



SIP&T at Bauma Conexpo Africa 2015



SIP&T booth at Bauma Conexpo Africa 2015

After its successful premiere edition of the two years ago, the construction equipment trade fair Bauma Conexpo Africa has opened its doors once again from 15 to 18 September 2015 in Johannesburg.

by Stefano Arrigoni

SIP&T – one of the world market leader in the development and manufacture of Kelly bar and rotary drilling tools for specialist foundation engineering – has participated this year promoting different items especially selected for the South African market. The SIP&T team has met many visitors at the stand H6.H52 in the

indoor area of the Johannesburg Expo Centre. Nearly 14,300 visitors from 75 countries attended the show, 13 percent of the visitors came from outside of South Africa with a significant increase in percentage from sub-Saharan Africa. The top five visiting countries from Africa besides the host country were (in this order): Zambia, Zimbabwe, Namibia, Mozambique and

drilling equipment

STRONGER TOGETHER: SIP&T WELCOMES BPD GEOTEK SOLUTIONS SA

At the Bauma Conexpo Africa Francesco Cantisani, SIP&T International Sales Director, was pleased to announce new business partnerships with BPD Geotek Solutions SA as SIP&T agency in South Africa. During the official announcement, Francesco Cantisani declared: "With this new alliance, we believe we are well positioned to expand the presence of our Kelly bar and rotary drilling tools further across Italy. We look forward to a successful collaborative partnership with this company". Derik Prinsloo, Managing Director

of BPD Geotek Solutions SA, expressed his thanks and also stated: "Our product range is complement each other perfectly. These partnerships will enable us to offer to our customers a virtual all-round package from one source. BPD Geotek Solutions is a supplier of Specialised Geotechnical Equipment and Services to the Southern Africa Construction and Foundation Industry. We are currently agents and dealers for the Casagrande Group, ICE/Dieseko Group and HD Engineering, just to mention some of them. Our Agencies

and Suppliers are all market leaders in their related fields, by providing us strong values such as reliability and state of the art technology, in order to supply to our customers the highest service level which is expected by us. Our aim is to offer not only new and second-hand equipment and machinery, but also after sales services such as maintenance, spare parts, service support and complete working solutions".

SIP&T and BPD Geotek Solutions SA celebrating new business partnership



its name suggests, it breaks a complex problem down into a finite number of simple problems. A continuous structure has actually an infinite number of simple problems but analyzing the finite elements predicts the behavior of a continuous structure via meshing into "finite elements", analyzing a finite number of simple problems. Every element in a finite element analysis is one of these simple problems. Every element in a finite element model contains a finite number of nodes that define the boundaries of the element to whom loadings and bonds can be applied. The finer the mesh, the greater the number of nodes and elements and the more faithfully the structural geometry, load application, as well as stress and strain gradients can be represented. There is one compromise to live with: the greater the number of model nodes and elements, the greater the calculation power needed to solve the complex problem. Designing Kelly bars is essentially a repetitive process: a concept is developed, feasibility analysis is run, drawings are produced, prototypes are built and tested, the test results are evaluated and the process repeats itself until a version that can be made is found. FEM analysis is fundamental in facing and solving the challenges that come up during the various product development stages. SIP&T has gained enormous benefits from implementing this analysis into its production process; in detail, the variety of materials used to build Kelly bars has been increased, optimized weight, thickness and shape, reduced testing time and, with it, time-to-market. The greatest advantage, however, is in the Kelly bar production stage, during whom we have noted a considerable reduction in the weight of the materials used, reduced material waste, reduced production times and, at the same time, increased production capacity and energy efficiency. All of this allows us to quickly (two three weeks) supply the final user with the

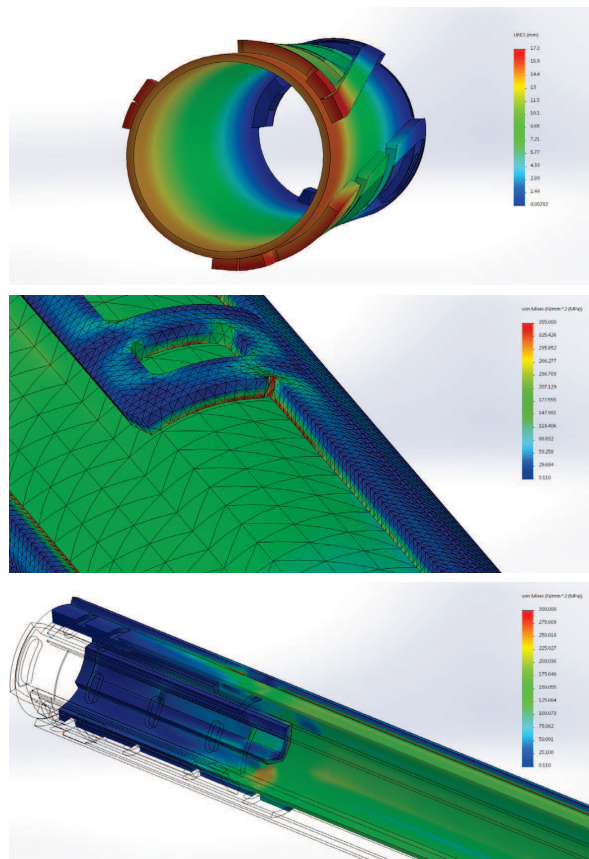
Botswana. In addition, for the first time there were delegations from Ethiopia, Kenya, Mozambique, Nigeria and Zambia. In general, SIP&T have to highlight the large participation in terms of customer, all of them interested in SIP&T products and new technologies. In a relaxing hospitality, clients had the chance to talk about their projects and to get answers to all their questions live from SIP&T sales team.

Always cutting edge

The company's core business is, without any doubt, Kelly bar production (both

interlocking and friction). Kelly bars transfer maximum torque and crowd force from rig to the drilling tool. Understanding customer requests, analyzing reports from the different construction sites where SIP&T Kelly bars have been used, studying their performance in geologically challenging soil strata and checking their output, we decided to enrich and development company know-how by introducing the Finite Element Method (FEM) for each Kelly bar. FEM is a numerical method that can be used to solve complex problems and today, has become the main method for structural analysis. As

drilling equipment



SIP&T Kelly bar and some examples of Finite Element Method (FEM)

finished equipment, built in accordance with the drill torque and the project features of the pile to drill. To date, SIP&T designs and produces the right Kelly bar compatible with the related rotary head for all major drill brands and models. The torque range to keep in mind is vast and goes from a minimum of 40 kNm to a maximum of 480 kNm; the maximum reachable depth is up to 100 m. To this end, remember that the maximum length of a telescopic Kelly bar (consequently, its drilling depth) and its ability to drill the soil depend on three factors: the type of drilling rig, the winch pulling capacity and the type of tool used. SIP&T can customize the length of the Kelly bar, the number of its elements, the rotary drive passage, the drive stub, the kelly guide flange, the swivel joint with the wire steel cable, the upper and lower shock absorber systems, the profile and pitch of the lock and unlock systems on the different

elements, as well as the drive shell on specific customer requests. Perfect Kelly bar sizing requires studying of soil geological report, precise knowledge of the maximum torque that can be applied to the Kelly bar, the suitable tool to advance quickly and safely. Upstream of all of this is proper FEM analysis that considers all the previously mentioned parameters plus the mechanical features of the materials used. This way, the parts of the Kelly bar that are more highly subjected to stress are identified and, therefore, the product design starts from pipe quality, diameter and thickness, as well as from the width and thickness of the ribs to weld onto the pipes to stiffen them, ending up with the right tolerance between the various elements making up the Kelly bar itself. Special attention is given to sizing the drive shell, which transfer rotary drive and crowd force between an element and the next one. This is a

delicate aspect and, more often than not, defines a successful Kelly bar. In general, dimensional checks are done during the production process, using go/no-go gauges and non-destructive testing with liquid penetrant and ultrasonic flaw detectors to check welding efficiency. The materials used are high quality and certified according to international standards; they are chosen following engineering criteria including, for example, high resistance to wear. Modern CAD/CAM tool machines allow complex mechanical processing. Innovative welding processes ensure a reduction in defects and, therefore, extend the Kelly bar's useful life.

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