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# Light Fantastic

LSi reports from the Enchanted Forest



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# classic gear

Bordoni Dimmers | Rob Halliday . . .



The amount of time and effort that has been spent over the years devising ways of creating and controlling light on stage is quite remarkable - especially given how easy it is for those not in the know to dismiss entertainment lighting as something trivial.

Computers and electronics are at work now, of course, but before that candles, gas, then the pots of water, manually controlled variable resistors driven by sliders or, en masse, by shafts - motorised versions of the same things with electronically driven clutches - all used to regulate electricity to light bulbs.

As often seems to be the case, the UK and Europe sometimes diverged in their favoured technology, partly just because of price. But even that doyen of British lighting, Strand's Fred Bentham, had to concede that the arrival of one particular approach to dimming in the late 1920s gave a system which "put the Germans ahead of the world for many years." This was the Bordoni dimmer.

The Bordoni approach was made possible by the general adoption of alternating current electricity during the period. This let something other than a resistance be used to regulate the light: Bordonis instead used a transformer. Others had done this, one transformer per channel with a commutator track and wiper arm allowing a voltage to be tapped off from different parts of the transformer winding. The Bordoni trick was to have one common core and primary (the expensive part!) but to then give each circuit its own secondary winding, each of which slid independently in and out of the transformer, moved mechanically via tracker wires that ran up and over pulleys to counterweights and to the control room.

There, fader handles had twist-grips to lock them to shafts, allowing fades to be



Photo: Martin Chisnall

achieved by cranking wheels at the end of each shaft to move the windings up and out of, or down and in to, the transformer. The late Francis Reid recalled a trip to the Vienna Opera where "between cues, several operators stepped one pace smartly forward and set the on/off and level-stop for each cue, then stepped back in unison while the cue ran driven by the chief operator at the stage end of the perch."

The advantages of the transformer dimmers were their load independence - as happy to dim a 15W pygmy bulb as their rated 5kW load - and their efficiency. Those who ran them also recall

a beautiful fade curve.

Though standard in Europe until the mid-1950s, Bordonis never really caught on in the UK, except in one theatre where the owner cared passionately about quality over price: Glyndebourne Opera. The system there had 54 secondaries, powered through three oil-filled circuit breakers. "The lighting is the most modern in the world. It is the only instance of its kind in England. Last year there were only two in Europe - one in Vienna and one in Danzig," wrote Glyndebourne's John Christie, unveiling the system in 1933. The Bordonis lasted there until 1964, when they were replaced by the first European theatre installation of the dimming technology that has been the standard ever since, the thyristor.

Amazingly, you can still find Bordoni systems in place, if not in use. The Beaulieu Theatre in Lausanne (*pictured*) has one from 1954 that looks in every respect as if it's just been installed; tracker wires still working, complete with original documentation and even cue sheets. If you tour in to there, be sure to take a look. Otherwise, head to [backstageheritage.org](http://backstageheritage.org) for more pictures. ☺

**Bordoni Dimmers:** [//plasa.me/xn8eo](http://plasa.me/xn8eo)

Rob has been working in and writing about lighting for more than 25 years, on shows around the world. He wonders if this makes him a classic... or just old!

Porispere Festival, Pori 2016. Aura Audio A3 System

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