CASE STUDY

Farrat
Engineering Excellence

Daily Mail Printing Press, Didcot

Main Contractor: Bowmer & Kirkland

Structural Engineer: URS Scott Wilson

Equipment:
Cerutti Flexo Full Colour Newspaper Printing Press

Challenge

This project followed the successful £82 million completion of a state of the art new printing facility at Didcot for Harmsworth Quays Printing Ltd on behalf of the Daily Mail - the printing and production operation incorporated a Cerutti Flexo printing press producing newspapers in colour with non-rub off ink.

The new press site was to be set in ten acres and would house four S4 Cerutti flexographic presses which can print up to 80,000 copies an hour. Once fully operational the centre would be printing 3.2 million copies a week of the Daily Mail and Mail on Sunday, and 350,000 copies of regional titles. Printing presses offer a unique challenge as they simultaneously operate at high speeds and also need to achieve a high level of precision in the print output.

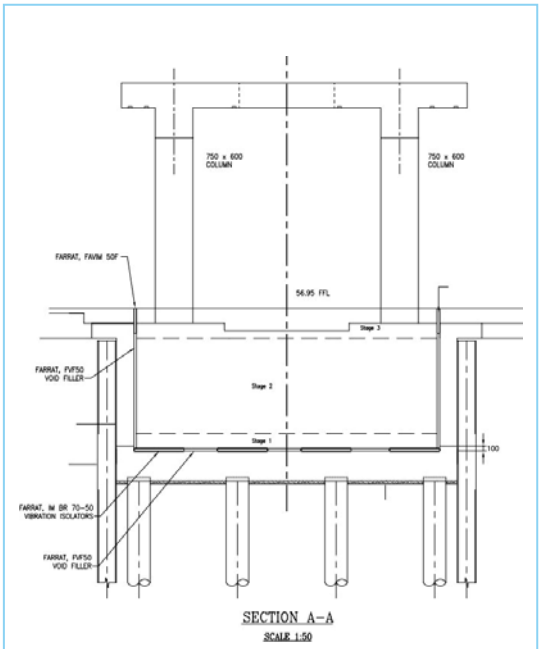
The client and their structural engineers were worried about the vibration from the Great Western main railway line adjacent to the building and vibration from the printing press itself affecting the offices built alongside. An additional challenge was the mass of the printing press in question which had a total weight, including printing press, folding units and reel stands, of 3,721,056kg.

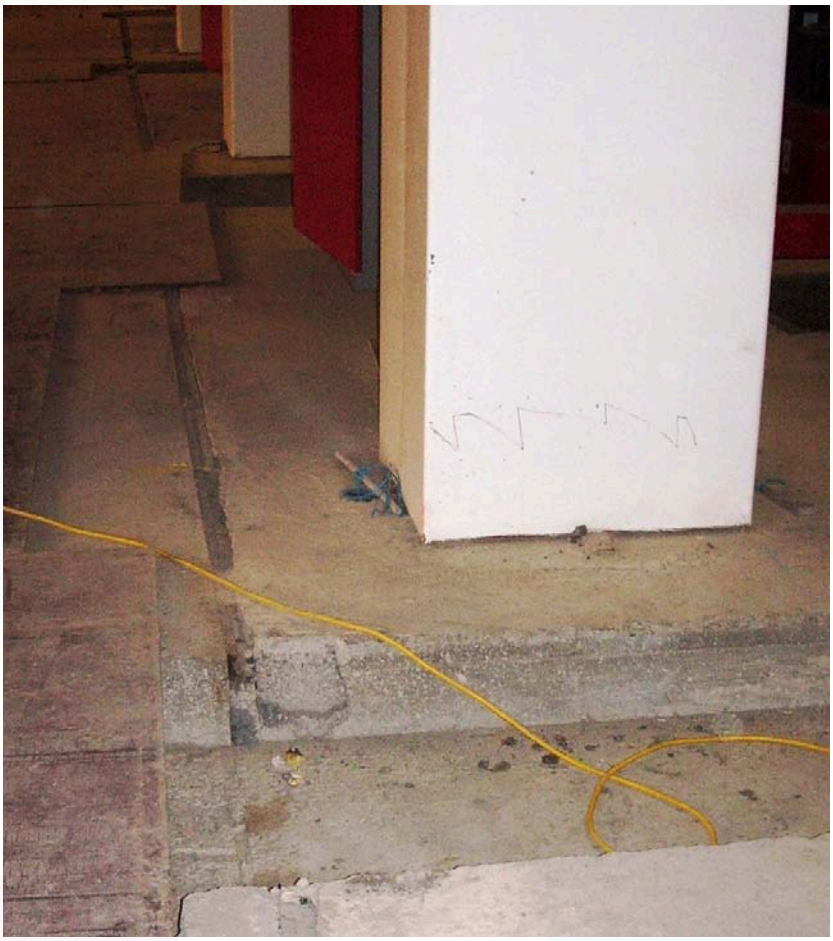
> **You can stand with one foot on the foundation and the other on the floor next to it and notice the absolute reduction in vibration.**
>
> **Design Manager,**
> **Bowmer & Kirkland**

Solution

Printing presses are highly complex structures made up of numerous internal rotating parts each of which could produce out of balance forces. As a result Farrat prioritised the identification of the operating speeds and resonation frequencies from within the machine before a suitable isolation system could be designed as it was critical to avoid any of these disturbing frequencies. A full analysis of the machine structure was established by taking a 3D model of structure from the press manufacturer. Based on the findings of the analysis Farrat designed a bespoke Isomat Isolated Foundation system with a dynamic natural frequency of 10Hz with around 10% damping.

Consequently the foundation which formed the backbone of the machine was designed. This needed to be 94 metres long and 6 metres wide but the depth was still to be determined. Such large printing presses are tall, narrow structures where the reel stands are at ground level and the press, which contains most of the weight, is supported by columns built off the isolated foundation block. In this case a 2.8 metre deep block was designed to provide sufficient stiffness for the modular machine as well as lowering its centre of gravity. To complete the process Farrat manufactured the isolation system which was then installed under our close supervision.





Key Facts

- 200 IMBR70-50 1000x500 Isomat Isolators
- Favim 100-50 top strip
- FVF10-50 base void former
- FVF15-50 void former for the walls
- Order value: £85,000.00

Farrat
Engineering Excellence

Farrat Isolevel Ltd Balmoral Road, Altrincham, Cheshire, WA15 8HJ, England, UK
T. +44 (0) 161 924 1600 F. +44 (0) 161 924 1616
E. sales@farrat.com **www.farrat.com**

Global experts in
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for Construction, Industry & Power Generation