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*HMP YOI Grampian – Peterhead*  
*Ground Source Heat Pump Systems & Shared Source*

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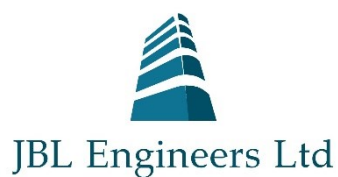


**Project Value: £270,000**

**Project Start Date: 4<sup>th</sup> April 2012**

**Project End Date: 14<sup>th</sup> November 2013**

**Stakeholders:**  
**REC Renewable Energy Ltd**  
**REC Ltd**  
**Skanska UK Plc**





James Lofthouse while in employment with REC Renewable Energy Ltd as technical and engineering director delivered the first commercial project for the newly form company just four months after its incorporation.

The project was secured through innovative design and through the comprehensive knowledge during interviews that James was able to demonstrate where competitors could not readily provide. The innovative design delivered for the scheme was to provide a shared heat source for 2 buildings, each operating decentralised heat pumps. While this approach is now in wide use, particularly within district energy, this design innovation at the time was only proposed by REC RE Ltd with James Lofthouse spearheading the design.



The project required 3 distinct buildings to be served by ground source heat pumps serving underfloor heating with loads of 191kW, 51kW and 45kW, Where the 51kW and 45kW loads were served by a shared bore field array providing the heat source for the heat pumps.

REC RE Ltd implemented at the direction of Mr Lofthouse 3D Design and BIM in the design and coordination of the project, to complement the construction method employed by Skanska, a modular design for plant was developed. In addition to conducting the design and commercial aspects of the project, Mr Lofthouse also acted as the project manager for the project having previously impressed Skanska on The One New Change Project in central London and was required by the final contract to project manage operations on site.

Due to the nature of GSHP project REC RE Ltd were one of the first contractors on site and one of the last, Mr Lofthouse designed and coordinated all ground works, and drilling operations, managing the drilling sub-contractor and REC RE Ltd pipe fitters.



With the project completed on time and to budget and with the heat pumps providing Seasonal COP's of 3.63 each and with seasonal performance factors >2.9 ensuring RHI qualification, the project was a success and a first on the new "super prisons" developed by the Scottish Prison Service.

In early 2018, JBL Engineers Ltd were contracted by HMP Grampian to provide consultancy services in support of the GSHP systems. Due to the RHI not being applied for by the estates team on commissioning, and the 5 year intervening period from commissioning the RHI criteria had changed, in order to complete the application JBL Engineers were engaged to provide detailed calculation and application support utilising historical data from the GSHP control systems. The resulting reports and analysis demonstrated that the systems were achieving consistent efficiency with the borehole arrays showing no sign of under sizing. The completed analysis enabled HMP Grampian to obtain back dated RHI payments from the date of commissioning due to the reporting of JBL Engineers Ltd.

