Software-as-a-Service (SaaS) water quality monitoring

Bosch Capital has been appointed by environmental and water governance, risk and compliance specialists, Carin Bosman Sustainable Solutions (CBSS), to support the commercial development of the new LEGUAAN™ Software-as-a-Service (SaaS) water quality monitoring, data visualisation and reporting tool. This project is supported by the WADER programme of the Water Research Commission (WRC).

Bosch Capital has been appointed by CBSS to support the commercial development of the LEGUAAN™ Software-as-a-Service (SaaS) water quality monitoring, data visualisation and reporting tool.

Carin Bosman Sustainable Solutions (CBSS) has developed a water resource management tool to facilitate the efficient conversion of water monitoring data into meaningful visual graphs and reports that meet specific requirements of each organisation and to facilitate improved monitoring and compliance.

"In this exciting venture with CBSS, the Bosch Capital team is conducting a market analysis study that will inform the development of a commercial model and business plan for the LEGUAAN SaaS tool. This project also includes the development of a high-level financial model, to enable the analysis of the key financial drivers of the business," explains Rajiv Paladh, manager of Advisory and Funding at Bosch Capital. Bosch Capital is a member of the Bosch Holdings group of multidisciplinary consulting engineering companies. Bosch Capital offers advisory, capital raising and investment solutions, which form part of an integrated financial and engineering solution for Bosch Projects' clients

"This study is crucial in assisting CBSS to ensure that LEGUAAN will offer an excellent value proposition to customers."

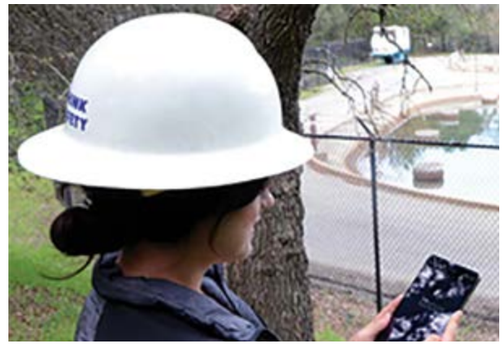
The founding member of CBSS, Carin Bosman, had this to say regarding the monitoring tool: "We derived the name LEGUAAN from the South African water monitor, an agile reptile that plays an essential role in maintaining ecological balance in aquatic ecosystems. Key advantages of this cost-efficient system are time-savings for the user, coupled with the assurance that all data is accurately converted into meaningful information and graphical representations. Without the correct interpretation of results, it is impossible to make informed decisions about the management adjustments that are necessary to improve consumption, reduce water footprint and minimise impacts on water quality, as well as reduce liability risks for the organisation."

Once the scientific integrity of the data is verified, it is swiftly converted into interactive and intelligible charts, such as Mauchino diagrams (salt balances including nitrates), time-series graphs (single year, multi-year and stacked for seasonal comparison), box-plot diagrams for statistical evaluations, and Ficklin graphs. Graphs and reports are provided online to users in a secure, interactive dashboard format, thus enabling users to download and present them to their internal and external stakeholders.

Reports and graphs generated by this water resource management tool can be set up to compare a user's data to the limit values in the water-use licence, or any other site-specific limit value specified by a government agency. CBSS specialists are also able to assist with the development of scientifically correct site-specific limit values in accordance with the new Department of Water and Sanitation (DWS) policy on Water Quality Management.

The name LEGUAAN is derived from the South African water monitor, an agile reptile that plays an essential role in maintaining the ecological balance in aquatic ecosystems.

CBSS has also developed the WaterMonster™ App that automates the capture of all critical field data necessary in the interpretation of water quality monitoring results. These factors include the type of sample, weather conditions at the monitoring location and observations about the colour, odour and flow of water. Relevant field readings of variables, such as temperature, electrical conductivity and dissolved oxygen are digitally captured.



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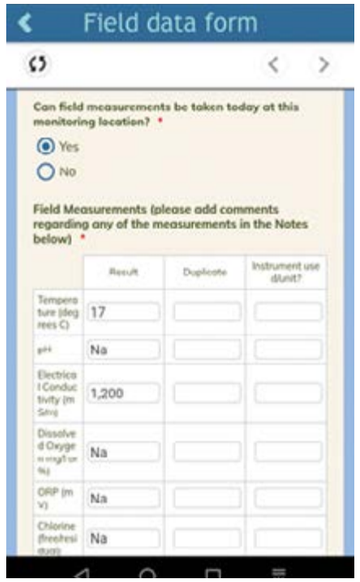
WaterMonster also documents the geo-location of where the sample is being taken, captures a photograph of the monitoring location and, if a sample cannot not be taken, records the reasons or obstacles for this. If a field sampler needs to purge a borehole before taking a groundwater sample, the purge-time is automatically calculated. Certain variables such as free chlorine and dissolved oxygen must be measured at the sampling location because concentrations change during transportation to a laboratory. All field observations are immediately available in a digital format and the data is submitted instantaneously to a dedicated, pre-determined email address in PDF-format.

By combining the capturing efficiency of the WaterMonster App, with the meaningful visualisations of LEGUAAN, users are able to easily convert unmanageable spreadsheets and lab reports into clear, visualised management information that can be used to inform actions of operators to enable them to contribute towards improving water quality around South Africa.



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Keeping plastic tubs out of landfill

Research has highlighted that a significant proportion of consumers re-use margarine, large yoghurt, and ice-cream tubs made from polypropylene (PP), extending their lifespan and keeping these products out of landfill. Led by the Polyolefin Responsibility Organisation NPC (Polyco), the 'PP tub re-use research' aims to guide a higher-level of repurposing for these plastic packaging items by improving their design for re-use and recyclability.

"Polyco understands the value in research-based credible information. We initiated the research with The Moss Group to determine the extent to which margarine, ice-cream and large yoghurt tubs are re-used after their original use," says Mandy Naudé, CEO at Polyco. "We wanted to look at this market sector and understand how much of this PP packaging material is placed on the market, how much is recycled and how much goes to landfill. We then calculate what percentage of these tubs is re-used in households."

To collect this consumer data, 1 550 respondents were engaged telephonically, via online surveys, in face-to-face interviews and via social media polls to get feedback on what they do with large yoghurt, margarine and ice cream tubs. "More than 80% of respondents who participated in the research indicated that they repurposed these plastic tubs, most commonly for food storage, food distribution and household storage," says Naudé.

At least 103-million large yoghurt tubs, 80-million margarine tubs and 31-million ice-cream tubs are produced each year in South Africa, equating to an average of more than 10 000 t of this plastic packaging entering the market. The high repurposing rate results in lower volumes of PP plastic tubs entering landfill or landing up in the natural environment.

Available beach litter data, collected around the country in 2019 and 2020 and provided by a team led by Professor Peter Ryan (UCT) and Dr Maelle Connan (NMU), supports this and indicates that these tubs make up around 3% of the 12 378 bottles and tubs catalogued.

"Supporting the efforts of our PP tub research, we will use these results to guide PP packaging producers and their customers to improve the design of tubs for repurposing," says Naudé. "Design adjustments such as increasing the strength, improving the lid fit and having removable labels will lead consumers to use these items as storage containers for a longer period."

While the re-use rate of these PP tubs is high, the recycling rate of PP plastic products is approximately 30%. Re-using PP tubs for storage is a temporary solution and eventually these products will need to be disposed of. PP plastic tubs should be designed for circularity, not to be landfilled. Designing products for post-consumer recyclability has now been made a requirement by government.

"This consumer insight research has allowed us to understand what drives the re-use behaviour, which will be very important for brand owners who, under EPR regulations, will be required to manage their products at end-of-life to prevent them going to landfill."

New extended-producer responsibility (EPR) regulations are now requiring producers to take responsibility for their products to ensure that consumers can re-use and repurpose products and then recycle them with greater ease.

Driving the market for PP recyclate, designing products for recyclability, creating accessible recycling facilities and increased consumer awareness will increase the recycling rates of these products and lower the volumes of plastic going to landfill.

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