



## Shakespeare in a new Light.

Since 2011 audiences can see plays in a whole new light after a literally revolutionary development in theatre lighting with flat brushless DC motors, from maxon motor, playing a leading role.

The RSC Lightlock was developed by Vince Herbert, head of the Royal Shakespeare Company's Lighting Department, to address a problem that has plagued lighting designers for years – the momentum of heavy, remote-controlled spotlights. Until now using flexible, lightweight support structures for these lights was out of the question, since attempting to stop would set the whole gantry swinging after each motorised movement, sending spotlights all over the stage and ruining the performance. The only way to use large moving lights was to hang them from heavy-duty mounting infrastructures – which made accessing the lights a lengthy, dangerous and costly process, severely restricting directors' choices when deciding how to stage a production.

The RSC Lightlock prevents unwanted oscillation on lightweight structures by invoking Newton's third law of motion – the law of reciprocal actions. When the light needs to stop moving, a counterweight on an internal disc swings in the opposite direction to its movement, nullifying the momentum. Incredibly, the heavy counterweight necessary is rotated by a flat brushless DC motor just 90 mm in diameter. It is irreplaceable in the role, as maxon senior sales engineer Paul Williams explains: "The EC 90 Flat was selected because the Light lock requires something small, high performance, and above all, precise. If the disc is rotated even slightly too little or too much, the whole principle that makes the Lightlock so successful goes out of the window".

The small motor operates with such speed and exactitude that even with sudden, dramatic movements, the Lightlock can cancel out all unwanted motion in under two seconds. Mervyn Thomas, director of Lightlock Ltd, the company engaged to produce the RSC Lightlock, says: "The RSC Lightlock allows greater freedom of stage lighting creativity, which could mean we see entirely new slants on old plays.

It allows simpler and safer rigging opportunities because the moving light fixture can be now rigged from simple cable suspensions, meaning the crew can maintain and rig the fixture at floor level and simply raise it the desired working position.“ The principle behind it is blindingly simple; the design involved is extremely clever. With over a thousand theatre enthusiasts in the house, the technology powering the RSC Lightlock has to work perfectly, every time. That’s why we chose maxon motor.” Mr. Thomas adds.



Fig. 2: RSC Lightlock © Royal Shakespeare Company/Ellie Kurttz



Fig. 3: maxon EC flat motor “EC 90 flat”, Ø90 mm, brushless, 60 Watt © maxon motor ag

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Figure 1 “Hamlet” at the Courtyard Theatre, Stratford-upon-Avon. Production: Gregory Doran / in the background, on chairs; Patrick Stewart and Penny Downie, in the foreground; David Tennant (Hamlet) and Mariah Gale (Ophelia) © Royal Shakespeare Company/Ellie Kurttz