



SUMMER 2004— NEWSLETTER

Inside this issue:

ISO 9001
Nonlinear FEA
3D Rendering
Technical Research
AMEC Contract
Type 45 Contract
BAE Contract

Special points of interest:

- MMC invest in non-linear FEA software from Strand7
- MMC invest in commercial 3D rendering and visualisation software
- MMC successfully deploy its first bespoke software solution

Update and Latest News

Malin Marine are now approaching the end of their third financial year and we are pleased to report that it has been an exciting period during which we have tackled a wide range of projects across a variety of different sectors including offshore, MOD related and marine civil works.

We have decided to produce this short newsletter on a bi-annual basis to keep clients and contacts informed of the work we are involved in and also advise of new developments in our skill base.

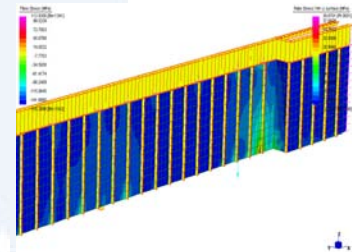
Key changes we would

like to draw your attention to include software investment, research activities and our progress towards adopted ISO 9001 all featured in this newsletter.

We would very much appreciate your feedback on the attached and if you have any queries or would like more information, please do not hesitate to contact us:

Contact Details:

Malin Marine Consultants Ltd
17 Sandyford Place
Glasgow
G3 7NB
Tel +44(0)141 243 2242
Fax +44(0)141 226 5501
Email info@malinmarine.com
Web www.malinmarine.com



Extract from recent FEA Study carried out by MMC

Preparing for ISO 9001

Over the last 18 months we have been busy improving and standardising our working practises and have implemented a full ISO 9001 quality system. This has been in operation for the last 15 months and has been formally audited both internally and

externally. A contract has been placed with DNV for our formal accreditation audit later this summer and by the time the next update is released, we hope to be fully accredited to ISO 9001.

This we feel is a major step forward for us with a

view to standardising our extremely successful and thorough work practises and offer greater client confidence in the manner in which projects are managed by the staff at MMC.

Nonlinear Finite Element Analysis

Over the last 12 months we have made considerable investments in our IT and engineering software capabilities. The most notable is the addition of a new high capacity server to serve our larger staff base and the onerous storage needs of our new Strand7 nonlinear finite element analysis system. The purchase of Strand7 and staff training allows us to carry out a wide range of finite element analysis including non-linear problems such as buckling, gap elements, and also complex models involving plate, beam and brick elements. We can also export IGES hull surface files

from our naval architecture system and import these as panelled FE surfaces onto which beams and stringers can be lofted providing accurate and speedy translation of design data from concept to analysis.

In addition, all results can be provided in soft format as a model complete with a free viewer. This allows the client freedom to analyse and query the model and all load cases at



Strand7 from G&D Computing
www.strand7.com

their leisure including obtaining new contour plots, animations and alternative results. This means that once the analysis is done, there is no requirement or future costs involved with additional post processing if the client is capable of carrying out this work themselves.

We have employed this system with great success on several new projects including structural analysis work on the new Type 45 Destroyer project.

Data Interchange Between CAD/FEA Modelling and Visualisation

Hand in hand with our new FEA system we have invested in advanced 3D modelling and rendering software in the form of Cinema 4D to complement our CAD systems (Microstation and Defcar Hull Design). What this allows us to do is create a geometrically accurate 3D model of a system quickly and intuitively in Strand7 and carry out any necessary analysis. Thereafter, this model's life can be extended by importing into our rendering system for texturing, lighting and can produce stunning high-resolution professional print quality images for clients promotion and reporting use. These models can be ani-

mated and we can even incorporate feedback from the FEA analysis into any rendering. Because the model has already been built the additional costs for this service can be small.

As mentioned, we presently employ Bentley's Microstation v8 for our CAD work allowing us to read both AutoCAD and Microstation files natively. When taken with Strand7 and Cinema4D, this allows a bi-directional transfer of geometric information thereby cutting delivery times and costs and giving better value to clients for a wider range of services.



Cinema4D Rendering and Modelling

Transportation Engineering—Motion Response Analysis Research

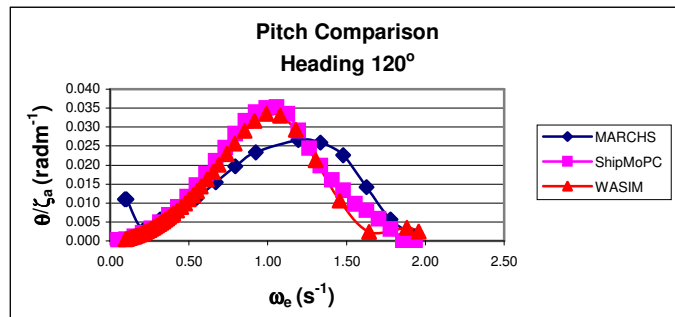
Over the last 9 months we have been involved in a research project with the Universities of Glasgow and Strathclyde with a view to developing and validating a library of barge models for motion response analysis. Again this has involved further investment in the WASIM suite of motion response analysis software from DNV.

These models will cover the main range of commercially available flat-top

barques and the project will seek to, not only validate these but also, develop a better understanding of the long term response of a barge and cargo whilst at sea. This will examine the use of probabilities of exceedence when designing seafastening systems to maximise strength and safety whilst minimising

unnecessary steelwork costs.

We hope to bring more details of the results of this study in future versions of this newsletter.



Recent, Sample Contracts

AMEC Towage Study



MMC's scope of work involved:

- Drafting towage procedures and equipment specifications for the towage of a large 44,000Te concrete structure from fabrication point in graving dock to final installation to restraining piles.
- Design and analysis of temporary catenary mooring system.
- Intact and damaged stability analysis and Warranty Surveyor liaison and negotiations

Type 45 Destroyer Finite Element Analysis



MMC's scope of work involved:

- Build Finite Element models of critical area within the Type 45 ship structure
- Analyse and report on internal deck and bulkhead loadings during equipment removal conditions for submission to class for approval

BAE Systems Bespoke Software Solution



MMC's scope of work involved:

- Take old DOS program code in the form of object PASCAL listings and create a user friendly windows C++ application
- Develop user manual, associated help file and standard windows installer for ease of client distribution
- Application to use existing data files and incorporate new analysis procedures not present in old system
- Allow the exporting of reports in the form of rtf files for viewing in conventional word processors and archiving on the company's network

Note: This was carried out within a project budget of only 84 manhours dispelling the myth that all software development is time consuming and costly!

Malin Marine Consultants Ltd
17 Sandyford Place
Glasgow
G3 7NB

Phone: +44 (0)141 243 2242
Fax: +44(0)141 226 5501
Email: info@malinmarine.com



NAVAL
ARCHITECTS
AND HEAVY
LIFT
SPECIALISTS

Malin Marine Consultants comprise a core team of professional, multi-disciplinary engineers providing an extremely diverse and flexible set of specialised skills which in turn are built upon a wealth of practical experience in visiting and working with ships and their crew. It is this unique combination of a deep rooted, practical approach to our way of working combined with an openness to new technology and techniques which places us in a strong position to tackle the many unusual and diverse challenges which come our way.

At our core is a work philosophy of professionalism and excellent time management skills allowing us to quickly turn around a client's contract requirements wherever necessary.

Please feel free to contact us with any technical enquiry you may have and be assured of a prompt and professional response.

Next Issue...

In the next issue we hope to report on a number of exciting projects presently underway including:

- Detailed Finite Element Analysis of a 1000 Te hull section
- Mooring study and wind tunnel test of deepwater pipelay vessel

In addition, we will report on our ongoing application of our Quality System and our progress towards achieving full accreditation status.

Finally, we will update on our research programme underway with the Universities of Glasgow and Strathclyde.

Marine Surveying Forum—2004

We would also like to point out that a technical paper entitled “**Technical and Marine Aspects while Planning and Executing the Transportation of Heavy Lift Cargoes**” presented by us at the Marine Surveying Forum held this year in London is available for download from our website. Visit www.malinmarine.com for a copy.

If you have any further questions on any projects or services mentioned in this brochure, please do not hesitate to contact us at the address detailed above where one of our staff will be only too delighted to assist and provide more information.