Deeside

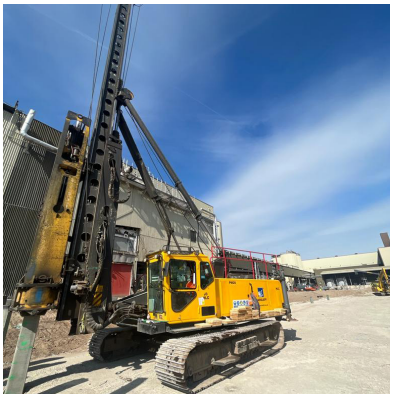
Effective project management and well-rounded knowledge means the delivery of operational excellence for a large scale piling project in North Wales

Aarsleff were approached in June 2022 in regards to a large project in Northern Wales, near the border with England, in order to found a new paper mill to facilitate more domestic manufacturing of paper.

The project was being carried out by Turkish contractor, ENKA, who carry out large projects across the European construction market. Aarsleff were sent an initial design, which suggested the installation of over 18,000 piles to found the new mill, with large section sizes. Aarsleff reviewed this design, suggesting an alternative following analysis by our experienced design engineers which reduced the number of piles to 8500 piles. This aimed to mitigate the following risks associated with the project; high potential for shallow obstructions due to existing foundations, potential for densification of the underlying cohesionless materials during installation of such a high quantity of piles within close proximity, vibration for existing structures, rising fuel costs, and uncertain material rates in unpredictable climate.

Once the tender had been approved, Aarsleff contested trial results carried out by a previous piling contractor due to the excessive energy applied to the piles and the tight installation set of the trial piles. We were aware that working to this installation criteria would have unnecessary impact on programme, cost, and pile integrity. This was backed up by a simplified group analysis to evaluate the performance of pile groups and critical pile testing to perform pile group analysis for large pile-slabs across the site.

After trial piling occurred and the contract was agreed, Aarsleff commenced piling on site. It became clear that communication would play a key part in delivering success and value for our client on this project. Therefore, the decision was taken to appoint not only a supervisor and project manager to the project, but also one of our student engineers to be on site four days a week to provide a liaison with the client. This, combined with daily progress reports on top of our usual master logs and pile record sheets ensured that the client had constant understanding of our progress and a contact on site to raise any concerns with directly.



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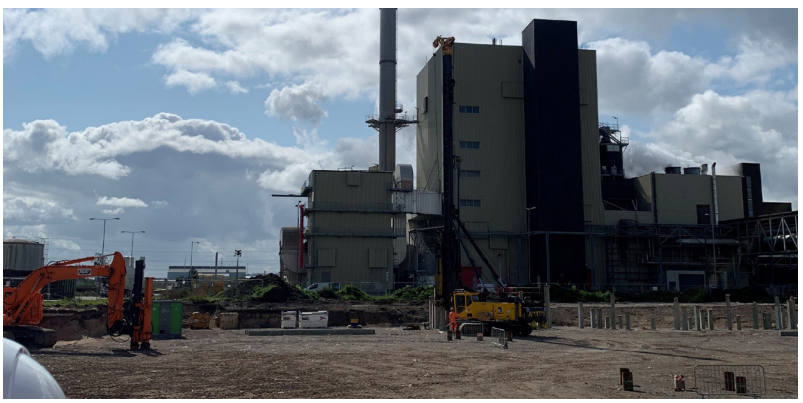
A number of challenges were overcome by Aarsleff's early engagement and innovative approach on site. A drivehead cleaner was brought to site to clear concrete and rebar from the rigs, reducing the time piling rig attendants spend cleaning and therefore also reducing manual handling and risk of injury. An underpack fire control system was used, reducing time on site for fire watch after piling shifts. A heave mitigation plan was also implemented using a 35t Excavator with 2.2t hammer, restriking piles to eliminate any heave. Any piles exceeding 4mm heave in the mill seat, that we had access to could be restruck at break times or end of shift.

Overall, Aarsleff's technical knowledge and open approach ensured that we were able to meet our client's need and deliver operational excellence on site. The project is a great example of how the strength of Aarsleff's team from commercial, design, operations and pre-construction all create a value-added solution for our clients. We are delighted that our work on this site has opened up potential opportunities for continued work on this development.



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Data

• 8500 300sq mm driven precast concrete piles

Client

ENKA

Type of contract

Design and build contract

Construction period

June - October 2023

Contact

Aarsleff Ground Engineering
info@aarsleff.co.uk
www.aarsleff.co.uk
Tel 01636 611140

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