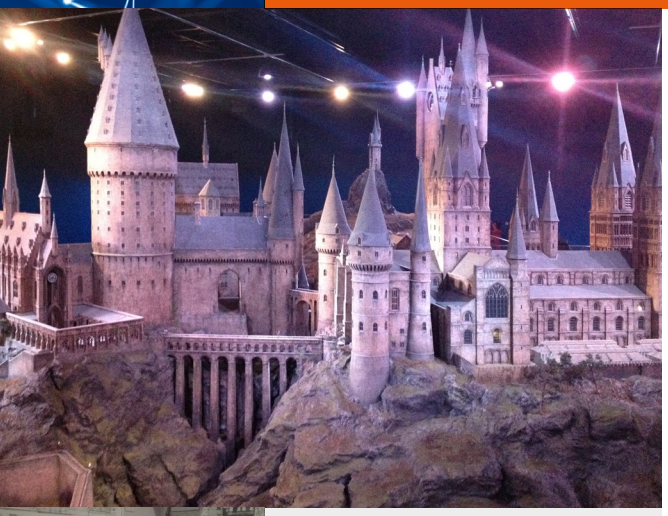
POWERSYSTEMS™
HIGH VOLTAGE SPECIALISTS
An Employee Owned Business

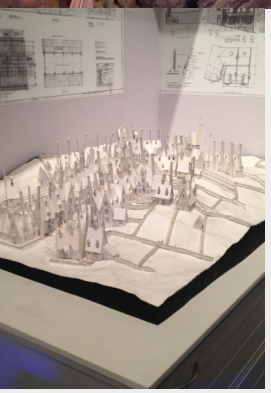
66kV 275kV 33kV 11kV 132kV 400kV

CASE STUDY 13008

Warner Bros. Studios

Leavesden, HV Infrastructure Project





PROJECT VALUE MILLIONS 1.8

13 MONTHS

GRID CONNECTION

33kV Grid Route

UPL

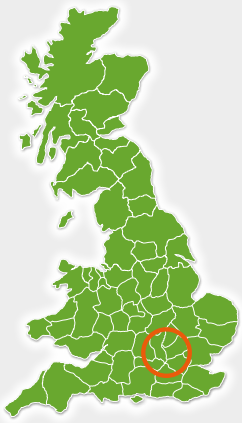
Project Facts and Figures:

- 33kv Grid Route (dual 33kV supply) approx. 1.9km length in carriageway including directional drill beneath the A41 trunk road
- Design and construction of the substation buildings and transformer compounds
- 2No. 12.5MVA 33/11kV transformers
- 6 panel 11kV switchboard for UKPN and customers metered supplies
- Protection panels, battery chargers and telecontrol
- Auxiliary pad mount 11/0.415kV transformer and grid route to UKPN 11kV network
- All HV joints and terminations
- Testing and commissioning of switchgear, transformers and HV cabling.
- The site was connected to the UKPN network via dual 33kV circuits at a primary substation some 1.8kM from the site
- In addition to the primary substation works Powersystems were also awarded the onsite private 11kV network works which involved the design and installation of 5kM 11kV cabling and 14No. 1.5MVA 11/0.415kV transformers with close coupled RMU's located throughout the studios complex.

WARNER BROS.

Warner Bros. background:

Warner Bros. Studios, Leavesden is a purpose built film production complex offering film makers and studios one of the largest and most state-of-the-art film facilities in all of Europe. It is an 80-hectare studio complex in Leavesden in Hertfordshire, in southeast England. Formerly known as Leavesden Film Studios, it is a film and media complex owned by Warner Bros. The studios were all converted from an aircraft factory and airfield called Leavesden Aerodrome, a centre of British aircraft production during World War II. It is situated in Abbots Langley, near Watford, in southwest Hertfordshire.



Continues overleaf:

33 kV 11 kV

Warner Bros. Studios - Leavesden, HV Infrastructure Project

CASE STUDY 13008

400kV 132kV 11kV 33kV 275kV 66kV

UPL

Powersystems Partnerships:

The electrical work was undertaken in partnership with Utility Partnership Limited on behalf of the client, Warner Brothers.

Scope of works and major design considerations

Powersystems were appointed to carry out the grid connection after a lengthy tender and negotiation process, and due to our extensive experience in completing large grid connection projects.

What the client wanted

Warner Bros. needed absolute surety the project could be delivered within an extremely tight timescale, as the on-site construction had already commenced in readiness for the VIP and Public openings scheduled for March 2012

Following a meeting with Warner Bros. UK, Hoare Lea and Utility Partnership in London, Powersystems were awarded the contract in July 2010.

The results:

A successful delivery of a project, within budget, timescales and to the customers satisfaction.

Warner Bros. background - *continued:*

Warner Bros. Studios, Leavesden is one of only a few places in the UK where large-scale film productions can be made. The studios contain approximately 50,000 m2 of flexible space which includes stage space, one of the largest filtered and heated stage-based water tanks in Europe, production office space, workshops and support buildings, along with an extensive 32-hectare backlot which offers a 180-degree uninterrupted horizon, favourable for exterior sets. Following an over £110m refurbishment by Warner Bros. the studios are now one of the largest and most state-of-the-art secure film making facilities in the world.

Though the studios are owned by Warner Bros., all of the studio facilities are available to rent for any production. Since acquiring the site Warner Bros. has opened a public attraction called Warner Bros. Studio Tour London – The Making of Harry Potter, which receives over 6,000 visitors a day at peak times all whilst the site maintains a secure studio space within the same complex.

The site was first built back in 1940 after the outbreak of World War II and was originally designed as an airfield.

It was not until 1997 that it was rebranded as the Leavesden Studios, A succession of major feature films made use of the site, in 1997, the first of the Star Wars prequels, The Phantom Menace and later Tim Burton's Sleepy Hollow. By the year 2000, Heyday Films had acquired use of the site on behalf of Warner Bros. for what would be the first in a series of films, Harry Potter and the Philosopher's Stone. Every one of the Harry Potter films was based at Leavesden Studios over the following ten years.

The site is home to the award winning Harry Potter Studio Tour, which following final completion of Harry Potter and the Deathly Hallows preserves and showcases the iconic props, costumes and film sets from all the previous productions, opened in March 2012 adjacent to the working studios the Tour offers a unique insight into the production, special effects and a backlot filled with original sets.

Warner Bros. Studios - Leavesden, HV Infrastructure Project

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400kV 132kV 11kV 33kV 275kV 66kV

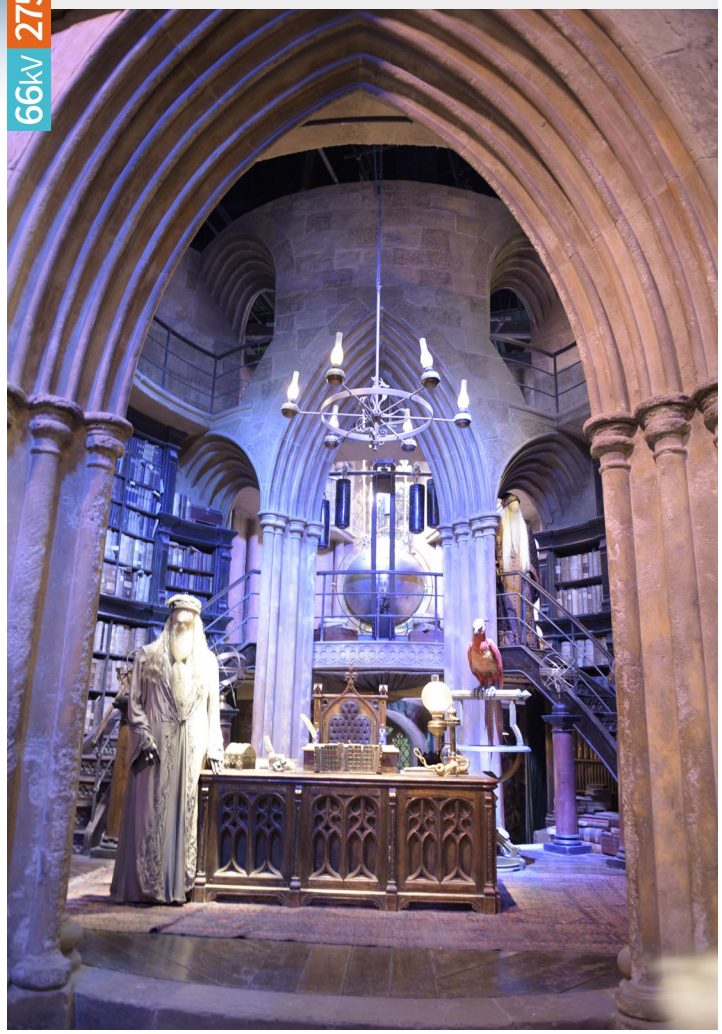
How Powersystems helped:

Powersystems were appointed by Utility Partnership Limited, on behalf of Warner Bros. to design, construct and commission a new Primary Substation to serve the Leavesden Studios Complex. The substation was designed and constructed under Competition in Connections within the UK Power Networks DNO area.

Whilst adhering to the OFGEM and the DNO's requirements our professionally trained engineers liaised with UKPN to ensure that the substation design and installations would meet with the DNO's specifications and would be adopted upon completion.

The site was connected to the UKPN network via dual 33kV circuits at a Primary Substation some 1.8kM from the site.

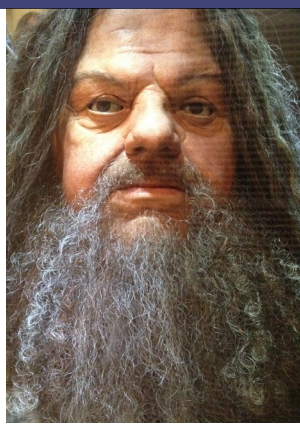
In addition to the Primary Substation works Powersystems were also awarded the onsite private 11kV network works which involved the design and installation of 4kM 11kV cabling and 14no 1.5MVA 11/0.415kV transformers with close coupled RMU's located throughout the studios complex.



Together with our supply chain partners, Powersystems UK were able to design, install and commission the following:

Design works

- 33,000/11,000v transformers - the installation, testing and commissioning of 2no 7.0/15MVA, 3ph, 50 Hertz 33/11.5kV, oil immersed, naturally cooled transformers
- NEX - the installation of 2 no neutral earthing reactors, which were all tested upon being installed. These will be star point connected to the customer's 33/11kV transformers
- 11,000v Hawker Siddeley ECLIPSE indoor metal-clad switchgear
- 33kV/11kV cabling- install, terminate and pressure 2 circuits of 33,000V
- Transformer protection panels - provided all 33, 000v transformer and 11,000v switchgear protection panels.
- Battery chargers



Installation Works

- Installation of 2 No 33Kv Circuits
- The installation of 2 No Pilot Cables
- 7.0/15mva 33,000/11,000v transformers
- Tap change panels
- Transformer protection panels
- 11,000v incoming 5 panels fixed pattern vacuum circuit breaker switchboard to include all protection, marshalling panels, jointing, termination works, testing and commissioning

Commissioning Works

Commissioning of the connection was completed to estimated timescales, with on-site witness testing completed in February 2012.

Project Timings

The project began in September 2010 and was completed in October 2011.

The results:

A successful delivery of a project, within budget, timescales and to the customers satisfaction.

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