BOLTSENS

A New Product Line for Critical Lubricated Machinery Monitoring

Consortium

- ATTEN2, Spain
- IK4-Tekniker, Spain

Sector

MANUFACTURING

Duration

10 MONTHS

Challenge

The continuous increase in technological and quality requirements from industry demands better lubricants, that can withstand higher stress and longer oil drain intervals. Also, environmental concern pushes to the optimization of lubricant lifecycle. But, at the same time, the continuous focus on the lubricated equipment health and its maintenance procedures are still the main concern in factories. Also, Industry 4.0 is a leading trend nowadays and lubrication is not out of the digitalization need. The combination of all these requirements creates the necessity to take advantage of new technology in the lubrication services.
The complexity of the lubrication system with small sumps and small oil quantity did not allow the use of current Atten2 technology for on-line oil monitoring. BOLTSENS project allows us to adapt and modify the technology in order to be able to integrate the sensor to this specific application. BIMBO and GH have validated and tested the solution with really good results.

DIATOMIC Support

Coaches follow-up sessions have been very useful mainly for the market phase, solving the doubts concerning the project execution. The Bootcamp was interesting but I guess that the format (on-line) make it useless and less attractive for companies like Atten2.

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Solution

The developed sensor system extends the current sensor portfolio of Atten2 and allows diversification to other sectors and applications. Due to its new fluidic-opto-mechanical design, the new sensor can be directly attached to non-flow fluid tanks. Moreover, due to the new wireless and autonomous capabilities, the new sensor will be able to be installed in moving applications like robots, transmissions, or trucks.
Online lubricant monitoring offers added value in the whole lubricant supply and user chain. From the oil factory to the end-of-life lubricant drain, lubricant monitoring sensors offer added value to the customer.
Good results have been obtained with BIMBO production plant where 2 units have been tested and validated, and the corporative staff has decided to include the sensor in all critical machinery for all the plants all over the world. The business of this operation in around 150.000€ for the next 12 months.

Lessons Learned

- The importance of defining the market properly from the beginning of the project.
- COVID-19 was very challenging, adapting the homework to the development of the project.
- Try to define real tests on customer site as soon as possible.

TRL & Adopters

TRL level at the beginning of the experiment: **5**
TRL level at the end of the experiment: **8-9**
Number of early/first adopters raised during the experiment: **2**

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Timeline

The Design phase has been developed according to the plan without any delay and deviation from the planned activity.
In the Development phase, we accumulate some delay during the development of the prototypes because some bugs were identified in the verification. Unfortunately, we accumulate more delay because of the COVID-19, but we try to reduce the effects of adapting the validation and verification tests to the new scenario.
The Market phase has been completed with some delay because of the COVID19 but we try to reduce it and we complete it in parallel with the development phase.

Stakeholders

IK4-TEKNIKER is a technological centre legally constituted as a private non-profit foundation that aims at the development and transfer of technology to improve the competitiveness of the industry. In line with its mission and origin, IK4-TEKNIKER is mainly concentrated on the technological problems of manufacturing industry, not only by providing the companies with novel technologies but also by generating new business initiatives, most often born as "spin-offs" of the center itself.

End Users

Grupo Bimbo, the Mexican multinational bakery product manufacturing company, the world's largest baking companywith some of the widest distribution networks in Mexico and the U.S.
GH Cranes & Components, a family-owned business established in 1958, with presence in 70 different countries and more than 115,000 projects in all types of industries and material handling applications.

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Key Results

The key result of the experiment is the BOLTSENS sensor system. The BOLSENS project aims at the development of an in-line sensor for the analysis of lubricant and hydraulic fluid degradation, combining oil degradation measurements through an RGB colour detector and water content measurements through a non-dispersive infrared (NDIR) detector.

Impact

BOLTSENS project will directly impact the business of Atten for the next years. With the result of the project, Atten2 will launch a new product line, where several sensor units will be used for different applications.

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Testimonials

> *The product is very interesting and fits perfectly with the digitalization strategy in GH Cranes. The solution provides really good information for the service team which will be able to assess the machine remotely and plan the activities correctly.*
> — Joseba Munarriz, Engineer at GH Cranes & Components

> *I am managing the acquisition of the solution globally for the other plants of BIMBO all over the world, therefore I considers the solution valid for the monitoring of the main critical lubricated machines.*
> — Guadalupe Zeltzin Castillo Beltrán, Global Asset Management Manager at BIMBO Group

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