

# Retrofit

Turnkey solution 220mw CHP

CASE STUDY



**How Indassol provided a turnkey  
solution on a 220MW CHP power plant,  
ahead of schedule and with  
no reported lost time accidents**

**CASE STUDY**

***Indassol***





Indassol recently completed a unique project – the first in the UK in which such a large (220 megawatt) power plant was dismantled, reassembled and commissioned for an overseas client.

#### **The background**

The power station was built in 2000 in Deeside, Flintshire, United Kingdom. High gas prices and relatively low electricity prices resulted in the operator taking the decision that it was no longer viable to keep it open, and to investigate the possibilities to sell or relocate the plant.

When the decision to close became public knowledge in July 2012, we contacted the operator to offer our services to identify a buyer outside the United Kingdom.

The operator agreed and after an intensive marketing campaign and several false starts, a credible buyer was found in Turkey.

With our extensive expertise and meticulous planning processes in place, we were able to provide the full turnkey solution that the buyer in Turkey required – dismantling, export packing, special logistics and transport within the UK and Turkey, sea shipment on several chartered vessels, rebuilding and recommissioning the plant at its new home in Turkey.





### The removal stage

We started work on the dismantling stage in April 2014. This required more than 100,000 man-hours, with over 6,000 tonnes of bulk equipment being removed from the six-acre site.

Removal was completed to the highest standards:

- Meticulous planning ensured a safe and seamless process.
- Approximately 11,000 tonnes of equipment in total was dismantled.
- This included two x 76 metre high chimney stacks, which were removed in sections of between 15 and 50 tonnes in weight, and three x 140 tonne generators.
- In addition to the bulk equipment items, a total of 266 x 40 ft containers were shipped from Ellesmere Port to Iskenderun.

In March 2015, the last pieces of equipment were loaded out from the site.





### Demolition running in parallel

When the removal of the equipment had progressed sufficiently in October 2014, the demolition process had also started. Running the dismantling and demolition works in parallel was achieved by good project planning and the phased release of dismantling areas to our demolition partners, all controlled with the permit to work system.

- 388 concrete piles were excavated down to two metres below ground level.
- All of the resulting spoil was crushed on site to a specified size of 75 mm and spread evenly across the entire six-acre site. This was done to satisfy the lease return conditions of the site owners, Flintshire County Council, who checked and approved the levels and took the site back under their responsibility.
- All of the steel frames of the site buildings were salvaged and taken to Turkey and re-used.

### Completed ahead of schedule

The site at Shotton was handed back to the operator on 8 May 2015, seven weeks ahead of schedule.



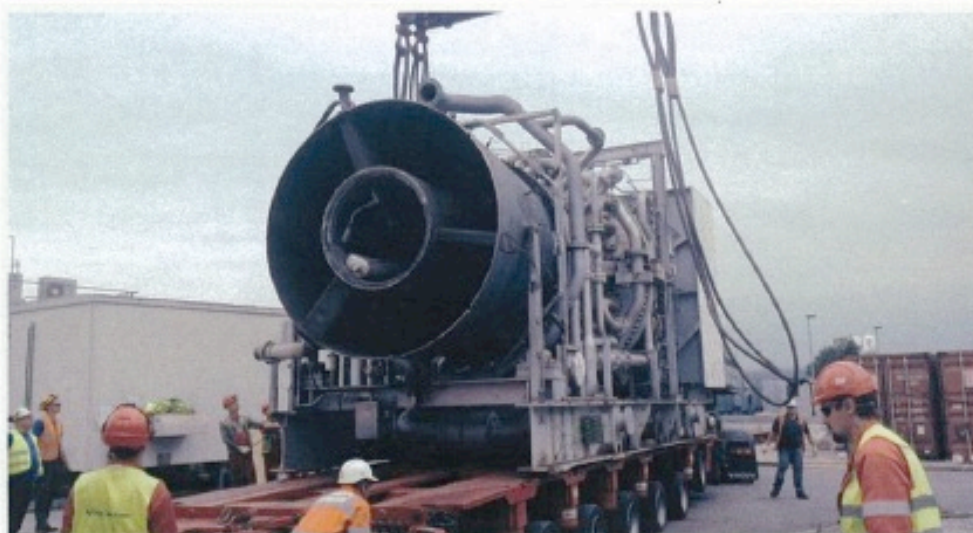


### Weather watch

As the dismantling process required us to work extensively at height and involved major lifting operations, we had to take careful account of the weather. We adapted our schedule by planning to have 750 tonne cranes on site and dismantle particularly substantial pieces of equipment to fit in with long-range weather forecasts. In particular, this meant avoiding the predicted high winds in October 2014. It was a successful approach. For example, both chimney stacks were brought to ground level without losing a single day to the weather.

### Teamwork

At Indassol, we pride ourselves on our solid teamwork and this has undoubtedly been one of the keys to the success of this project. Guiding the project at Shotton were our own highly professional, multi-disciplined engineering team with a wealth of experience across many industries. They were backed up by very skilled and proficient subcontractors, including 70 mechanical and electrical and 10 demolition technicians. We aimed to assist everyone's excellent work by providing a supportive, team-focused environment.





## The reinstallation

The power plant was sold in March 2014 to a private sector buyer in Turkey. The reinstallation site in Mardin, Turkey is located just eight miles from the Syrian border. Security was therefore a major concern – especially as the advice on the Foreign & Colonial Office website at the time was not to travel to the area. As part of our due diligence, we instructed a UK based private security company to visit the area and carry out a risk assessment in advance of work commencing on site. Based on their findings, and to minimise risk to our UK team and satisfy our insurers, we decided to employ a suitably qualified and recommended local project management team.

We participated in the process to interview and appoint local mechanical and electrical sub-contractors, and the workforce of between 70 and 120 (depending on the stage of the operation) upheld high standards throughout the reinstallation process. We

had daily communication with the local project manager, and key Indassol personnel made regular visits to site to maintain overall control.

The Turkish operator's power generation licence required that the plant be located close to Mardin city and a large industrial estate. It was rebuilt on a former mountain side and the site created and levelled by explosive demolition.

Excavation and construction of the power island plinths started in January 2015, and commercial power production started in mid-May 2016. The site is now generating 140 megawatts from the two gas turbines on a simple cycle basis. This was achieved by the introduction of diverter stacks, pending the future commissioning of the steam turbine when the operator's power generation licence is increased to 220 megawatts. We also replaced the outdated Mark V Control System with a new Siemens S7 system.







**No reported lost time accidents from start to finish**  
Safe working was of paramount importance to us and our clients at Shotton and in Turkey. As well as our own scrupulous checks and processes, we were continually subject to external monitoring at Shotton by a third party appointed by the client as health and safety advisors, as well as by the client's in-house health and safety team. Throughout the whole process of plant removal and installation, demolition and construction – a total of some 350,000 man hours – there were no reported lost time accidents.

