[Custom product development]

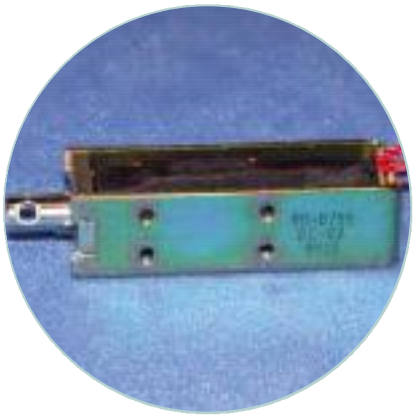
[The development process for a custom part on actuator commences when initial communications point towards a problem which is solved, but cannot be addressed by a standard product, and where the development time and costs for a custom solution are outweighed by the advantages this approach can offer.]

Stage 1 - Clarification

[Development of a good custom solution is a partnership. We are contributing our expertise in the design and manufacture of electromechanical actuators, and you are contributing your expertise in your specialised product field.
The first stage in the development process is normally a face-to-face meeting to discuss the application and the proposed solution in detail to be certain that we understand correctly what you want to achieve, and that you understand what we are able to offer to resolve the problem.
The aim of this first meeting is to clarify the technical nature of the problem, the characteristics of, and commercial constraints on the solution. The outcome may be that a standard product offers a good solution if the application itself can be modified in some respect, or that a custom solution is the best option. In some cases, it may be the case when the requirements are clarified and we can not offer a good solution at all, we will endeavour to be clear about what we believe to be the best solution, or alternative options if several exist, to solve the problem.]

"It is agreed that custom solution is the best option"

"Height is constrained and other dimensions are free"



Stage 2 - Establish Development Team

[In order to develop an optimum solution we need to function as part of your development team in this specific aspect of your product development. For the project to progress quickly, we need a defined contact within your development team who acts as a focus point for our communications with you. It must be understood on all sides that we need to maintain close contact throughout the development process. It may be the case that some aspects of the solution are better integrated into the device we supply, or that our device may be able to utilise existing structures within your system to realise a simpler, more reliable, and cheaper solution. So we can have open communication during the development process, it is important that any confidentiality and intellectual property issues should be resolved during this early stage.]

"Commit resources to the development."

Stage 3 - Development Process & Proposal

[Following the first meeting, the next stage in development will generally be to submit a development proposal. This will normally take a few weeks to prepare, but can take longer for complex products. Where the proposed product is similar to an existing product, we may be able to provide an approximate indication of development costs verbally during the first meeting. The development proposal stage typically requires that we carry out some modelling of the proposed design to predict approximate performance parameters. The development proposal will give a cost and timescale for design and development of the solution including a stated number of sample parts, and a unit cost for additional samples if required. It will also give a budgetary indication of expected unit price and any tooling cost required to produce the product in series production. The development proposal will be accompanied by a short proposal specification showing the physical form and key 'acceptance' performance parameters based on modelling of the design. The development cost will take into account the anticipated workload in terms of further modelling work, drawings, component manufacture, machine set-up and programming costs, and design and manufacture of any assembly fixtures required to produce samples.]

"Establish cost / performance criteria for solution"

Stage 4 - Build Samples

[Some discussions regarding the initial proposal and revisions to the design may be required. Once these are resolved and agreed, and a development order placed, work will commence on the design. At this stage, more accurate FEA modelling is generally carried out to refine the electromagnetic design, engineering drawings are produced for the components required, and production of sample quantities is begun. On completion of samples, testing is carried out to verify the key performance characteristics. Samples produced without tooling may differ in some respects from tooled parts due to limitations of the production process, but will be made as close as possible with regard to form, function, and materials, to tooled product, and should enable the design concept to be proved and tested.

Where a design fails to meet acceptance parameters, and does not function satisfactorily due to failure to meet parameters, we will carry out modification at our cost to rectify performance issues, or the development charge will be waived if we are unable to realise an acceptable solution. Development costs will be invoiced when goods are delivered if the design satisfies acceptance parameters, or on acceptance of the design (there are cases where a design may work satisfactorily even though it failed to meet acceptance parameters established at the outset of development).

During the realization of a custom solution, the design may change due to process limitations not anticipated at the outset of the project, or changes to the product concept. If further samples are required, or if minor design changes are required due to changes in the specification, we will endeavour to accommodate these within the development cost. Further charges will be applied if substantial changes are required for reasons which are unrelated to our realisation of the design, and will normally require a new Development Proposal. Once a workable design is realised, we will submit a final quotation for series production, and NRSU (Non-Refundable Set Up) costs.

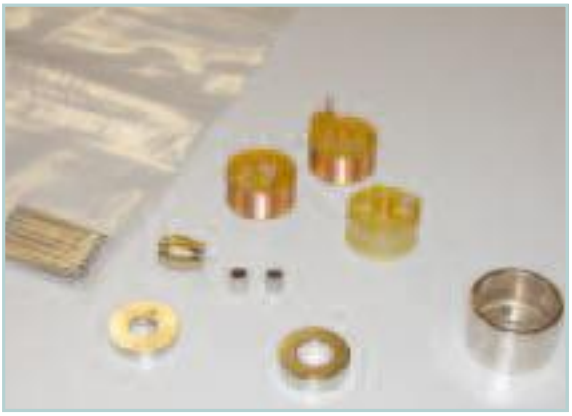
Communication (Drawings, e-mail)

For speed and clarity of technical communications, we would prefer to transfer any drawing data electronically rather than by fax or mail. We now use Solid Edge for the majority of our CAD design and can send data either in Solid Edge file format if you have compatible systems, or as PDF files or IGS files for 2-D drawings or 3-D models respectively.

For legal reasons, any quotations or price offers will be sent by fax and/or mail. While we will endeavour to ensure the accuracy of information supplied by e-mail, this will not be regarded as legally binding in the event of any dispute arising.]

"Acceptance of Samples"

Drawings and component data required for production of a simple custom product



Component parts for a small voice-coil motor device

Stage 5 - Starting Up Production

[Once samples have been approved, a custom product is ready to enter into production. This process starts when a P/O is entered for a quantity of product, and for any NRSU items required to commence production.

In most respects, the production item will be similar to sample parts, but production methods for some components and assembly processes may change to suit volume production.

When production commences, critical operations which are controlled at a samples stage by the skill of the operator will controlled by tooling wherever possible, so as to minimize any possibility of operator error. The process of tooling certain operations to eliminate error may continue after the start of production as experience of building the product is accumulated. Detailed work instructions are developed at the same stage to ensure consistency of the product.

Unless specifically stated otherwise, any NRSU items shown in development proposal or quotations refer to customer contribution to design, set-up, and tooling/fixtures (design and manufacture) cost. Large NRSU items apply to specific tooling items or assembly fixtures. For simple products, NRSU may be quoted as a single cost although several distinct setup elements may be involved. Physical tooling produced on this basis will not be used to produce product for other customers competing in your business, but may be used to produce product for customers in other, unrelated businesses where these do not compete with yours. Geeplus retains title to any tooling items produced on this basis, and is responsible for the storage, repair, and maintenance (or replacement if worn out) of the tooling for the life of the project. Where full exclusivity is required on use of tooling, full title will transfer to you on payment of the balance of full tooling cost (quoted NRSU is normally 60% of full tooling cost, so an additional 40% is required for full tooling cost). Physical tools which you own will be returned to you on request or at the conclusion of production of the product - return of physical tooling does not imply any rights to manufacture a product which has been designed by Geeplus unless licensing terms have been agreed.

In certain cases, where a component for which tooling is required is of interest to us for utilization in other products, we may be prepared to bear part or all of the NRSU cost, either as an initial cost, or discounted on the unit price of the product over a specified quantity of pieces. This is done only with customer agreement. In this circumstance we retain the right to use parts produced from the tooling for any purpose we see fit, and any rights of the customer to buy the tooling outright, or to make modifications to the design (other than by making another tool) are waived.

Timescales

Development timescales vary depending on the complexity of the product. Our quoted leadtimes are from the date of acceptance of an order. If you are working to urgent timescales, we will do what we can to meet urgent delivery requirements. Please help us by ensuring that orders are placed promptly, and are consistent with the terms of quotation, so we can start work on your project immediately on receipt of your order.]