

## ECS completes rebuild of 26-tonne sluice gate on River Idle



**The Environment Agency (EA) has continued with its maintenance of several major water control structures with the replacement of the tidal sluice gate on the River Idle - where it meets the River Trent at West Stockwith, Notts. The contract was completed by ECS Engineering Services as part of its framework agreement with the EA. It follows on from previous work done by ECS to refurbish the counterweight for the lifting system.**

ECS was responsible for the design, assembly, installation and commissioning of the new 26 tonne sluice gate, which was partially fabricated off-site. Due to its size and weight, the final assembly stages were completed on-site at West Stockwith. The installation team used a 250 tonne mobile crane to remove the top platform before lifting out the old gate and installing the new one.

The lifting operation itself required almost perfect weather conditions due to the weight of the sluice gate and its tendency to act like a sail in the lightest wind. The crane, one of the largest standard mobile cranes available, was positioned on a purpose built pad adjacent to the sluice structure.

The project included the replacement of the steel ropes and the gate runners which guide the sluice gate into position during normal operation. It also involved a specialist dive team to install two limpet cofferdams which allowed the engineers to remove and replace the gate running tracks under dry conditions. With these in place, the new sluice gate could be installed and the top platform replaced.

Clark Williamson, Commercial Director at ECS comments: "ECS has developed a successful working relationship with the EA and this project is one of many that demonstrates the scale of work that can be involved. With our new 50,000 sq ft fabrication facility, we have the capacity to ensure a variety

of projects can be underway simultaneously and our CE accreditation provides reassurance of our professional approach."

The sluice is located close to residential properties and following the previous project, ECS was commended on its sympathetic working practices that kept any disturbance of the residents to a minimum. ECS endeavoured to maintain this good will during the project to replace the existing sluice gate which involved some extended working hours.

The project has extended the operational life of the sluice gate which forms an important part of the local water control regime maintained by the EA, and also completes the overhaul of this structure. ECS continues to work with the EA as a framework contractor, as well as other utilities and drainage boards to provide complete turnkey engineered maintenance solutions, even for complicated projects requiring specialist engineering underwater.

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## MD's comments

Welcome to the latest edition of the ECS newsletter

As many will know, Gary Jordan has recently stepped down from the position of Managing Director. I have now taken on the role of leading ECS and continuing our development and growth and will continue to build on our success to date.

Since our last newsletter we have been involved in many prestigious projects, with just a few of them outlined in this edition. Our business is continuing to expand and the recent agreement for ECS to supply and install InfraCore products is a very positive step that will fit well with our existing clients as well as develop new markets for our expertise.

As always, our employees continue to deliver and exceed the expectations of our clients and they continue to be our most valuable asset. So from all of the management team, you have our greatest appreciation and we wish you and our customers a prosperous 2015.



*Bob Nix*

Bob Nix,  
Managing Director



## FiberCore lock gates win innovation award

The world's largest fibre reinforced polymer (FRP) lock gates, designed and manufactured by FiberCore Europe, have won the 'dry feet' category at the 2014 Dutch Water Innovation Awards. The Association of Dutch Water Boards (UvW) annually awards innovative projects that contribute to better water management and this year saw the expert jury select four winners from 135 entries.

The FiberCore entry will form part of the new lock III of the Wilhelmina Canal in Tilburg when it is installed in 2015. The gates will be 13 meters tall and 10.5 meters wide and manufactured using the patented InfraCore® Inside technology. The new lock is part of the larger project to widen and deepen a 5km stretch of the canal to improve inland navigation in the area.

## Top 6 contract wins

**William Hare, Structural Engineers**  
Various structural steelwork packages. **Value > £330,000**

**Environment Agency, Kempsey**  
Pumping station improvement works under MEICA framework. **Value > £300,000**

**Doosan Babcock, Nuclear Power Stations**  
Duct supports for installation in the containment area, fabricated under high specifications CE EXC3. **Value > £150,000**

**British Antarctic Survey**  
Various structural steel fabrications to improve the scientific station. **Value > £105,000**

**MC engineering, Wickford STW**  
Supply and install new Archimedes screw pump for Anglian Water. **Value approx £100,000**

**Severn Trent Services, Aldershot STW**  
Various asset improvement works on MOD sewage treatment works. **Value > £90,000**

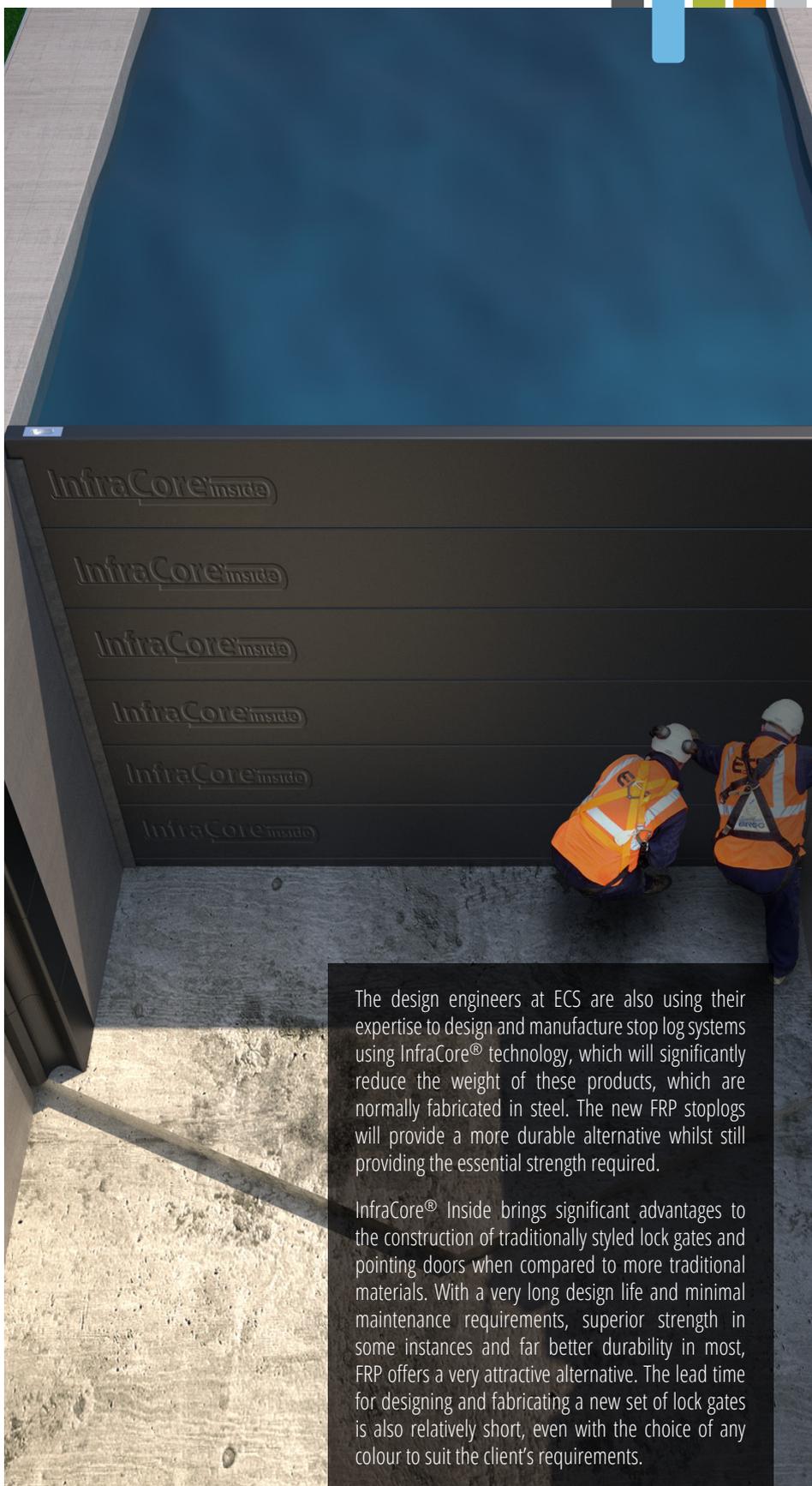
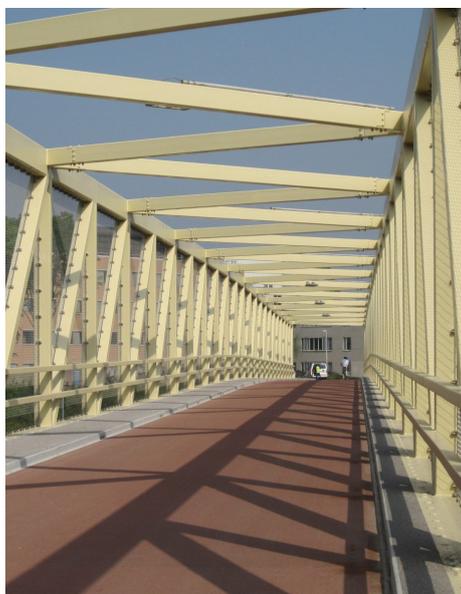
# Lightweight and durable fibre reinforced polymer (FRP) lock gates, stoplogs, bridges and bridge decks available from ECS Engineering

ECS Engineering has gained the rights to supply and install a range of innovative, environmentally friendly and maintenance free lock gates, bridges and bridge decks produced with the worldwide patented InfraCore® technology. These innovative products, made from fibre reinforced polymers (FRP), provide a very durable and considerably lighter modern day alternative to some traditional construction materials that are being installed by the expert engineering teams at ECS.

The Dutch company FiberCore Europe has developed a unique and standardised technology to use composite FRP material, which has market leading load bearing capabilities, up to 60 tonnes and more. This enables designers and engineers to select an alternative, environmentally friendly, low maintenance product for traditional projects and also minimise the time required to complete a project and so reduce the overall costs.

When used in bridge design, the FRP manufacturing process allows for more complex designs such as varying cambers and non-constant cross-sections to be easily created. Once complete, the lightweight material allows more cost effective transport, better weather resistance, simplified assembly and considerably less time on site, all of which helps to minimise the project costs.

This deal will provide ECS with further options for the current offering that it provides for a number of clients including water utilities, local councils, the Canal & River Trust and the Environment Agency.



The design engineers at ECS are also using their expertise to design and manufacture stop log systems using InfraCore® technology, which will significantly reduce the weight of these products, which are normally fabricated in steel. The new FRP stoplogs will provide a more durable alternative whilst still providing the essential strength required.

InfraCore® Inside brings significant advantages to the construction of traditionally styled lock gates and pointing doors when compared to more traditional materials. With a very long design life and minimal maintenance requirements, superior strength in some instances and far better durability in most, FRP offers a very attractive alternative. The lead time for designing and fabricating a new set of lock gates is also relatively short, even with the choice of any colour to suit the client's requirements.



# ECS improves maintenance operations at Colwick Sluice

**The Colwick Sluice in Nottingham is a key component of the flood defence apparatus designed to protect the city; one that the Environment Agency (EA) has been upgrading in order to improve the efficiency of essential maintenance work. As part of this project ECS Engineering Services has installed a new semi-automated stoplog deployment system which provides the EA with 'dry' access to the sluice gate mechanism, speeding up operations considerably.**

Originally built in 1955, the Colwick Sluice consists of 5 sluice gates and forms a key control point for the water levels of the River Trent and is used by the EA to protect Nottingham against flooding. The last major work to be carried out at Colwick was in 1995, when the sluice gates were replaced and fresh concrete was laid in the base to alleviate river bed erosion on the downstream section of the river.

Periodically the EA is required to carry out maintenance on the sluice gates and in some cases this requires the area around the gate to be inspected which means that the water must be held back just upstream of the gate. This is done using a stoplog system which consists of a number of steel sections which are lowered into slots located in the concrete structure of the sluice. Once in position, the gate is opened and the trapped water is released, allowing the inspections to be carried out.

The procedure to install the stoplogs, each weighing 3.8 tonnes, was very labour intensive, requiring a mobile crane to move each steel section from its storage position to the sluice where it was positioned and lowered by two separate hoists. The procedure for keeping the stoplog level during the lowering procedure was essentially done by eye, requiring additional personnel to those involved in controlling the stoplog.

Working close to the water also requires extra safety

precautions to be taken to ensure that personnel remain as safe as reasonably possible during the work. To ensure the safety of the maintenance team, each man working on the sluice structure had to wear a harness, which was connected to the structure via a lanyard. In addition, there was a boat team in place on the river in case a rescue was required. In all, a team of 7 was required to operate the lowering system, with additional support from the mobile crane.

The EA planned to improve this procedure, both in terms of efficiency and safety and turned to one its framework suppliers, ECS Engineering Services. With extensive knowledge and expertise in water control products, ECS was given the brief to design and install a bespoke system which would automate the deployment of the stoplogs.

An initial site survey determined that the most efficient system would involve two linked lowering mechanisms which could be located at any of the five



sluice gates in order to deploy the stoplogs. Using the existing structure of the sluice, it would be possible to use the existing set of tracks, along which the new lowering mechanism could travel. For this aspect of the project, ECS turned to an engineering partner with expertise in rail engineering, to design the carriage running gear and control systems.

The improved procedure for installing the stoplogs still requires a mobile crane on site to move the sections from the storage area to the lowering carriage; however, from that point the carriage will take over the operation of automatically moving the stoplog sections to the required sluice gate and lowering them into position.

This is done using a pair of hoists that are controlled by a PLC which uses an encoder to determine the position of the stoplog and determine when each section is in place. Once in position, the stoplog is released from the lifting frame, which is then

retracted ready to load the next section.

Phil Anderson, Project Manager for ECS comments: "From a technical perspective this is quite a complex installation, but the overall contribution to both speed and improved safety is considerable. Working in close proximity to deep water always raises additional safety concerns, but this system will allow the total number of people involved to be reduced as well as reducing the overall risk for everyone involved.

Previously, it could take a team of seven, at least four to five hours to complete the installation of all seven stoplogs required to isolate one sluice gate. With the new system installed by ECS, the team has been reduced to two or three men, who can complete the operation within an hour. This represents a 65% reduction in manpower and a 75% reduction in time, but more importantly the whole team can work within the hand railing on the sluice, greatly improving the health and safety aspect of the operation.

Phil Anderson concludes: "The completed deployment system has been tested and commissioned with the oversight of the EA in order to ensure that the controls and safety devices are all working as prescribed. This project will bring some real benefits in improving the health and safety aspect of maintaining the sluice gates as well as reducing the annual costs."



# ECS Engineering Services delivers steelwork for new Paris landmark



Image courtesy of Nicolas Borel

**In the current climate of austerity, many of the major building projects in Paris have been shelved, but one has survived, the Paris Philharmonic building, which is set to become one of the landmarks of the city. The striking design requires a great deal of engineering expertise to ensure that the completed concert hall will meet the required standards. Part of that expertise is being provided by ECS Engineering Services, which has been sub-contracted to provide a proportion of the structural steelwork.**

Construction started back in September 2009, but with a 12 month period during which no work was carried out, the completion date has now been set for the end of 2014. As the building has emerged from the ground, so the deliveries of concrete and steel have continued apace. ECS won the contract to supply 307 tonnes of steelwork which will form part of the roof structure.

John Cotterill, Operations Director for ECS, explains: "The job was to produce a set of I-beams not only with bespoke flange connections, but also with rectangular



Image courtesy of Nicolas Borel



The striking design requires a great deal of engineering expertise to ensure that the completed concert hall will meet the required standards

cut-outs in the vertical sections. The dimensions had to be met exactly so that our fabrications would fit together perfectly with the materials already on site.

"Although the CE marking regulations had not come into force at the time this project was completed, all of the steel was produced under CE certification standards. ECS had completed the approval process for CE marking of structural steel after nearly two years work. This is just the latest achievement of our professional and dedicated engineers."

The fabrication department of ECS recently moved to new premises at Fullwood, where it processes 180 tonnes of structural steel every week using the 50,000 sq ft of floor space. The new facility is equipped with the latest plasma cutting, machining and welding

equipment along with 75 tonnes of lifting capacity, which all enables ECS to handle a wide range of fabrication tasks and deliver them on time.

The steelwork for Paris had to be delivered to a tight deadline to fit in with the build schedule on site, so it was essential that the fabrication work was completed on time. This included the plasma cutting of the rectangular holes, for which precision was crucial to prevent misalignment later in the build.

The Paris Philharmonic building is located in the Parc de la Villette, on the north-east edge of Paris and the construction area covers nearly 20,000 sqm. When completed, it will seat 2,400 people in an arrangement that has been carefully designed to ensure the optimum acoustic experience.

# ECS to replace Marlow and Romney lock gates for EA



As a framework contractor to the Environment Agency (EA), ECS Engineering Services has won the contract to replace the lock gates at both Marlow and Romney locks on the River Thames. The project will include the design, fabrication and installation of the new lock gates and will be completed by the end of the year.

The existing lock at Marlow was rebuilt by the Thames Conservancy in 1927 and since then the only improvements have been routine maintenance work and the addition of electrical power to make gate operation easier. Romney Lock was rebuilt in 1979/80 and this structure has continued to be maintained by the EA over the years.

The new lock gates will be designed by ECS, according to the specifications provided by the EA, constructed at its new 50,000 sq ft premises and then installed by the experienced ECS site engineers. Under BS EN 1090, both sets of lock gates will be required to meet CE certification standards for fabricated structural steelwork, a standard for which ECS has already received accreditation.

## Holme Tunnel project wins national rail award



The project to strengthen and repair the 160 year old, 250 metre long Holme Tunnel, undertaken by Network Rail and its engineering partner AMCO, has been awarded the 'Civil Engineering Achievement of the Year' award at this year's prestigious National Rail Awards. The main contractor for the structural steelwork was Barnshaws, a world leading section bending company, with ECS Engineering Services providing fabrication and assembly facilities.

The National Rail Awards, which took place in London in September, saw nearly 1,300 people in attendance with the various award winners being selected for their outstanding contributions to the rail sector. Commenting on the Home Tunnel project the judges were reported to have said: "The works were delivered on time and to budget and are now bringing significant benefits to railway operations. The innovation shown across the whole task was impressive and teamwork was of a high order."

ECS was able to use its CAD facility to check the dimensions of every curved arch before starting the fabrication and assembly process. Using its drilling, welding and finishing facilities, ECS was able to manage their section of the project and ensure that each component was delivered to site on time and so support the project timing.



## CE marking approval

**ECS has achieved CE marking approval to execution class level 3 (EXC3) under BS EN 9010-2, which came into force in July this year.**

ECS began the process nearly 2 years ago by investing in training for two welding coordinators, who have been certified by the British Constructional Steel Association (BCSA). We have implemented a comprehensive Factory Production Control system which allows us to ensure the quality of our fabricated products and provides complete traceability to our customers.

We will continue to invest in training to ensure we maintain the high standards expected by our clients and our operation will be assessed each year by an independent assessor to allow us to maintain our CE approved status.

This latest achievement by ECS underlines the professional and dedicated approach of its employees and complements previous awards under BS EN 14001, Environment Management and BS OHSAS 18001 Health & Safety Management as well as a sixth gold award from RoSPA.

# Archimedes screw pump refurbishment improves efficiency at Skellyton



A regular maintenance programme is helping one northern water utility company to enhance the efficiency of its waste water treatment sites with the latest improvements being made to a pair of Archimedes screw pumps. The task of replacing the bottom bearings and re-screeding the concrete trough was completed by ECS Engineering Services, which is supported by the pump manufacturer Landustrie.

This utility company is one of the largest operators of

Archimedes screw pumps in the UK. For one site near Hamilton, South Lanarkshire, a pair of Archimedes screw pumps had been identified as requiring new bottom bearings and remaking of the concrete troughs.

The Archimedes screw pump design relies on the trough in which it lies to guide the water to the top of the screw. The efficiency of this process is determined by the gap between the screw pump flights and the trough. Over time the motion of the water will wear the concrete and the gap will increase, allowing more water to fall back to the bottom of the screw.

This particular project was carried out by ECS who

have considerable experience in maintaining these assets being the UK sales and service partner for Landustrie. ECS was able to specify a new stainless steel, eco-friendly bearing which is sealed for life and requires no annual maintenance. The design of the bearing allows for 3-dimensional self alignment, which absorbs the expansion and contraction of the screw in changing temperatures.

The project required a mobile crane to lift out the screws and allow the existing screeded troughs to be broken out and 5mm tolerance bars to be welded temporarily onto the full length of the flights of the screws. In this way the original bearings can be removed and replaced with the Eco bearings before the screw is replaced in the trough and connected to a special screeding drive motor.

Fresh screed was then hand formed to create the basis of the new trough utilising the special screeding drives to turn the screw very slowly. The temporary screeding bars shape the concrete to form a perfect fit for each screw and the remainder of the trough is hand finished. Once the materials have gone off, the screeding bars are removed and the service motor connected to allow normal operation.



Engineering Services ■■

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