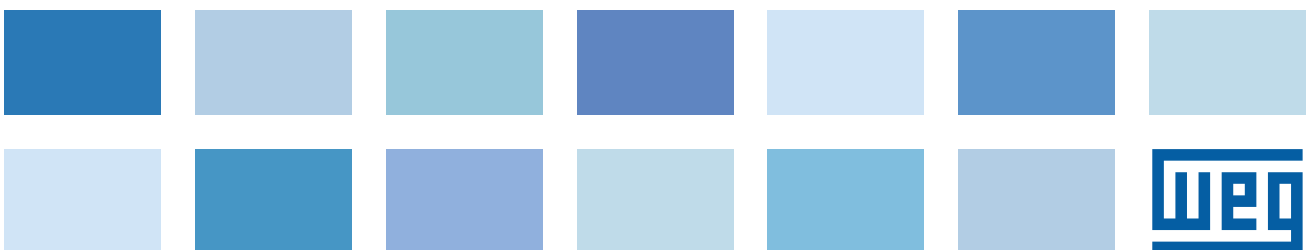





WEG Helps To Generate Hydro-Electricity For Windsor Castle



WEG Helps to Generate Hydro-Electricity for Windsor Castle



A project delivered by Southeast Power Engineering has seen a mini power station being installed on the River Thames at Romney weir to produce electricity sustainably using environmentally friendly water driven Archimedes screw generators. The completed design features two WEG W22 Premium Efficiency IE3 generators being driven by the screws via a gearbox to produce electricity which now powers Windsor Castle.

The scheme is the brainchild of David Dechambeau, Managing Director of Southeast Power Engineering, who has overseen every step of the design and installation process.

The power station consists of two Archimedes screws, each weighing 40 tonnes, connected to the WEG W22 IE3 class premium efficiency generators, which were targeted to produce a combined output of 300kW/hr. However, after some adjustments to the screw position, they are now delivering 320kW/hr at peak flow, exceeding the original design criteria.

The WEG W22 IE3 generators were designed and manufactured in Portugal at WEG's dedicated European manufacturing site; they are rated at 185kW and produce electricity at 400V, which is then fed via a 500kVA transformer to an underground

line that connects to Windsor Castle as well as the National Grid.

The W22 units are specials in that they are generators based on a W22 motor, the reason being that in this application; when the screws need to be re-started, electricity is used to start the screws turning and then as the speed increases, so the motor function is changed over to a generator and the rotation of the screw is maintained by the water which in turn maintains the generator speed to produce the electricity.

Efficiency was a key target for this application as the installation has a fixed ROI period, at 96% efficiency the WEG motor/generators represented one of the best investments Southeast Power could make in the power transmission design to ensure their six year ROI target was met. The installation has a minimum guaranteed design life of 15 years and Southeast Power has a 40 year tenancy of the site, so reliability and longevity were also very important considerations – if the screws stop turning then there is a direct consequence in terms of revenue.

David Dechambeau comments, "In order to make this project sustainable, it was essential that we selected the most efficient equipment for the construction of this power station. The design called for a reliable generator with superior



efficiency ratings and on balance the WEG component definitely fitted the criteria and it was straightforward to install.”

David Dechambeau adds, “This is a very important project for us, not only because we are supplying the Royal Household, but also as an initial stepping stone for a number of similar projects. It is essential that we install the most efficient and ecologically sound power plant as possible. The work we are completing now will help to deliver future projects using similar technology as demand for sustainable power is understandably going to increase.”

W22 sets the benchmark

The W22 motor sets the standard for affordable energy efficiency in the WEG range; while super-high efficiency IE4 motors are available, the IE3 standard offers 96% efficient W22 machines from fractional kW ratings to megawatt powers off-the-shelf. These machines, whether used as motors or adapted to become generators, satisfy an attractive balance between high efficiency, range, availability and value.

When you look at the total cost of ownership (TCO) for one of the machines over its lifetime the cost of acquisition typically represents only 1% of the total cost of ownership of an electric motor. In contrast, the associated energy savings provided by premium efficiency motors far outweigh this

additional investment in purchase price, particularly in applications where the process operates on a 24hr basis.

Green power gets Royal approval

The Windsor hydroelectric project represents an investment of over £1.7 million coming from a consortium of private and public funds, but success was not a foregone conclusion as it has taken several years for a scheme to get off the ground after previous attempts failed due to problems with alternative technology and funding.

The royal household has agreed to buy the power generated by the Romney Weir generators, guaranteeing an income for the project, but also cutting overheads for the site. The Queen already has another hydroelectric plant in Balmoral and the Prince of Wales employs solar panels and wood chip boilers on his estate, the Archimedes screws however are the largest project so far and fit-in with a policy by the Royal Household to both cut bills and reduce its carbon footprint.

Estimates are that the hydro-electric generation capacity is equivalent to £1million worth of local coal generation, effectively reducing carbon dioxide emissions by 790,000 kilos per year. The ecological side of the project goes further, alongside generating sustainable power the project has also built a new ‘fish path’ to allow the river’s marine life to migrate upstream for the first time in centuries.

WEG Worldwide Operations

ARGENTINA

San Francisco - Cordoba
Phone: +54 3564 421484
info-ar@weg.net

Cordoba - Cordoba
Phone: +54 351 4641366
weg-morbe@weg.com.ar

Buenos Aires
Phone: +54 11 42998000
ventas@pulverlux.com.ar

AUSTRALIA

Scoresby - Victoria
Phone: +61 3 97654600
info-au@weg.net

AUSTRIA

Markt Piesting - Wiener
Neustadt-Land
Phone: +43 2633 4040
watt@wattdrive.com

BELGIUM

Nivelles - Belgium
Phone: +32 67 888420
info-be@weg.net

BRAZIL

Jaraguá do Sul - Santa Catarina
Phone: +55 47 32764000
info-br@weg.net

CHILE

La Reina - Santiago
Phone: +56 2 27848900
info-cl@weg.net

CHINA

Nantong - Jiangsu
Phone: +86 513 85989333
info-cn@weg.net

Changzhou - Jiangsu
Phone: +86 519 88067692
info-cn@weg.net

COLOMBIA

San Cayetano - Bogota
Phone: +57 1 4160166
info-co@weg.net

ECUADOR

El Batan - Quito
Phone: +593 2 5144339
ceccato@weg.net

FRANCE

Saint-Quentin-Fallavier - Isère
Phone: +33 4 74991135
info-fr@weg.net

GERMANY

Türnich - Kerpen
Phone: +49 2237 92910
info-de@weg.net

Balingen - Baden-Württemberg
Phone: +49 7433 90410
info@weg-antriebe.de

Homburg (Efze) - Hesse
Phone: +49 5681 99520
info@akh-antriebstechnik.de

GHANA

Accra
Phone: +233 30 2766490
info@zestghana.com.gh

INDIA

Bangalore - Karnataka
Phone: +91 80 41282007
info-in@weg.net

Hosur - Tamil Nadu
Phone: +91 4344 301577
info-in@weg.net

ITALY

Cinisello Balsamo - Milano
Phone: +39 2 61293535
info-it@weg.net

JAPAN

Yokohama - Kanagawa
Phone: +81 45 5503030
info-jp@weg.net

MALAYSIA

Shah Alam - Selangor
Phone: +60 3 78591626
info@wattdrive.com.my

MEXICO

Huehuetoca - Mexico
Phone: +52 55 53214275
info-mx@weg.net

Tizayuca - Hidalgo
Phone: +52 77 97963790

NETHERLANDS

Oldenzaal - Overijssel
Phone: +31 541 571080
info-nl@weg.net

PERU

La Victoria - Lima
Phone: +51 1 2097600
info-pe@weg.net

PORTUGAL

Maia - Porto
Phone: +351 22 9477700
info-pt@weg.net

RUSSIA and CIS

Saint Petersburg
Phone: +7 812 363 2172
sales-wes@weg.net

SOUTH AFRICA

Johannesburg
Phone: +27 11 7236000
info@zest.co.za

SPAIN

Coslada - Madrid
Phone: +34 91 6553008
wegiberia@wegiberia.es

SINGAPORE

Singapore
Phone: +65 68589081
info-sg@weg.net

Singapore
Phone: +65 68622220
watteuro@watteuro.com.sg

SCANDINAVIA

Mölnlycke - Sweden
Phone: +46 31 888000
info-se@weg.net

UK

Redditch - Worcestershire
Phone: +44 1527 513800
info-uk@weg.net

UNITED ARAB EMIRATES

Jebel Ali - Dubai
Phone: +971 4 8130800
info-ae@weg.net

USA

Duluth - Georgia
Phone: +1 678 2492000
info-us@weg.net

Minneapolis - Minnesota
Phone: +1 612 3788000

VENEZUELA

Valencia - Carabobo
Phone: +58 241 8210582
info-ve@weg.net

For those countries where there is not a WEG own operation, find our local distributor at www.weg.net.



WEG Group - Motors Business Unit
Jaraguá do Sul - SC - Brazil
Phone: +55 47 3276 4000
motores@weg.net
www.weg.net

