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WOODETECH is a Chilean company with commercial and operational bases in Brazil, Chile and USA.

+20 years of innovation
+50 systems installed around the world
We are constantly looking for new opportunities to improve industrial processes, that is why we research, design and develop products with global scalability potential.

To bring our client's operational processes into the future, through the use of innovative, coherent and functional technological solutions.
OUR PRODUCTS – Main Features

PRECISION
High-end lasers. Accuracy volume, factor and load distribution, image records.

REAL-TIME
Results in under 2 minutes per measurement.

UPTIME
High uptime level (99%).

AUDITABLE
Auditing web application. Easy results review.

REPORTS
Operational and Business reports.

Our products are especially designed to be operated in industrial environments.
Our Products

Logmeter®

Automatic system capable of obtaining, in less than two minutes, high-precision volume measurements and estimate biometric characteristics of timber loaded over trucks trailers, in movement.

Benefits

• Improves the interaction with suppliers and clients - The measurement of the volume and biometric characteristics is accurate, objective and transparent, thus eliminating subjectivity.

• Weight and volumetric conversion factors are not needed.

Pulp Mill  SawMill  Panel Mill  Woodchips/Pellets

Shuqualak, Mississippi, USA.
OUR PRODUCTS

BULKMETER

Automatic system capable of obtaining high precision volume measurements of bulk materials loaded on open top containers, measuring loaded and empty container.

Benefit

• Versatility – measurement of different bulk materials.
• Volume measurement is not affected by humidity.
• Easy to install and operate – does not need an operator.
OUR PRODUCTS

SENTINEL

Automatic system capable of capture and control vehicles inbound and outbound (reception and dispatch of material) from industrial sites in real time.

Benefit

- Versatility – allows to register different types of vehicles.
- Control – control inbound and outbound according to business rules established by the client.
- Important Data - Relevant information for logistcal and operational decision making.
OUR PRODUCTS

DASHBOARD
Operation control in one place

KPI board
- Graphs and indicators of business according to information raised by each system - automatically and manual entry.

Detailed event review
- Allows review each event with detailed information and images. In addition, filters can be applied for a more efficient search.

Reports
- Download reports of each event in PDF format and Excel sheets with historical data.

Alert list
- Displays a list of latest alerts generated for all facilities. Allows access to complete listing in more detail and filter for each facility.

Sentinel  Logmeter  Bulkmeter
Commercial Deployment of a 3D Laser Measurement System

Forico Pty Limited (“Forico”) is Tasmania's largest private forest management company, operating to achieve sustainable social, environmental and economic outcomes for Tasmania.

### Land Use Area (ha)

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Area (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plantation</td>
<td>94,400</td>
</tr>
<tr>
<td>Natural Forest</td>
<td>81,200</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>3,800</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>179,400</strong></td>
</tr>
</tbody>
</table>

Specific objective to be solved:

Same bone dry tonnes of wood carted with less trucks that enables the same bone dry tonnes of chips freighted with less vessels.

- Develop commercial mechanism that provides potential payment bonus the drying of logs to maximize the payload volumetric capacity of each truck (safely).

“To do so, we need a measuring device that reliably and accurately determines solid volume of each load”.

*Darren Herd, Strategic Resource and Logistics Manager at Forico.*
Why cubic meters?

Forico's main type of plantations: Eucalypts nitens

- Basic Density eucalypts nitens is low*
- Climate < 1200 mm and cool (average 10 deg C)

Full review of the opportunities to transition the whole supply chain

*Abruzzi, Rafael Cetal... (2013). Relationship between density and anatomical structure of different species of Eucalyptus and identification of preservatives. Material Research, 16(6), 1428-1438. Epub September 10, 2013.
Why cubic meters?

Logmeter is part of a Forico’s combined Operational Project. The main purpose is to enable hardwood plantation log supply to move to a volumetric POS.

1st Step
CULTURE AND ACCEPTANCE

- Key step for supply chain acceptance to move away from payment by weight

2nd Step
INITIAL TRIALS (2015 and 2016)

- Log drying trials
- Humidity curves
- Standing cu.m to gmt conversion (harvest rates)

3rd Step
WHAT OTHERS DOING? (Chile – November 2015)

- Woodtech Prospection

4th Step
LOGMETER TRIAL IMPLEMENTATION (March 2018)

- Validation
- Data collection
- Analysis
- Results

5th Step
PURCHASE (August 2018)

- Control and reception management by volume measurement

Forico needs a measuring device that reliably and accurately determines solid volume of each load.

Dataset revealed the accuracy of the system. Today, Forico is measuring by volume and is trying to move the market from payment based in weight to payment by volume. Now they have real data to show the improvements.
BUSINESS CASE - Forico, Australia

PERFORMANCE

Average Length
Manual vs Logmeter
(over 100 samples)

Correlation Coefficient: 0.95

Average Small End Diameter
Manual vs Logmeter
(over 100 samples)

Correlation Coefficient: 0.85
BUSINESS CASE – Eldorado Tres Lagoas, Brazil

Reliable, accurate and automatic volume measurement system since day 1

Eldorado Brazil is one of the most modern producers of bleached eucalyptus pulp in Brazil. With a vision of leading the global pulp market, their growth and value generation strategy is underpinned by four pillars: competitiveness, sustainability, innovation and valuing people.

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Area (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eucalyptus</td>
<td>230,000</td>
</tr>
<tr>
<td>Nursery</td>
<td>15.9</td>
</tr>
<tr>
<td>Total</td>
<td>230,015.9</td>
</tr>
</tbody>
</table>

Specific objective to be solved:

- Their main goal was to build the most modern pulp mill in the world (2010).
- In order to achieve it, their processes needed to be automated, so they wanted to acquire top-of-the-edge technologies since the beginning of the project (planning).

Nowadays, Eldorado boasts the lowest production costs in Brazil’s Cellulose industry. In 2017, produced 1.7 million tons, a volume 4% higher than in 2016.
PROJECT PLANNING: Since the conception of the mill, Logmeter was conceived as an option to measure the logs entry.

VALIDATION AND OPERATION: Once the construction ends and start-up of the mill began, Logmeter was ready to be operated.

9000 trucks measured per month by Logmeter units. More than 3.9 Millions of m3/year.

Logmeter allows improved long-term planification. 1 percent deviation in relation to forestry inventories.

SATISFIED CLIENT: Today, both units are fully operating, 24 hours per day, without interruption. Both with uptime higher than 98 percent.

PURCHASE: After several technical meetings, Eldorado decided to acquire Logmeter in November.

SECOND UNIT: First unit positive-operational impacts led to Eldorado’s decision to purchase a new unit, as a back up, to avoid waiting lines.

One of the main priorities to Eldorado was to reach high levels of operative automation to reduce cost and increase efficiency.
BUSINESS CASE – Arauco, Chile

Measurement and Control automatic-systems to improved operational processes

Arauco is one of the largest forestry companies in the world, and the largest in South America. Produces Pulp, Wood and Panels. Innovation is an essential part of Arauco's strategy, and involves the combination of technology, process optimization, creativity and ventures to develop new and improved solutions.

<table>
<thead>
<tr>
<th>Forestland</th>
<th>Area (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Productives areas</td>
<td>1,258,000</td>
</tr>
<tr>
<td>Protected areas</td>
<td>442,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,700,000</strong></td>
</tr>
</tbody>
</table>

Specific objective to be solved:

- Automate the wood reception process in their plants.
- Increase accuracy and have the data online to enable management.

Arauco Plant is part of Horcones Complex in Biobio, Chile.
2008 – LOGMETER
Arauco Plant -from Horcones Complex, Bío Bío Region- acquired Logmeter in June, to measure 100% entry logs to the pulp mill.

2009 – LOGMETER, Unit 2
After one year in operation, a second unit was needed. This time Bosques Arauco purchased the system -part of Horcones Complex too.

2012 – BULKMETER
Arauco starts implementing MAPA Project. A Bioenergy Plant was part of the plan, and as a consequence, Bulkmeter was acquired to measure Biomass and Chips entries.

2016 – SENTINEL
As part of automatize-control system, Arauco acquired 9 Sentinel units, one was installed at the Complex.

2018 – LOGMETER free of operator
Arauco decided to automatized the reception bridge process and then their Logmeters. The goal was to not need operators.

2018 - …
The supplies-reception process was not only automatized, but it has also significantly reduced the dependence of operators. In addition, reception times have decreased and control KPIs have been increased.
Thank You!