

Oil Wells Drilling Project Management



Background

- A large oil holding company commissions approximately 350 wells annually. The average construction cost for one well is \$15,000 per day, and it takes 85 days on average to construct one well.
- To reduce construction time, the company employs lean production methods. The company has developed the "best composite construction project" model based on the project data with the top performance indicators.
- Now, the construction of every new well is measured and compared with the "best composite project," aiming to eliminate downtime and non-productive time losses. This application of lean production reduces the average construction time of a well by 11.5 days, resulting in a cost saving of \$172,500 per well and \$60.2 million annually for the entire oil extraction holding.

Process

- Every day, the oil well construction project management team receives work status updates: drilling progress from drilling management systems and crew availability reports for the crews involved in the next stages of construction. Reports are provided in MS Excel via email, and data errors are common, such as the incorrect date format in respective fields.
- The received information is checked for format accuracy and exported to a homegrown corporate construction project management system.
- A project analyst assesses the data alignment with the "best composite project" and, based on it:
 - Creates a progress report for management on two PowerPoint slides.
 - Informs construction crews about identified deviations via email.
 - Modifies the construction plan.



Oil Wells Drilling Project Management

Challenges

- On average, 20 project offices work simultaneously on wells construction, each responsible for several wells. Each office requires 3 FTEs to compile reports and update plans at a monthly cost of roughly \$10,000 or \$120,000 annually. Thus, for 20 offices, the direct annual cost of compiling reports and updating plans is approximately \$2.4M.
- Data errors in reports affect the effectiveness of the lean production system and put the target savings of \$60.2M per year at risk.

Solution

To address these challenges, the company deployed three **Primo RPA bots**:

- **Bot #1.** Reads emails, extracts report files, checks the data format in the reports, and uploads the data into the corporate construction project management system. Additionally, the bot checks on-time receipt of reports from crews and the drilling management system and notifies the project office staff in case of missing reports.
- **Bot #2.** Prepares the project status report in PowerPoint and distributes it via email to the list of recipients.
- **Bot #3.** Informs construction crews via email about identified project delays.

Financial Impact

- Direct impact - redeploying 2 FTE per project office resulted in **\$1.6M yearly savings**.
- Indirect impact - achieving the target savings of **\$60.2M annually** from new wells construction costs.



Document Reconciliation with Contractors



Background

- A subsidiary of a large oil and gas holding engages contractors for the construction and maintenance of wells and pipelines. The completion of work is confirmed by certificates, which are sent from the contractors to the company's financial department.
- Employees receive completion certificates from contractors via email, collect attached files, and find the contract number and date, TIN (Taxpayer Identification Number), and BIC (Bank Identification Code). Then they verify the data in the ERP system and highlight discrepancies. Finally, they send the discrepancy report to the manager.

Problem

- It's a 100% manual process, taking 30 minutes to process one document. Approximately 7000 certificates are processed annually, taking 3500 working hours per year.
- Errors in data lead to additional reconciliation efforts, taking extra time to interact with contractors. They also affect the company's financial planning due to deviations from the initial budget.

Solution

- A robot receives the completion certificates by email, checks the XLSX file, and finds the contract number, dates, amounts, TIN, and BIC. Then, the robot verifies the data in ERP and highlights discrepancies, if any. The robot sends the prepared discrepancy summary to the human specialist.
- Human involvement in the operations is reduced from 100% to 5%.

Financial Impact

- Direct impact - freeing up 2 FTE and corresponding savings of \$60,000 per year for one company within the holding. The projected implementation of the solution across 20 key companies in the holding will result in direct savings of **\$1.2M per year**.



Oil Transportation to the Marine Terminal



Background

- After extraction, oil is transported from the field to the floating storage, where customers pick it up. This transportation is carried out in two stages – via pipeline from the field to the marine terminal, and tankers bring it from the terminal to the floating oil storage. Seven tankers are involved in the transportation. Information about the steps involved in loading tankers (approaching the terminal, mooring, crew disembarkation, connecting oil supply hoses, oil pumping, etc.) and corresponding weather conditions are recorded in MS Excel files on the secured military-grade laptops of the shift crew.
- Once a day, the information about operations is uploaded to the corporate file storage for subsequent processing and report generation for both the company and its partner – the shipping company responsible for the tankers and their management.
- To reduce overall oil transportation costs, the company has set a goal to optimize oil loading time by applying lean production methods and creating a model of the "best composite load" (benchmark model of the transportation process).
- In addressing this challenge, the company needed to standardize and verify data from the marine terminal and its subsequent upload to the corporate information system for report preparation and updating the benchmark transportation process model.

Challenge

- Making data changes at the marine terminal is impossible due to complex weather conditions, high work intensity, and unstable data transmission channels between the terminal and the company's control center.
- Processing incoming data on the control center's side required the allocation of 1.5 FTE with a rate of \$2,500/month. Manual data processing leads to errors, including errors in the final reports. Additionally, delays and errors in loading information for the shipping company cause delays and affect the overall productivity of the entire logistics chain.

Oil Transportation to the Marine Terminal

Solution

- The company has deployed a Primo RPA bot to analyze reports prepared by the marine terminal workers (information on loading operations) and correct them using Intelligent Document Processing / NLP - verify ships, operations, timestamps, etc. The corrected data is uploaded to the corporate system and the shipping company's information system. Based on the uploaded data, the process is evaluated for compliance with the benchmark process.
- The bot frees employees from the data processing task and virtually eliminates report errors.

Financial Impact

- Direct impact - freeing up 1.5 FTE and corresponding savings of **\$45,000 annually**.
- Indirect impact - achieving a **\$21M savings** target in transporting oil to floating storage.



Petroleum Tracking at Receipt in the Distribution Center



Background

Petroleum arrives at the regional distribution center by train - 10 cars a day on average. Each car comes with a set of transportation documents describing its content. Each car is checked, weighed, and measured upon arrival to confirm the petroleum's volume and parameters.

Then, a receiving clerk enters information into multiple systems:

- Railroad terminal system to confirm receipt
- Oil company's tracking system for distribution centers to track received petroleum

They also check and sign incoming documents.

Challenges

- Time-consuming: each car takes 15 min on average; thus, 150 min for 10 cars or 2.5 hours per day. Hence, 55 hours/month for one distribution center. There are 150 distribution centers in the country, so it takes roughly 8250 hours per month for all distribution centers.
- Error-prone: errors are common since human clerks often confuse numbers and cars when typing data into the system.
- Access to the railroad terminal system costs is expensive and required for each distribution center.

Solution

- Primo RPA bot synchronizes data between the railroad and oil tracking system through a single central terminal, reducing the need to access the railroad terminal and saving \$100,000/month.
- Integrated IDP solution automatically extracts information from incoming documents and validates it across the systems. It reduces verification time from 15 to 2 minutes on average, saving 7000+ hours/month and reducing the number of errors to almost zero, saving time on resolving these issues and improving partner relationships with the railroad.

Financial Impact

- The total savings account for \$220,000/month or **\$2.6M/year**.

Driver and Vehicle Validation at Shipping from a Distribution Center



Background

There are 150 distribution centers, each receiving and loading 20-50 (35 on average) trucks daily with petroleum. The distribution operator checks the truck's and driver's documents and prepares and prints the bill of lading and the invoice. It takes 10 minutes per truck on average.

Challenges

- Time-consuming: 10 min per truck, 350 minutes per day, thus 128 hours per month for one center and around 19,250 hours per month for all distribution centers.
- Error-prone: human errors are common, and the resolution takes much additional time, causing delays and more stress.

Solution

Automatic intelligent document processing - drivers quickly scan their driver licenses and shipping documents; thus, when they approach the operator, their information is confirmed, and shipping documents are prepared. The operator checks and prints them in 2 min instead of 10 minutes, saving 15,400 hours/month and drastically reducing stress and errors. It also prevents operators from conspiring with drivers and creates an additional layer of control and governance.

Impact:

- The total savings are \$300,000/month or **\$3.6M annually**.