

POWER

IN CONTROL

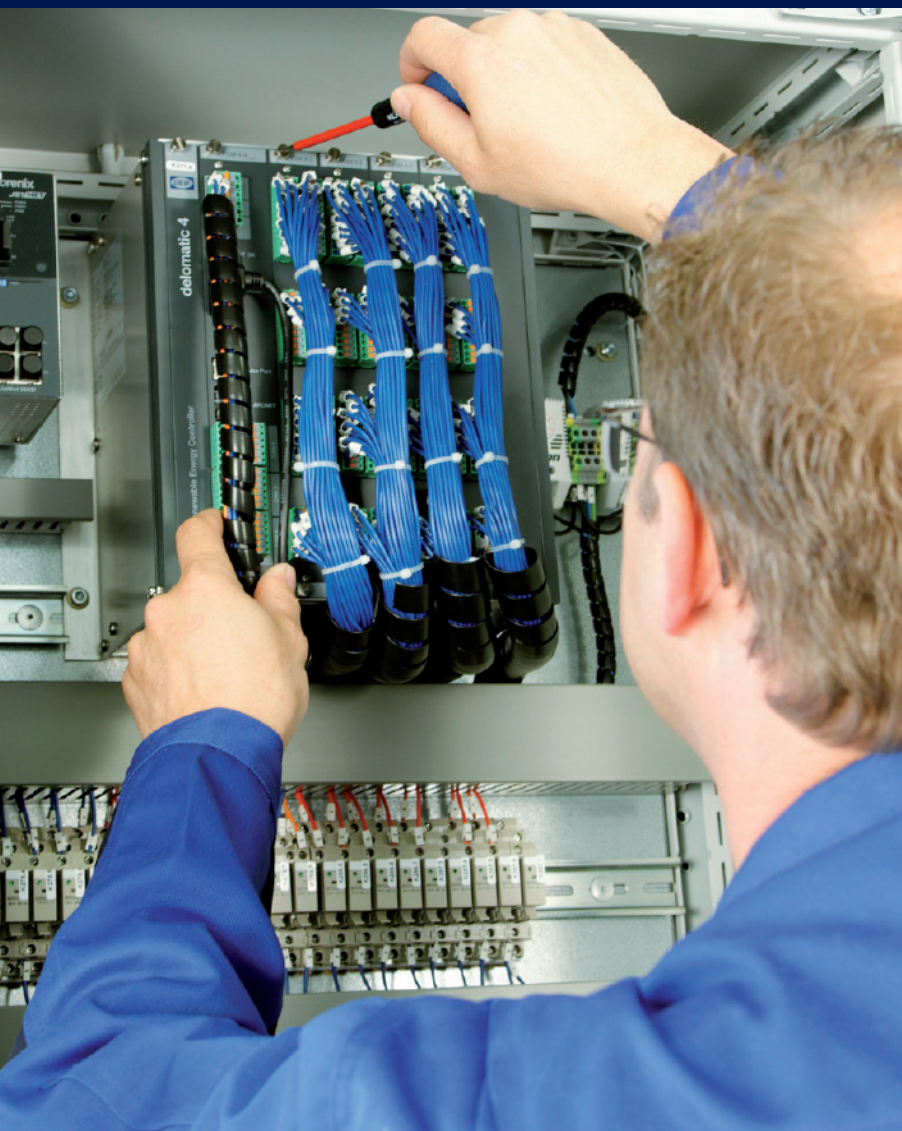
QUALITY BEYOND EXPECTATIONS



DEIF

power in control

Quality as culture



Since 1933, DEIF has pursued an active policy on quality. We are determined to constantly improve ourselves. That is why we always accept full responsibility for the quality of our solutions. From idea to implementation, our business partners should expect nothing but the best from us. Throughout the years, this way of thinking has created a unique mindset that influences the quality of what we do on all levels. From start to finish, we do everything we can to make sure that the requirements of each and every customer are met. To us, quality is not just a key competition parameter – it is part of who we are.

Safeguarding quality

This brochure shows how we integrate quality into our solutions from the very outset. It highlights some of the unique procedures that enable us to deal with quality issues at any given stage in our work process. Because of our systematic approach, we can detect, correct and prevent errors down to the smallest levels of detail. As a consequence, our results are matched by few others.

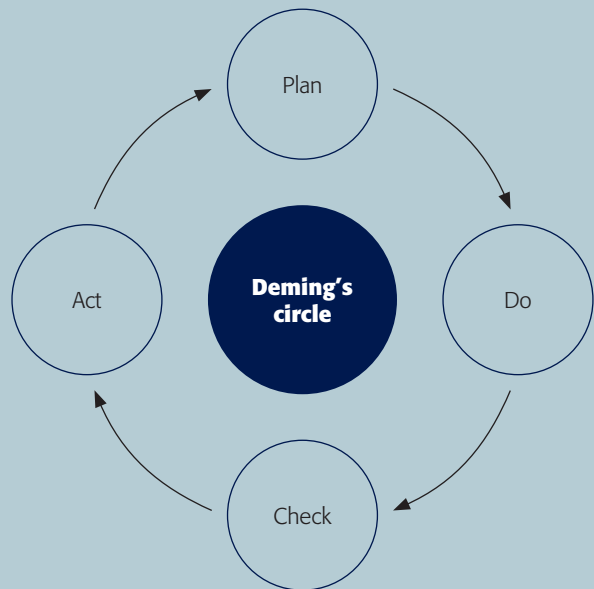


“DEIF has a culture which has defined the company since the beginning: There is a lot of focus on quality and a distinct sense of product ownership here. The employees are proud of their work and their achievements. I see it wherever I go.”

Benny Skov
Lloyd's Register Quality Assurance

Our concept of quality

The key to understanding why DEIF's concept of quality is different from most others is our system of ongoing evaluation and improvement. Once an idea has been introduced, it is subject to a perpetual cycle of quality improvement. The implication is that we can always do better.

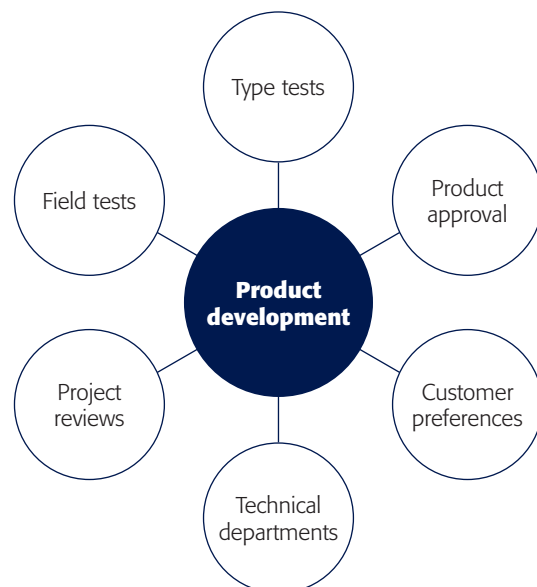


Involving customers in the development process

To us, good quality is part and parcel of any initial product design – and good quality always begins with a good idea.

As an idea matures and develops into a project proposal, a process of internal review begins. If a project shows promise, it continues to the next review level – if it fails to convince, the project is abandoned. The review process is a means of managing our projects. From idea to phase-out, we want to make sure that our projects remain viable.

As the figure to the right shows, our process of product review is characterised by a high degree of interdisciplinary co-operation. We integrate our entire organisation into the process. Also, we involve our customers through field-testing. We want to be absolutely certain that our solutions make a difference in practice – not just on paper.



Strict, tough and systematic

When producing a product prototype, the department for development follows a three-step working procedure: First, specialists prepare the product specifications. Second, designers draw up the module layouts. Third, engineers produce the codes, PCB's, circuits, etc.

As part of the product approval process, we carry out a series of type tests. The products undergo strict test procedures far tougher than the requested norms.



Preparing for market release

Before a product is ready for market release it is subject to both internal and external quality control procedures. Using in-house genset test applications, our developers are able to simulate real-life operation in great detail.

During an introduction phase of 6-12 months, customer field tests take place. We carefully select and monitor the applications in order to learn as much as possible about how the product performs on its own. The information we obtain is used for future projects.



Our support engineers carry out the final tests and write up the technical documentation. Their involvement is important for two main reasons: Firstly, they have the hands-on application experience for the technical documentation to be 100 per cent accurate. Secondly, they have to know the exact content of the technical documentation in case a customer requires their assistance.



Quality in the manufacturing process

Printed Circuit Boards are vulnerable. Consequently, during the manufacturing process all of our PCB's receive an eco-friendly protective coating. They are then assembled and their casings are each labelled with a unique bar code. The code allows for access to test and adjustment data, which ensures traceability throughout the lifetime of the final product.

In case we detect a fault during the manufacturing process, the fault receives a code. The code enables us to generate fault statistics for analytical purposes and to carry out corrective and preventive actions.

Before delivery, all finished products undergo a final automatic quality check. The results are stored so that they are available in future – if needed.



Test, test, test, test

When developing and testing our products, we pay unique attention to the quality. Yet, we allow no room for complacency. We would rather test a product once too many than provide a customer with a less-than-perfect solution. Our products must live up to their specifications – and to the expectations of the customer.



Targets, standards and procedures

In order to ensure a consistently high level of quality, we work according to IPC standards. Various other procedures are in place allowing us to continuously monitor, maintain and improve the quality of our products.

All of our production facilities are ESD protected according to the EN61340 industrial standard. Moreover, in all of our business activities we comply with international standards for quality and reliability of electronic assembly.



Your knowledge – our quality

Aggreko is a global leader in the rental of power and temperature control solutions. Among other places, the company provides large-scale power generation in Kampala, Uganda.

We have an extensive network of service centres across the world. Choosing DEIF as your supplier therefore includes flexible and fast on-site technical assistance – globally, locally and 24-7. The centres enable us to ensure correct installation, stable operation and an absolute minimum of downtime. Moreover, our supporters are not just dedicated. They offer well-qualified and personal support and are noted for a level of knowledge and hands-on experience that goes far beyond the complexity of our own products. They understand how to develop customised solutions based on the customer's requirements. More importantly, they understand the importance of sharing their knowledge with the customer.

"When we have an issue, DEIF excels to help us – without even knowing what brought about the situation. They will address the problem and afterwards determine the root cause of it. That is the kind of responsiveness we require going forward as a growing business."

Peter Carty
Senior Quality Engineer, Aggreko

We want to do even better

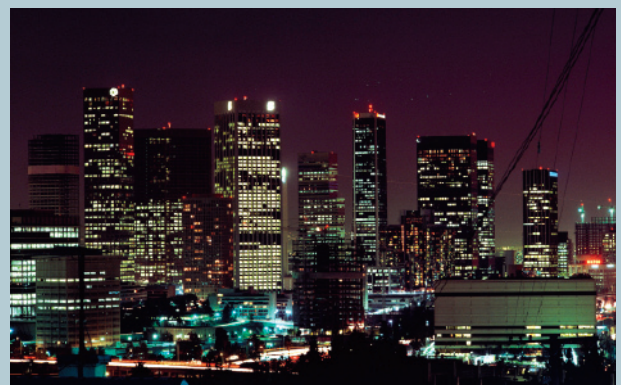
DEIF has a policy of zero tolerance on faults: One is too many. Yet, low tolerance alone does not stop faults from happening. That is why we always follow up on cases of irregular product performance – wherever and whenever they may occur. Should a customer experience a problem, each complaint will receive individual attention and prompt immediate feedback from us.

Each quarter, our quality focus groups evaluate and discuss closed cases of complaint and compare their findings with other market feedback. Subsequently, product improvements are carried out if necessary.



“Out of more than 1,500 units supplied by us during the course of a year, our Japanese partner detected five faults. This is neither acceptable to our partner nor to us. We supply the best quality – no less. That is why we took immediate steps to identify the root causes of the five faults. We were then able to take corrective action and bring us back on our target of zero faults.”

Frank P. Overby, Quality Manager, DEIF



Extreme environments and critical applications

How does a doctor explain to the relatives that their loved one has passed away during surgery because of a sudden power failure? The question is unanswerable. A hospital needs to be able to rely 100 per cent on its emergency genset.

To deserve such trust, a supplier has to deliver a consistently convincing performance. Across the whole spectrum of control, protection and communication solutions, no slip-ups can be afforded.

Only unique test systems will provide solution designs of the necessary quality to handle extreme environments and critical applications. One of such test systems is found at DEIF.



Why our tests are unequalled

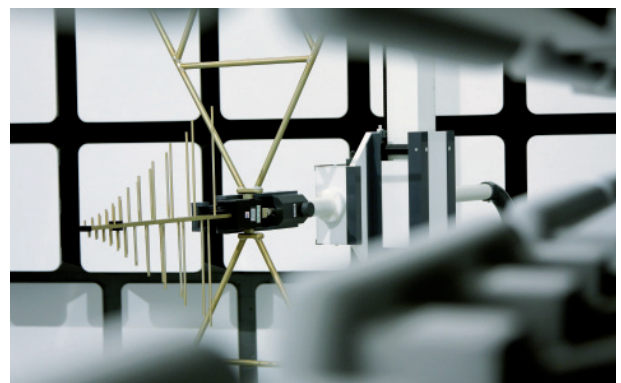
Before market release, all of our products are tested in our own test centre. The tests are carried out by our own meticulous staff of specialised engineers. The test centre is part of our ISO 9001 certified quality management system and houses some of the most advanced testing facilities in the world. They allow us to carry out all the relevant tests for marine classification approvals, CE marking, MED approvals, UL, etc. – under our own roof.



Having our own test laboratory gives our customers the following advantages:

- Fast and efficient tests and approval procedures ensuring that products can be released without delay
- The possibility of intensive testing throughout the entire development process
- Testing of product updates
- Products in serial production are continuously subject to verifying type tests
- Easy access to facilities that allow us to simulate and recreate real-life impacts

Classification societies pay us regular visits in order to approve our production facilities, laboratories and products. Yet, we also carry out non-classification tests. The purpose of these tests is to make sure that our customers' expectations



are met not just in terms of classification standards, but also in terms of more application specific demands on robustness, functionality, design, etc.

DEIF is a market leader with a proven record of more than 80 years of technological achievement and innovation in engine & genset controls, marine bridge instrumentation, switchboard instrumentation and renewable energy controls.

Our goal is to always bring a competitive edge to our customers' businesses by providing green, safe and reliable product lines with flexible features and first class service and support.

The DEIF Group is committed to maintaining and expanding its position as a trusted global supplier of quality solutions.



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