



The resulting application, **BlockLabs**, uses digital equivalents of industrial samples, which eliminates inefficiencies and costs associated with 'reworking'

BLOCKLABS

60,000
samples
processed
annually by the
Repsol Tech Lab

400,000
euros
of estimated
annual saving

Blockchain technology for the energy sector

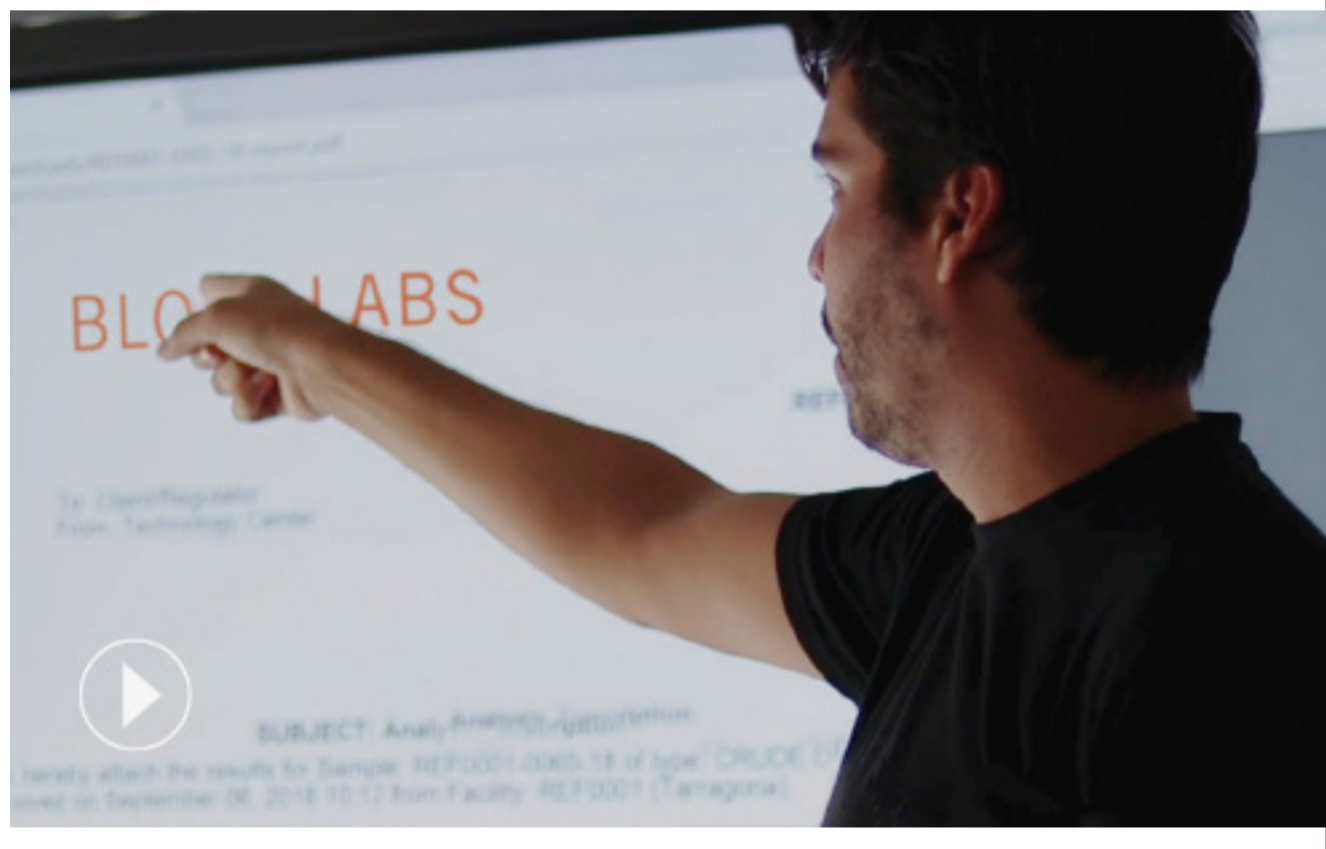
The start-up Finboot and the Repsol Technology Lab Research Center (Tech Lab) have conducted successful tests using blockchain technology to improve the product certification process. They have developed the application BlockLabs, which uses digital equivalents of the samples to be approved to prevent inefficiency and the costs associated with 'reworking' (phone calls, emails, resending samples, etc.). A blockchain is a structure that can be used to transmit information, spreading it out in several blocks to ensure it can be shared securely. Originally, it was associated with cryptocurrency, but it also has lots of potential in other fields such as industrial supply chain management.

The partnership between Repsol and Finboot, a high-level software company, was incubated by Fundación Repsol's Entrepreneurs Fund. The start-up aims to connect "a technology, that is often talked about but still difficult to use, within the corporate sphere," said Juan M. Pérez, CEO of Finboot. "They have developed a platform that adapts and scales this technology to deliver tools that allow offices or factories to easily connect to several blockchains using a web application."

Refining and petrochemical products are subject to a series of safety and quality certifications by regulatory organisms. "Currently, there is a lot of rework involved in these types of processes where we handle a large number of samples due to labeling errors, information losses, or incorrect connections between information," explains Tomas M. Malango, Experimentation Manager of the Tech Lab. Digitalization "allows us to identify the samples correctly throughout their whole life cycle."

To validate the blockchain methodology, the Tech Lab decided to apply it to samples from the industrial businesses "because we receive around 60,000 a year at our center, and the process involves many internal and external participants and is resource-intensive. Furthermore, it is mostly paper-based," continues Malango.

The Repsol Technology Lab Research Center processes 60,000 samples from the industrial businesses each year



Digital equivalents of the samples to be certified

A blockchain network is made up of a series of nodes, including the industrial facilities where the sample is taken, its transportation to the Tech Lab, the analysis and reports that take place there, and the Refining or Chemicals business that owns the sample and receives the results, in addition to "the corresponding certifying entity, if we complete the process," adds Malango.

With BlockLabs, people can request certification of a sample on the web application, which creates an equivalent digital file and registers it in a blockchain. From this moment on, physical samples and all the associated information (characterization, origin, certificates requested, etc.) are registered and unchangeably linked to their digital equivalents. Once testing has been carried out and the certificate has been issued, the details of the certificate are registered in the digital asset with the same code.

This technology is consistent because the process of registering the asset's characteristics and transferring this information between members of the network follows protocols that ensure the integrity of the information. All users that are part of a blockchain generate a code that identifies a new element known as a token, in this case the digital copy of the sample from refining. This code is created one time only and cannot be changed. If anyone tries to alter the token in a way that is not established in the protocol, the associated code would change and the other users would not recognize the token. Additionally, the user that changed it can be identified.

Taking into account the number of samples that require rework, this process is expected to generate savings of 400,000 euros in the Tech Lab. "It is an efficiency improvement," continues Malango, "an improvement that could also be applied in other departments of the company that have similar practices and problems."

This process is expected to lead to savings of 400,000 euros per year



Blockchain technology could also be used in the sale of crude oil or in the fashion industry

Towards a global certification blockchain

The first pilot test was carried out this summer using real samples to recreate the entire ecosystem, and "we want to refine and plant the seeds in our research center by April 2019." In addition to Refining and Chemicals, "we are also studying the possibility of applying this methodology in other businesses, such as lubricants or liquefied petroleum gas (LPG)," that require similar certifications.

In September, a demonstration was carried out in the presence of different parties involved. "We are currently getting all the stakeholders involved. They appreciated the speed, security, and precise reporting of information offered by the tool." BlockLabs could also be of interest for customers such as "Madrid Barajas Airport, for instance, in case they wanted to know the quality of our aviation kerosene throughout all the process," added Tomás Malango.

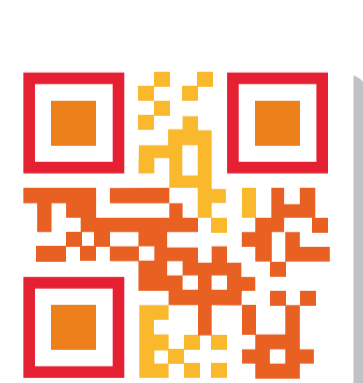
In the future, Juan M. Pérez believes that this test carried out with a private Repsol blockchain "will expand and all the different parties involved in the process (energy companies, regulatory bodies, and customers) will be integrated into one global certification network, as they know that it is a transparent and trustworthy source of information." Malango also shares this vision: "this has legislative, technological, and standardization possibilities, and pilot test like this one help demonstrate that it is a secure technology."

Digital assets as a commercial tool

Official certification processes are BlockLabs' natural growth environment, "but this project allows us to test a methodology that is applicable to other businesses that need to exchange information about a sample in a verifiable way, such as Trading. Product or crude tanker sale operations involve a large amount of documentation and several different players. If we could certify the various elements of the process in real time and all those involved in the process could see the other steps, it would be of great value."

Finboot is applying what it has learned in the energy industry to other sectors that use increasingly complex supply and distribution systems, such as the fashion industry. A new application of its platform, used to certify the sustainability of production processes in this industry, will allow us to "find out what material was used to make an item of clothing, where it was made, and what the factory was like just by reading its code," ensured Pérez.

In the medium term, these digital assets could become a commercial tool. "For bio gasoline, Repsol could sell the asset along with a digital certificate of its origin and its lower emissions," explained Pérez, as an example. The traceability of blockchain technology may also be a competitive advantage "because it could allow customers to follow how the products from our processes are designed and produced in real time," concludes Malango.



Download all the images in this News

ZIP. 3,2 Mb

Download the complete article in this News

PDF. 2,8 Mb