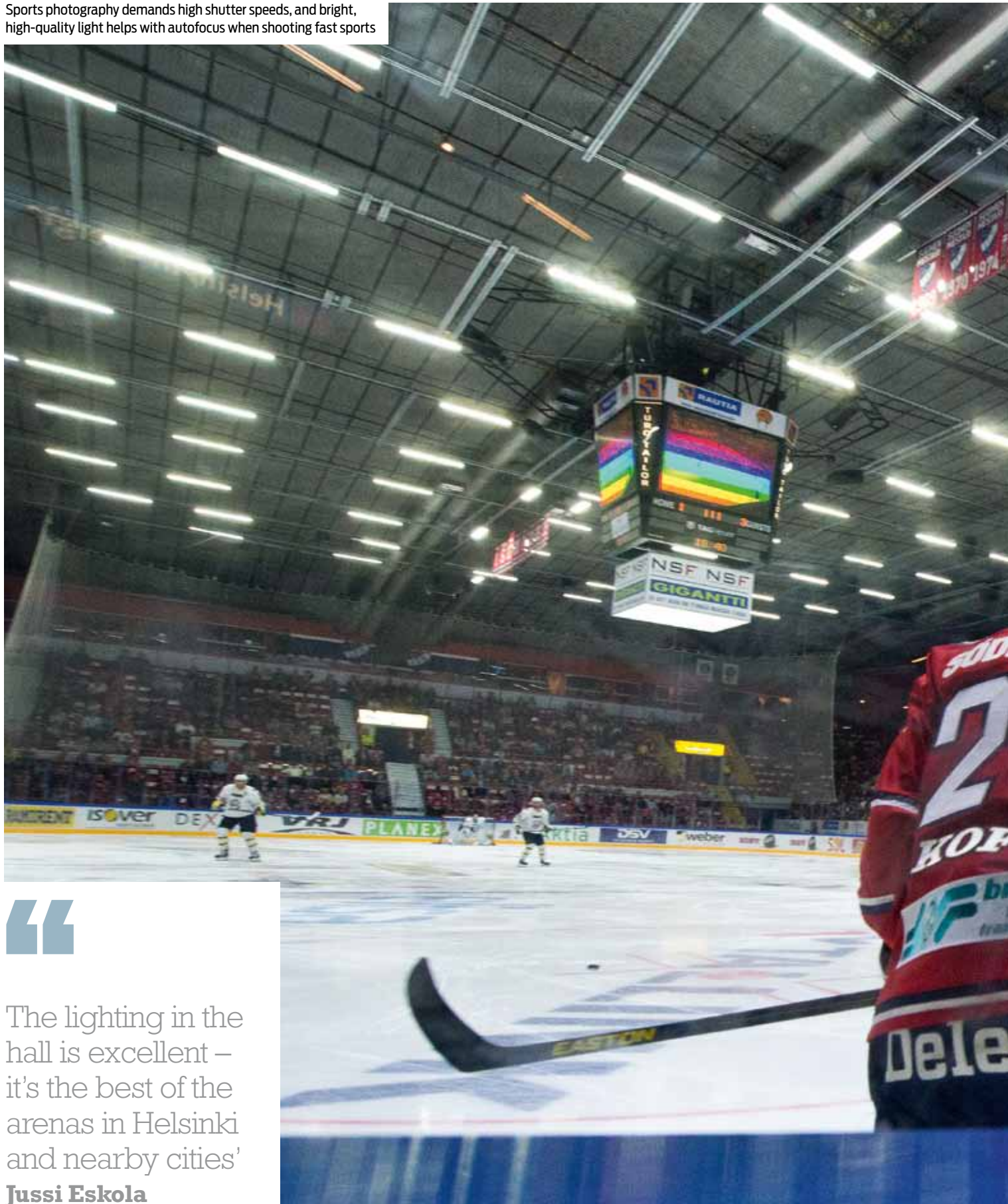
Benefits of LEDs

LEDs have many benefits. 'Installing lighting in large, high areas like ice hockey halls makes it ideal for solid-state lighting technology,' says Mika Nummenpalo, international industry sales manager at Finnish LED luminaire manufacturer Easy Led, the company that supplied the fittings to the project. 'There's no need for annual maintenance in normal use. But in case of maintenance or upgrading the technology in the future, the low weight and simple cabling makes it easy to repair or replace the luminaires.

'And LEDs offer future-proofing,' he adds. 'The drivers are capable of working with new, more advanced and efficient LED chips as they are developed, saving even more energy while emitting the same light levels to retain uniformity.' ▶

PROJECT HELSINKI ICE HALL, FINLAND

Sports photography demands high shutter speeds, and bright, high-quality light helps with autofocus when shooting fast sports



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The lighting in the hall is excellent – it's the best of the arenas in Helsinki and nearby cities' **Jussi Eskola**



Jussi Eskola

**LIGHTS,
CAMERA,
ACTION...**



Mikko Granberg is managing director of Citius Imaging, an official distributor and integrator of Vision Research's Phantom high speed video cameras. He explains the importance of lighting that supports the capture of high-quality, ultra-slow motion images at live sporting events.

'Phantom cameras are capable of capturing images at full HD (1080p) resolution at 2,560 frames per second (fps). This is roughly 100 times faster than typical TV broadcasting cameras.'

'Use of ultra-slow motion in sports broadcasting is growing fast all over the world – we see it all the time on Formula 1, MotoGP, football, ATP tennis, golf and all major sporting games. Ultra-slow motion footage from indoor sports played under lamp lighting is very rare, because traditional arena lights do not meet the requirements of ultra-slow motion imaging.'

'Capturing images faster than the standard recording speed sets special requirements for the lighting. When capturing several hundred images every second and playing it out at normal playback speed (25-30 fps), the flickering of metal halide and fluorescent lights becomes very visible. A high recording frame rate also sets limitations on the maximum exposure time available. Fast movement in sport in particular needs to be captured at a very short exposure time (fast shutter) to provide crystal-sharp images.'

'At the Helsinki Ice Hall we can capture ultra-slow motion footage of ice hockey and basketball as the LED lighting doesn't exhibit flicker when we play back at ultra-slow motion. There's other benefits too such as high and constant luminance, even distribution of light throughout the playing area, and natural and steady colour temperature.'

Installing LEDs improves the quality of ice because they generate less heat than conventional light sources. Energy efficiency was also a key criterion. It was accepted that choosing high-quality LED luminaires would mean a high initial investment, but a rapid payback. After a successful LED installation in the Aimo Mäkinen ice hockey arena in 2011, Helsinki Ice Hall has now received the full LED treatment.

In the main arena, the existing lighting comprised a mix of 1kW metal halide and 1.5kW 375W halogen luminaires with a total power consumption of 135kW. These have been replaced with 84 375W Pro12X Oslon 360 HD-FF luminaires with a 60-degree light distribution for the ice rink lighting, four 375W Pro12X Oslon 360 HD-FF luminaires with a 30-degree

distribution in the bench areas, two 250W Pro8X Oslon 240 HD-FF fixtures with 80-degree distribution for the media cube, and eight 375W Pro12X Oslon 360 HD-FF fixtures for the concert lighting. This has a total power consumption of 36.5kW, or 11kW when dimmed.

The practice arena was previously lit by 400W mercury vapour lamps, with a total consumption of 70kW. These have given way to 104 105W Pro3X Oslon 90 HD-FF luminaires, consuming just 11kW. Overall, the previous lighting operational load of 60W/m² has been reduced to 17W/m² using LEDs.

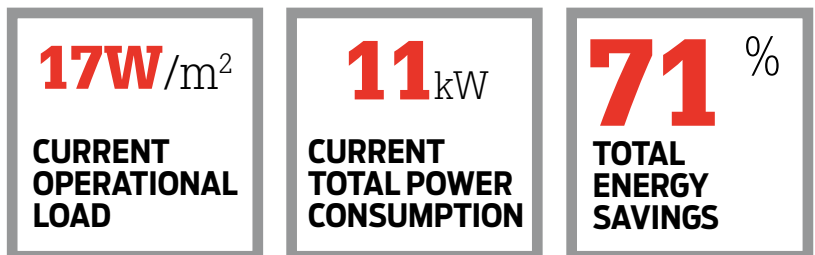
Arguably the most significant impact of the new lighting is the support it provides for modern photo technology. Sports photographer Jussi Eskola says: 'During this autumn I have shot many ice hockey and basketball games in Helsinki Ice Hall. The lighting in the hall is excellent – it's the best of the arenas in Helsinki and nearby cities. Sports photography requires high shutter speed, and now I can double the speed I used before. High quality and adequate light helps with autofocus when shooting fast sports.'

He notes that unlike other halls, the amount of light is consistent all around the playing area, with a natural colour temperature and an absence of flicker. 'In some arenas the colour temperature of the light varies from picture to picture. When a hall has lighting of this quality, photography is not about survival in difficult circumstances, but about being able to focus on shooting fast-paced sporting events.'

TV lighting expert Martin Backa has worked in the industry for 20 years. He says: 'The lights at the Helsinki Ice Hall are the best in the league. Instant startup times are always surprising, and we get the right colour temperature right away. I can't say the lighting is perfect yet, it maybe needs a few more luminaires to the corners and penalty boxes. But it feels like there's less "leakage" of light, so there is lots of light on the helmet while still leaving the face a little darker.'

He is particularly appreciative of the uniformity and natural colour temperature of the Ice Hall installation. 'In ice hockey we also use slow motion camera technology; my camera records three times more frames per second than a normal camera. In some halls this causes flickering, but not in Helsinki.'

ENERGY DASHBOARD



The brightness and colour temperature of the light is uniform throughout the hall



Jussi Eskola