

by Oleg Ishchuk SDC Verifier

The cumbersome task of verifying structural design according to numerous standards has always been a challenge. Engineers have found themselves buried under mountains of manuals, struggling with manual calculations, or juggling multiple software programs to model and verify compliance. Recognizing the engineers' pain points, we thoroughly explored the complexities of industry standards and created a solution to simplify the design process. Through tireless dedication and relentless innovation, engineers found that they were able to conduct standards verification directly within Ansys Mechanical, Simcenter 3D, and Femap using SDC Verifier software.

Streamlining structural verification

However, transforming the way engineers approach standards verification has not stopped there. We continue to expand the library of standards, ensuring that our software remains at the forefront of industry advancements.

Each FEA (finite element analysis) model can be automatically verified against numerous prebuilt codes and industry standards such as:

- DIN Deutsches Institut f
 ür Normung or German institute for standardization,
- EN Eurocodes,
- FEM Federation Europeenne de la Manutention,
- AISC American Institute of Steel Construction,
- Norsok standards developed by the Norwegian petroleum industry,
- ISO International Organization for Standards,
- DNV Det Norske Veritas certifications for marine insurance,
- ABS American Bureau of Shipping,
- FKM Forschungskuratorium Maschinenbau, or mechanical engineering research board, the de facto standard for assessing the strength of metal components in general mechanical engineering,
- DVS Deutscher Verband f
 ür Schwei
 ßen und verwandte Verfahren, the German Welding Society, defines quality standards for the joining, cutting, and coating technologies.







In addition, SDC Verifier has an open API (application programming interface) and a formula editor so that engineers can see all the steps involved in calculating the relevant standard, edit ready-made standards in national annexes, or create a control according to their own rules.

Moreover, there are separate apps for dedicated checks: Beam Member Check App, Beam Member and Joint Checks App, Plate and Stiffener Buckling App, Fatigue App, and code-specific checks such as Eurocode 3, AISC, and FKM. Our software incorporates unique tools that have evolved by analysing common workflow requirements. These tools include recognition tools for detecting beams, plates, welds, stiffeners, and connectors because accurate verification must be based on the structural elements, not the mesh.

The recognition tools allow any structure made of 1D, 2D or 3D elements to be checked, simplifying the engineers' work. Engineers often have to modify the project to define the best possible design, reduce the amount of material, prevent stress concentrations, remove bottlenecks, and ensure that the structure passes all verification and certification stages smoothly. For this purpose, SDC Verifier's Optimization tool helps prepare a range of possible sizes, shapes, thicknesses, or element classifications for each part of the model, striking a balance between design requirements, compliance with industry standards, and the costs of the structure. Creating calculation reports is a requirement for certification, but it is usually a timeconsuming manual task that engineers would like to automate. SDC Verifier has a special tool — Report Designer which enables the automatic creation of template-based reports and includes all necessary calculation results. Reports can be exported to PDF or Microsoft Word for further editing.

To ensure that our software is accessible to freelance engineers and large companies, we have launched a flexible licensing policy, offering three levels of functionality (for Beams, Beams and Plates, and Full). Using simulation tools to ensure that the structure meets all requirements for safe operation under all conditions is crucial in many sectors, and the offshore industry is one of those. Due to the extreme environmental factors in which offshore structures operate, they are subject to strict controls throughout their life cycle, from design to decommissioning. SDC Verifier is widely used to troubleshoot and verify projects in the offshore industry, implementing specific standards and regulations such as ABS Plate Buckling (2004 editions), ABS Plate Buckling (2014 editions), API RP 2A-WSD (21st, 2007), API RP 2A-LRFD (1st, 1993), DNV OS-C101-LRFD Weld Strength (2011), DNV OS-C201-WSD Weld Strength (2011), and DNV-RP-C203 Fatigue (2016), and others.

Since 1998, SDC Verifier has been helping industry leaders such as Bluewater, Heerema, Boskalis, TechnipFMC, and SBM Offshore to address the need to check new and old structures, ensuring compliance with the requirements for stability and safe operation in all circumstances and for successful certification.

A paradigm shift in verification

SDC Verifier's journey towards innovation goes beyond simply verifying standards; it's about recognizing and addressing the evolving needs of engineers.







As we delved deeper into the industry, we noticed that engineers in specific sectors, such as civil engineering, often require standards verification without requiring fullfledged FEA simulations. To bridge this gap we introduced the standalone program SDC Verifier, an evolution in our software lineup.

This version is specifically designed to meet the needs of engineers who prioritize standards verification over complex simulations. In SDC Verifier, engineers can easily create designs from scratch, as well as integrate existing drawings, 3D files, or finite element models from any software, through a contemporary, user-friendly graphical interface that simplifies the process.

Our parametric modelling functionality simplifies the model creation process, saving time and effort and allowing us to modify only the essential input parameters to create models.

With this innovation, SDC Verifier aims to become the FEA simulation program of choice for thousands of engineers, revolutionizing the way standards are verified in the industry.

Our software allows engineers to innovate with confidence, knowing that their designs meet the highest standards of excellence.

Engineering expertise driving innovation

When we say that SDC Verifier software is created by engineers for engineers, it is not just a buzzword. Our engineering consulting department has not only used SDC Verifier in over 400 projects for almost 100 valued customers but is also actively involved in developing new standards and improvements to the program itself. By exploring our customers' success stories, you can see how SDC Verifier has made a difference in real projects globally.

We also offer structural calculations, digital twin development, and cloud-based engineering solutions to provide engineers with cutting-edge technologies and innovative approaches. In addition, our services include measurements and inspections, standard checks, and personalized support to meet the unique requirements of the engineering project.

Partnering for success

At SDC Verifier, we are committed to providing excellence in software solutions and engineering consulting services, promoting innovation, and exceeding customer expectations at every step. We are more than just a software provider we are a trusted partner in structural design excellence.

Our mission is simple: to provide engineers and designers with the tools they need to bring their visions to life. We believe that every project deserves the utmost precision and reliability, so we are dedicated to providing industry-leading software solutions that push the boundaries.

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About SDC Verifier

SDC Verifier is a mechanical and structural design engineering company providing all-in-one design and code checking software and engineering consultancy services. Since 1998 we have won the trust of leading global companies in the Offshore and Maritime, Heavy Lifting, Oil and Gas, Defence, and other industries. The SDC Verifier software is a powerful design and standard inspection tool that works independently and within several FEA solutions such as Ansys, Femap, and Simcenter 3D. It helps to automatically verify FEA results against numerous industry standards such as DIN, EN, Eurocode, FEM, AISC, Norsok, ISO, DNV, ABS, FKM Fatigue, and DVS code for weld checks. SDC Verifier's functionality is proven to increase the productivity of engineering teams and take them to a new level of comfort. Contact SDC Verifier when in need of consultancy on FEA, modelling, design review according to standards, or for your other specialized software needs related to FEA or to industry standards. Visit sdcverifier.com