

PRODUCTION PARTNER

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LIGHTING & AUDIO TRACKING, CINDERELLA, LONDON.

**With zactrack and Soundscape
together with the Glass Shoe**



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Gareth Owen combines extensive tracking and immersive/spatial sound for Cinderella in London's West End. Rotatable stage sections also change audience positions and require suitable audio setups. This makes it easy to follow actors with all your senses.

Author: Lukas Herbers | Photos: Tristram Kenton (1), Lukas Herbers (5), zacktrack

Photo: Tristram Kenton

The Austrian company zackrack has been offering independent tracking systems for applications & events of all sizes for 15 years. Sound designer Gareth Owen has been using the system on Andrew Lloyd Webber's Cinderella since last year in London's West End. Light and sound work hand in hand during tracking.

Flexible planning thanks to scalability

"I can't even remember which application (Lighting or Audio) we approached first when we were planning," recalls CEO and founder of zackrack, Werner Petricek. "But the beauty of our system is that you don't really need to know in advance exactly what you're going to get because it's so flexible." The zackrack Pro used at the Gillian Lynne Theater for Cinderella is the larger of two systems the company offers and impresses with its immense scalability.

Extensive tracking with a manageable setup

The simpler Zackrack Smart system (list price 46,000 euros) with its own hardware is designed for a stage of up to 30 x 30 x 30m with at least six antennas positioned above it. If the coverage is restricted by massive stage elements, the number of antennas in the Smart system can be increased to up to eleven. At Starlight Express in Bochum, for example, this requirement arose due to the tunnel to be accessed through. Zackrack Pro with sales prices from 89,000 euros upwards is scalable in terms of area and number of antennas & trackers used. In the smaller Smart system, 50 to 60 tracking stations can be patched, but only twelve of them can be actively selected at the same time, while Zackrack Pro is also aiming for bigger productions here and can easily process 50 trackers actively at the same time.

Fail-safe thanks to ultra-broadband wireless technology

While zackrack is responsible for developing the actual tracking system, the transmitter and antenna hardware comes from Munich-based Kinexon GmbH, which originally used the technology in sports. The transmitters themselves are smaller than a belt-pack and work in the ultra-wide band of 3.25 - 4.75 GHz (zackrack Pro) or 6.2 - 6.7 GHz (zackrack Smart) and can therefore transmit through many common stage materials such as fabric, thin wood and trussing. Adverse weather conditions also pose a negligible risk in ultra-

wideband. Joseph Green, Head of Sound for the Cinderella production, therefore works very sparingly with his trackers. "We have a total of 34 units here for a cast of 30 actors," he explains as we tour the stage. "Only the main actor – our prince – gets two transmitters, because in one scene he's being harassed by a lot of people at once and we want to be on the safe side that nothing goes wrong."



With the rotating stage, parts of the audience are also turned into the stage area during the play. In order to react to the changed loudspeaker constellation, three different setups were calculated, which can be switched dynamically thanks to d&b Soundscape



Using tablets at all relevant positions, such as here at the microphone station, the various departments keep an overview of the active trackers and their position in the room

dual applications. "Our system can simultaneously supply several fixtures from the same system, i.e. two lighting consoles or different media servers and of course audio, with data at the same time. This happens, for example, via sACN, OSC, Art-Net or PSN. In order to avoid undesired tracking movements, one adjusts to the specific system." With lamps, the biggest determining factor is the physical inertia of the pan/tilt movements, which is why light tracking works with relatively high prediction values, since the inertia of the various lamp types is known and can be calculated. The system can easily distinguish between different lamp types and has been tested for up to 250 universes. "In audio tracking, on the other hand, extensive prediction is of course undesirable, so that the

Division of labour between the Lighting & Audio Crew

When operating the tracking system, the Cinderella crew practices a pragmatic division of labour. "The actors have to come to us to be mic'd anyway, so we also distribute the tracking transmitters that we have in the charging station. The lighting crew takes care of the operation of the servers and antennas. From the lighting desk, the trackers that are currently off-stage are also switched to inactive, so that the sound or lights are not jumping under any circumstances." At all relevant positions, the technicians involved have an insight into the current configuration of the system via tablet and the positions of the individual transmitters.

voice doesn't move on when the act has already changed direction, so we tend to rely on maximum smoothing here. Even with media servers, there must be a good balance and the correct coordinate system."

Individual tracking for different fixtures

In order to avoid general inaccuracies in tracking, zactrack's COO Paul Roch explains the different approaches of the tracking servers that can be selected for the indivi-



The software tools En-Snap and En-Space, developed by the Gareth Owens team, serve as an interface between the raw tracking data from zactrack and the d&b Soundscape, with which sound objects can be moved in space and cued via tracking

More creative freedom thanks to fast calibration

Since the calibration of a single fixture is done in just under a minute and can also take place without having to keep the stage empty for the period, it makes sense for the productions to measure more positions than actually planned. "We have now come to the recommendation to always measure a few more fixtures than are needed, since new approaches can be tested in a playful and easy way in the creative development of the show without having to do a lot of programming," says Werner Petricek, summing up the development of the last years.

Reliable tracking allows focus on the sound

Cinderella connects to Gareth Owen's sound design via three DS100 units from the d&b Soundscape system. Owen has already brought ten shows to the stage with Soundscape and raves about the advantages of the system, which make it possible to perceive artists following each other in their exact positions in the room. There were several reasons why the zackrack Pro was added to the new production. One of the most important is the nature of the stage at the Gillian Lynne Theater: instead of a classic orchestra pit, parts of the stage and the first rows of seating are built on a rotating platform. Therefore, during the play, the actors are in the middle of the audience space, while parts of the audience are moved into the stage area. "The Soundscape system is of course a huge step forward," summarizes Joseph Green, "after all, we want to hear the artists in their



The zackrack tracking system requires at least six antenna elements above the stage

real positions and not from a massive delay system above our heads. And with zackrack, we're actually blessed from an operator perspective. The system is perfect the way it is here." Thanks to the error-free and precise tracking, one no longer has to worry about thousands of manual position cues, but can concentrate fully on the quality of the sound and other aspects of the show.



Inside the zackrack system (antenna, transmitter and calibration puck, from left) is ultra-broadband technology from Munich-based Kinexon GmbH

Processing of the tracking data using d&b Soundscape

The En-Snap tool developed for the manufacturer by Gareth Owen's team supports d&b. "Basically, we deliver the pure tracking data with our servers, further processing then takes place in the respective system," explains Werner Petricek the connection. En-Snap allows the operators to use this tracking data received via OSC to automatically fire the cues previously defined in the tool. The software is connected directly to the DS100 and can position up to 64 sound objects within an En-space emulation and create them as cues. Since each cue can also be called up manu-

ally, there is also an automatic fallback option for tracking problems. En-Space is the second important tool of the Soundscape system, with which sound objects can be freely positioned in space.

Immersive sound despite a hidden orchestra

At Cinderella, zacktrack not only plays an important role in tracking the artists. With the rotating stage instead of an orchestra pit, an unconventional and pragmatic solution had to be found for the orchestra.

The musicians were accommodated on two levels to the left of the stage, out of sight of the audience.

Locating the musicians in their real position using soundscape was therefore pointless, so the decision was made to let the audience fully immerse themselves in the music instead.

Thanks to En-Space, the fact that parts of the monitoring system are moved into the audience area with the rotation of the stage is also not a problem, since the loudspeakers simply exchange their function with parts of the surround system in this situation. In total, the S100 matrices used therefore process three loudspeaker setups precalculated in ArrayCalc in order to be able to react to the different stage positions.



Joseph Green is Head of Sound for the Cinderella production and can't think of a better setup for the piece

Complete satisfaction for everyone involved

All in all, not only Joseph Green as Head of Sound is more than enthusiastic about the zacktrack system. Gareth Owen has already brought his next production to the stage with MJ The Musical: This time with zacktrack Smart and on Broadway in New York. And while zacktrack continues to work with research and development in Vienna, since the end of last year zacktrack International GmbH has been the exclusive worldwide source for service and sales in Paderborn. ■



Werner Petricek
(left) CEO and founder of zacktrack, and Paul Roch, COO and project manager