

AgustaWestland's New Estimating Models Improve Engineering Efficiency



Background

Since its formation, AgustaWestland has achieved significant success in the military helicopter market with the A109 LUH, A129, Super Lynx 300 and the 15-ton EH101 in its combat search and rescue as well as its fishery protection variants. In addition, AgustaWestland's outstanding performance in the civil sector has been based on the record-selling A109 Power, together with the A119 Koala helicopters.

Underpinning these successes is the company's engineering experience, including the requisite skills to undertake all stages of the design of a new helicopter from preliminary mission analysis and definition of operational requirements to the modelling of the entire helicopter systems and the design and specification of sub-systems and components. AgustaWestland also brings together a powerful combination of processes providing in-house capabilities for estimating, defining, planning and managing large, complex projects.

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Of particular importance for AgustaWestland's military helicopter business is their estimating capability. The focus of this facility within the company has changed over the years from manufacturing to procurement, calling for radical alterations in the makeup, procedures and tools adopted to meet AgustaWestland's defence business requirements. "The department and the tools used have changed from 60-plus estimating engineers in the early days, using a combination of expert opinion based on experience and home grown in-house spreadsheet processing, to a team of 12 today, employing the very latest in estimating tools available," said John Henson, an estimating



manager whose team utilizes both SEER-H, the hardware model, and SEER-MFG, the design for manufacturability model. “Two years ago we purchased SEER tools from Galorath and we have since extended our site licence for an additional three years. The move to using parametric estimating tools has made a significant difference to our department and the efficiency of our organization as whole.”

AgustaWestland, the Anglo-Italian helicopter company jointly owned by Italy’s Finmeccanica and the UK’s GKN, is a global leader in an industry sector that is amongst the most challenging and competitive internationally. The formation of AgustaWestland combines the previous businesses of Agusta SpA and GKN Westland Helicopters Limited, offering unrivalled capability in design, technical innovation and manufacturing, and requiring the very best materials, tools, equipment and personnel available. Although proud of its heritage stretching over some six decades, AgustaWestland personnel recognise the challenge of reinforcing their position as the global leader in the rotorcraft industry.

AgustaWestland is a leader in a number of the world’s most important helicopter programmes. In addition to its skills in contracting for key military programmes, AgustaWestland boasts considerable success in the civil sector by virtue of its significant marketing expertise. Westland contributes expansive experience in priming military business with an emphasis on project management. These combined assets offer the widest range of advanced technology available on the market for both civil and military rotorcraft applications. Furthermore, it has an impressive inventory for future products and technologies.

The decision to move from in-house designed dedicated spreadsheets and bespoke software to the SEER applications was not taken lightly. With an MA in Cost Engineering and over 30 years of experience in aircraft engineering, cost estimation and rate fixing, John Henson was eminently qualified to undertake a thorough investigation of the tools available on the market. Commenting on his investigation, Henson said: “Many of the tools available at the time appeared to look like fancy versions of the in-house spreadsheets that we already used, and the majority of the others

were empty shells that required additional algorithms and data to be added, requiring substantial additional resources.”

SEER-H

Henson chose the SEER models from Galorath to rationalise the variety of home grown and bespoke tools employed by his team. The SEER models had the added benefit of a site licence with no restrictions that enabled every cost engineer in the department to have access at their desktop, giving Galorath a distinct commercial edge in the eyes of Henson and AgustaWestland. “I found SEER-H to be very user friendly, it speaks plain engineering language and is not full of acronyms and jargon that require specialist knowledge and experience unlike many other cost estimation tools,” stated Henson.

AgustaWestland’s cost estimating department has found that SEER models provide consistent results and are easy to use because of the intuitive graphical user interface (GUI). The parametric methodology requires less detailed information to be entered into the calculation with no loss in accuracy, a distinct advantage for large projects such as whole assemblies and aircraft. Estimation times are reduced from ½ a day to minutes, with consistent and accurate results. In addition, SEER-H’s top-down process allows for “what if” scenarios and easily adjusts estimates for different manufacturing disciplines such as mechanical, electro-mechanical and electrical.



Currently, SEER-H is being used to estimate the cost of components and modular assemblies from preliminary drawings for the Future Lynx project, a project that is working towards providing a cost-effective way to extend the life of the UK MoD’s Lynx fleet. Based on the Super Lynx 300, this is the latest version of the very successful Lynx helicopter family, the world’s leading multi-role helicopter. The UK MoD operates a fleet of over 160 Lynx helicopters in navy and army roles,

many of which have been in service for over 20 years. Additionally, planning and definitive studies are now well advanced to upgrade and extend the service life to the MoD's Battlefield Light Utility Helicopter (BLUH) and Surface Combatant Maritime Rotorcraft (SCMR) requirements.

SEER-MFG

Continuing, Henson said: "SEER-MFG almost immediately added a new and valuable capability to the department. Straight out of the box, it's ready to use with only the usual customisation, improving the department's efficiency with better accuracy and consistency of results, building confidence in the engineers in my team."

SEER-MFG covers every aspect of a project so every detail is built into the estimate. Its knowledge bases provide an instant baseline to industry averages, so even if initial information isn't available, an industry average can be substituted until more specific information is available. The cost estimators at AgustaWestland found that SEER-MFG's ability to produce templates of manufacturing characteristics of their own company as well as those of subcontractors and suppliers particularly useful. These profiles of individual manufacturers provide a more consistent and accurate estimate according to engineers at AgustaWestland.



Among the projects in-hand, SEER-MFG is being used to estimate the manufacturing costs of the cabin roof of Westland's EH101 helicopter, providing "should costs" on how much a subcontractor should be charging for a product versus the actual bid. AgustaWestland's EH101 was designed as a new concept following extensive development and research into the future requirement for medium lift helicopters in military and civil

roles. Based on a common airframe and core systems, EH101 is configured to meet the multi-role requirements of many diverse customers around the world. It is uniquely capable of mastering the needs of any role using the same airframe and core systems - a capability unmatched by previous helicopter designs.



Training and Support

Galorath was very helpful, supportive and responsive, as well as being open to new ideas, according to Henson, who, along with his team, attended an intensive three-day “QuickStart” workshop designed to get estimators up and running on SEER quickly. “Galorath’s ‘QuickStart’ consulting support helped us through the initial learning curve with the SEER tools. In addition, when we encountered difficulties with some of the relationships within the estimating tools due to the conversion between imperial and metric, caused by the ‘Europeanisation’ of the tools, Galorath organised for its Product Manager, Dr Chris Rush, formerly of Cranfield University in the UK, to assist in finding solutions to the identified problems,” stated Henson.

Having opted not to take advantage of Galorath’s training for every cost engineer in the department, AgustaWestland identified two engineers to be trained. Henson recommends that other companies following this approach should choose the engineers carefully to ensure that at least one committed engineer for each model is given the full Galorath training. “It’s important that these engineers are enthusiastic and committed to the introduction of the new estimating tools within the department. These ‘super users’ must be committed not nominated so that they will readily champion the tools to their colleagues, disseminating the knowledge and hands-on experience that they have gained to ensure the efficient and smooth introduction of the new estimating tools,” concluded Henson.



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