



## DC motors put Shakespeare in a new Light.

Flat brushless DC motors play a critical role in a new theatre lighting development.

To solve a problem with theatre lighting that has been an issue for years, Vince Herbert of the Royal Shakespeare Company developed the RSC Lightlock. In the past, attempting to stop the momentum of heavy remote controlled spotlights would often cause whole lighting gantries to swing resulting in movement of all the other lights. The only possible method of using large lights was to mount them on robust fixed infrastructure making access of the lights dangerous and expensive.

The RSC Lightlock inhibits unwelcome swaying using Newton's third law, the law of reciprocal actions. As the light begins to decelerate an internal counterweight moves in the opposite direction to counteract the lights momentum. The heavy counterweight necessary for this is rotated by a small flat brushless DC motor that is only 9cm in diameter. maxon motor sales engineer Paul Williams explains why the motor is so effective: "The EC 90 Flat was selected because the Light lock requires something small, high performance – and above all – precise. If the counterweight disc is rotated even slightly too little or too much, the whole principle that makes the Light-lock so successful goes out the window".

The small brushless DC motor operates so dynamically that even abrupt, intense movements can be counteracted by the Lightlock. 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 to 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." Mr. Thomas adds.



*RSC Lightlock*



*maxon brushless DC flat motor © maxon motor*

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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 Kurtz*