Case Study

Dramatic Savings from 12 Location Agriculture Fuel Management System

Introduction

The world's largest Certified Sustainable Palm Oil producer had recently acquired almost 135,000 hectares of existing farmland, predominately situated in Papua New Guinea. Some of these plantations, which are dispersed over multiple remote locations are hundreds of kilometres apart. The isolation of these farms, combined with the complexities of integrating such a significant company acquisition made it challenging to analyse operating costs, productivity levels, or identify improvement opportunities.

MTIS (an Authorised Banlaw Technology Partner) was engaged to implement process and technology solutions for enhanced visibility into liquid resource management.

The client needed to achieve increased visibility and control over farming operations, and to lower costs. Consequently, the systems developed resulted in robust access control and enhanced data integration of one of the most significant costs to the business: diesel. Reliable, automated fuel transaction and utilisation data were dovetailed with systems related to harvest productivity, asset availability, fleet utilisation, as well as ongoing fleet maintenance and operational costs.

Results for the client business far and away exceed a reduction in fuel spend. Reporting improvements deliver actionable opportunities for each farming location, and the new consistent data foundation has allowed processes to be automated.

Locations & Project Implementation

LOCATION	IMPLEMENTATION DATE	VEHICLES ON LOCATION
West New Britain	Sep-18	934
Ramu Agri	Aug-20	560
Higaturu	Nov-20	336

BANLAW
Fluid Asset Intelligence

Client Farming Operations Include:

PALM OIL | BEEF | SUGAR CANE | ETHANOL | VEGETABLE OIL PRODUCTS

Business Challenges

No Control Over Liquid Resource Allocation

The acquired sites did not have a suitable means of controlling the access and issue of fuel. This free-issue-of-fuel inhibited preventative cost control mechanisms. The result was significant over-allocation and usage of diesel. The operation required an automated solution for management to regain control over liquid management for mobile and static assets at all worksites.

Inadequate Productivity Data And Benchmarking

There was no reliable control or quick access to data on fleet or individual vehicle productivity. This made it difficult to track performance or set realistic benchmarks for unlocking improvements. What was missing was a centralised automation to enable data access, frequent analysis, and the systematic identification of process improvement opportunities.

Discrepancies Around Fuel Received Vs. Paid For

Fuel deliveries did not have a mechanism for accurate measurement on receipt, causing a lack of oversight around bulk deliveries and custody transfer. Without resolving discrepancies between fuel paid for vs. fuel delivered, it is also impossible to reconcile and analyse downstream consumption within the business.

Client Strategic Goals

1. "Focus on innovation to improve productivity, optimise efficiency of processes, and enhance quality of products and services."
2. Find transparent and accurate strategies to "monitor operational performance."
3. Gain "technical support to our businesses by advisors to ensure continuous operational excellence."

Targeted Solutions

Technologies Deployed

- Vehicle RFID Fuel Tags installed on farming equipment to securely and automatically identify each machine
- Auto ID Readers and Nozzles installed at refuelling locations to ensure fuel is only dispensed to company-approved machines that are identified in the client financial system
- Vehicle mileage and engine hours tracking devices installed on trucks and other assets to link work performed to the volume of fuel consumed
- Fuel management field controllers deployed for localised fluid security, access control, and tank management
- Liquid resource management software enabled for real-time fuel inventory management, and shared visibility across all business locations

Banlaw ResTrack™
Fluid Asset Intelligence Products

- Fuel Management System Software
- Fuel Management Field Controllers
  - Advanced Controllers at fixed fuelling locations
  - Tank Side Controllers for tank farms
  - Mobile Controllers for on-site fuel trucks
- SecureFill Splash Fill Auto ID solution for securely filling vehicles, plant equipment and smaller stationary tanks via the fuel tank filler neck
- Banlaw On Board Device for automated vehicle mileage and engine hours tracking

BANLAW ResTrack™

Banlaw Advanced Controller, delivering real time visibility of fuel stores, and secure access to the correct amount, of the correct fuel, for the correct machines.

Processes and Strategies Deployed

Project Infrastructure

MTIS planned and coordinated all infrastructure upgrades, which were specifically designed using proprietary Banlaw technologies to meet the client's needs. A strong focus was placed on automated solutions due to the multi-site liquid management requirement. The project leveraged the latest IIoT innovations, aggregating various connected liquid management and business intelligence technologies to overcome challenges unique to the client.

Fuel Access Management

MTIS created a centralised hub for managing fuel security, including user and vehicle access configuration, and the issuing of secure identification and automated vehicle monitoring technologies. All Vehicle RFID Tags are now approved and configured centrally before issue. This enables enhanced visibility and accountability, along with industry-best fluid security and the capture of reliable data. MTIS acts as an external auditing and control department for the client.

Fuel Allocation Management

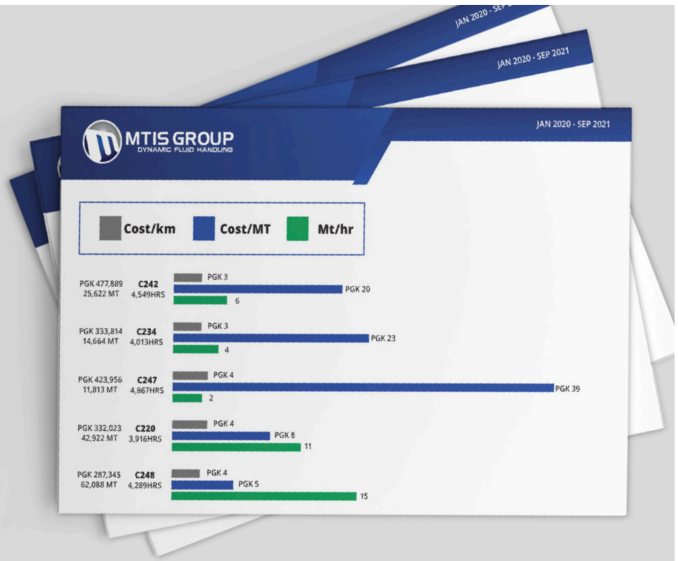
Using Banlaw's ResTrack RMS software data, the optimum amount of diesel required for each fleet and class of machine was established. This was achieved by carefully monitoring operations; benchmarking fuel consumption, mileage, engine hours, and the weight of fruit delivered. Over time these allowances have been refined, and continue to yield improved results for the numerous farming locations.

Fuel volume budgets have now been defined at a machine level. For example, analytics identified that 220 litres of diesel during each 24-hour period was sufficient for a specific fleet of trucks to deliver all the required work. This includes an appropriate safety margin. Previously, diesel usage of 400-500 litres per truck per day was considered normal.

Interactive Productivity Mapping and Reporting

Interactive Productivity Mapping is now provided to the client on a weekly basis. This business intelligence resource integrates fruit production data, fleet costs, machine utilisation metrics, as well as fuel delivery, storage, and dispense transactions into one holistic view. Bringing together subjects previously managed in isolation has allowed analysis of variances across the different plantations, fleets, and functions, yielding an ongoing stream of actionable business insights.

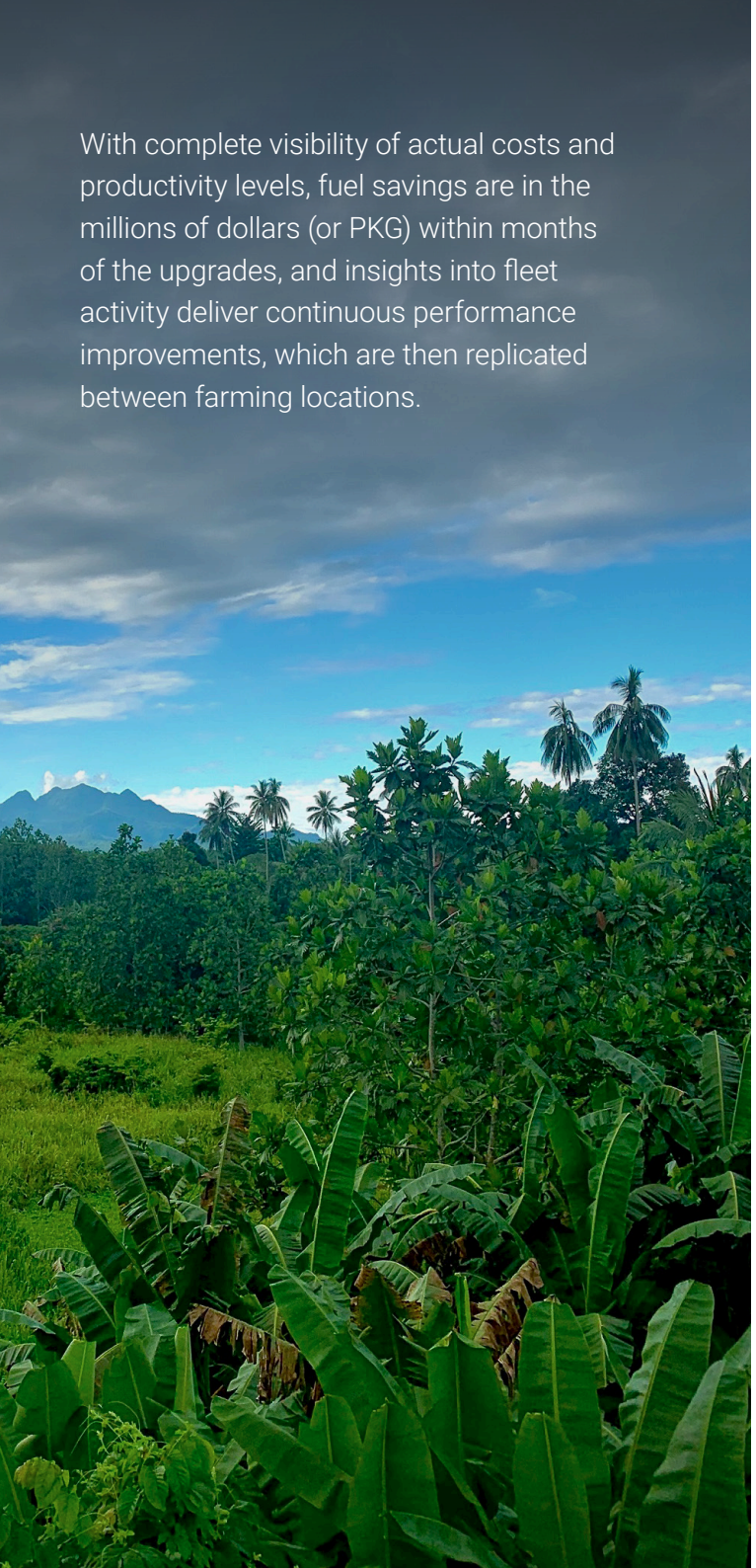
Reporting which previously took over a week to generate is now provided in minutes.



Continuous Improvement

MTIS established on-site offices offering complete project management and Quality Assurance (QA) services at various fuel storage locations. MTIS act as a third-party auditing body, helping to regulate, manage, and report on fuel management practices and opportunities for enhanced productivity. Combining robust controls at site-level, ongoing analytics, and proactive continuous improvement services has unlocked business outcomes far and away beyond the reduction in fuel spend.

Daily fuel allocation, consumption, and fruit production is being tracked and managed at a machine level, automatically, for 1,830 vehicles.



With complete visibility of actual costs and productivity levels, fuel savings are in the millions of dollars (or PKG) within months of the upgrades, and insights into fleet activity deliver continuous performance improvements, which are then replicated between farming locations.

Business Outcomes

Cost Savings

Limiting the amount of fuel available to each vehicle so that it is sufficient to do the job but not excessive, has caused far-reaching behavioural changes. One benefit is that fuel theft has been managed, with secure automated processes providing 100% validation of which approved vehicles have received all fuel.

LOCATION	MONTHLY SAVINGS	ANNUALISED - PGK		ANNUALISED - AUD	
MOSA					
Skip Trucks	112,000	PGK	1,344,000	AUD	511,900
Crane Trucks	52,000	PGK	624,000	AUD	237,600
Oil Tankers	21,900	PGK	262,800	AUD	100,000
Cost Savings during the initial project period (annualised)		PGK	2,230,800	AUD	849,500
RAMU AGRI					
FFB Palm Oil Trucks	53,000	PGK	636,000	AUD	242,200
Cane Harvesters	32,000	PGK	384,000	AUD	146,200
Light Vehicles	26,800	PGK	321,600	AUD	122,400
Mobile Bowser	91,000	PGK	364,000	AUD	138,600
Cost Savings during the initial project period (annualised)		PGK	1,705,600	AUD	649,400
HIGATURU					
EH Fleet (Heavy Vehicles)	11,000	PGK	132,000	AUD	50,200
NA (mostly wheel loader)	3,600	PGK	43,200	AUD	16,400
FL (Lishun TT)	3,050	PGK	36,600	AUD	13,900
Cost Savings during the initial project period (annualised)		PGK	211,800	AUD	80,500
Cost Savings achieved for the first 3 Locations during the initial project period (annualised)		**PKG**	**4,148,200**	**AUD**	**1,579,400**

Lightning-fast Return on Investment

- For the first site, investment delivered $800k in fuel savings within the first year (AUD)
- The Banlaw system had paid for itself within 3 months of installation, including all MTIS management and support fees
- The liquid resource management system and proactive process management framework has continued to deliver improved results. Jan2020 vs Jan2021 was a further 26% reduction in fuel consumption

Only Pay For The Fuel You Receive

It was discovered that 6% of the fuel being paid for did not make it to the bulk storage tanks on site. Precision metering equipment installed where fuel unloading occurs subsequently closed this gap.

Optimised Fleet Specification

Due to the increased data supply and accuracy, the client can now analyse and affect the ROI of vehicle selection. Questions answered include:

- In which farming locations will a truck costing 35,000 USD deliver the same amount of work as a 100,000 USD asset; due to terrain, maintainability, and other performance metrics?
- What are the individual fleet OpEx break-even points, and when should fleet assets be retired to best balance lifetime costs and resale value?
- Should we use 3rd party suppliers in a specific geographic location, or is it justifiable to invest in harvest machinery?

Actionable insights such as these provide an ongoing roadmap of improvement opportunities for the client business to incrementally improve Capex, OpEx, and production outcomes.

Focused Productivity Culture

Client management has been given the tools to better control the productivity culture within the operation. Data that is now available quickly, accurately, and reliably empowers staff to be more proactive in managing and limiting the OpEx spend. Areas of waste are now visible across the organisation and promptly acted upon.

Enhanced Benchmarking Capabilities

Because the client can now compare the productivity of different fleets, vehicles, or plantations, they can set clear and realistic KPIs and benchmarks. Weekly interactive performance indicators are then mined for continuous improvement opportunities, prioritised, and managed as part of an ongoing improvement roadmap.

Mill with Skip Trucks and Diesel Tankers

The client's own reported impact for this project was a PGK 1,867,591 cost reduction over 10 months from just the first location.

This proven outcome subsequently allowed upgrades to be approved and delivered at 12 more locations. These additional technology and process upgrades are now also delivering substantial and ongoing savings.

MTIS GROUP
DYNAMIC FLUID HANDLING

MTIS Group is an Authorised Banlaw Technology Partner. Technology Partners are specialised Banlaw Distributors with advanced connected-technology integration capabilities as well as full-breadth hydrocarbon management expertise.

Future Expansion

Due to the tremendous success of the initial project and replicable results, this initiative is now being expanded across the client's Pacific farming operations. This will result in even greater visibility, cost savings, and productivity enhancements as data-informed continuous improvements are prioritised.

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