

# MIELOO & ALEXANDER

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## Dutch Aerospace Parts Manufacturer RFID enabled Time of out of Refrigeration Control

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## The company

The company was founded in the early part of the last century and evolved from an airplane manufacturer to a specialized manufacturer of electronics and landing gear parts, and supplier of aircraft maintenance.

The group of companies has 4 manufacturing sites and manufactures components for major platforms ranging

from helicopters to business jets and from fighter aircrafts to the largest passenger planes in the world.

One of the plants in Netherlands, where lightweight composite materials are used to produce the aircraft components, approached Mieloo & Alexander in 2016 in the context of their Industry 4.0 program, with the objective to realize

visibility and transparency in the internal goods flow and material handling processes. A first project focusses on the handling of raw materials and is considered the Proof of Concept for further roll-out of the AutoID and IoT solutions of Mieloo & Alexander.

## Time out of Refrigeration control

The raw material for the aircraft components are mats of fiberglass or carbon with resin on a cardboard core, which are stored in a freezer at minus 20 degrees Celsius. This sensitive material may only be exposed to higher temperatures for a limited amount of time; if this time window is exceeded, the quality of the end-product cannot be guaranteed. Therefore, it is of the utmost importance that the actual "Time out of Refrigeration" or "ToR" is accurately monitored.

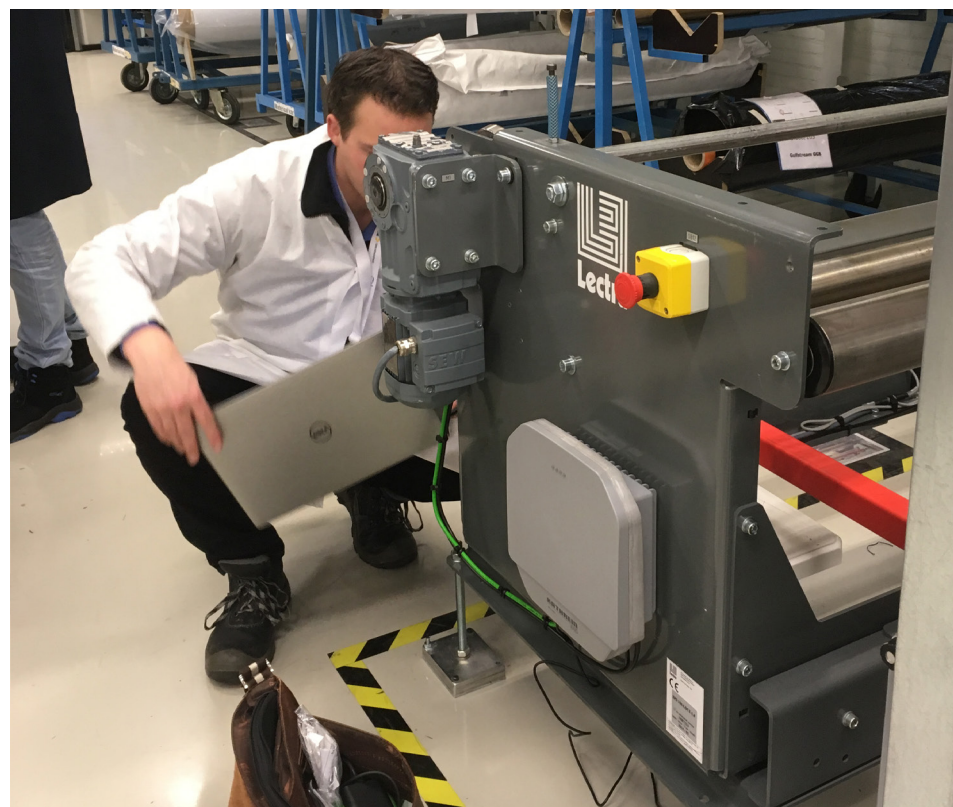
Time of Refrigeration is typically registered manually by material handling and production staff: the start time (when the roll is taken from the freezer) is registered on the material card applied to the product, and the remaining out of freezer time is calculated manually at defined intervals. Once the remainder of the roll is returned to the freezer, the stop time and remaining ToR is calculated and logged on the card.

Operators also write on the production order the product code and serial number used for the order, and on the material

card the production order for which the product is used and the square meters used and remaining.

As the current process is fully manual and therefore error prone and not

efficient, the company requested Mieloo & Alexander to implement passive UHF EPC/Gen2 RFID technology in combination with the ViZix IoT platform, to automate the Time out of Refrigeration registration process.



## Solution and benefits

The key components of the RFID/IoT solution deployed at Fokker Aerostructures:

- Passive RFID tags: each roll of fiberglass gets 2 pre-coded RFID tags, that are applied inside the core, and which are associated with the SKU and serial number of the material. This happens at receipt in the warehouse.
- RFID readers are deployed at the door of the freezer warehouse and at the entrance to the production facility. These readers automatically record the moment that rolls are taken from the freezer and when they are put back into storage.
- RFID readers on the infeed positions where the composite rolls are cut for the production to record the start and end time of the cutting process, and associate the product

data of the roll on the cutting machine with the production order for the semi-final product.

- The ViZix IoT middleware platform is used to capture the RFID reads and to keep the material cards of each composite roll digitally. It stores the time out and in refrigeration, and shows which rolls are in the freezer, in transit or in the production facility, either not yet or on a cutting line.
- Operators record the material consumed still manually but now in ViZix instead of writing it on a card, and ViZix calculates the total time out of refrigeration as well as material remaining on each roll. ViZix will generate alerts before ToR's are expiring or when rolls are placed on a cutting line without enough ToR time left.
- ViZix is integrated with the

Manufacturing Execution System, through which the serial numbers and quantities of the semi-final products used are automatically recorded on the corresponding production order in the MES, whilst the production order details are recorded automatically on the material card in the IoT system.

The new, RFID/IoT based process and system solution makes the registration much more efficient, and the quality of information is significantly improved, not only of the semi-final materials quality parameters but also of the inventory data which is used for planning and purchasing.


## Role of Mieloo & Alexander

Mieloo & Alexander supported the company with the design and set up of the ToR control system. Tags and RFID readers and antennas were already available from a previous PoC project. Mieloo & Alexander proposed to replace old RFID readers with Kathrein ARU-4 readers with an embedded Linux server on which Mieloo & Alexander's V-Track reader agent can be deployed, to keep the AutoID infrastructure as lean as possible. The existing RFID antennas and tags were re-used.

Mieloo & Alexander also set-up the ViZix IoT platform, but configuration was done

in close cooperation with the companies process and IT analysts. In doing so the IT team received a training on the job, enabling it to assume a larger role on subsequent projects, where Mieloo & Alexander's role will reduce to validation and 2nd tier consulting for complex requirements.





## About Mieloo & Alexander Business Integrators

Mieloo & Alexander Business Integrators is a logistics consultancy firm and RFID integrator specialised in “technology enabled supply chain improvement”. As supply chain and logistics advisors we support our clients with their supply chain strategy, process redesign and with planning and managing the transformation project. And as RFID integrators, we help our customers to realise the benefits of AutoID technology and to improve and innovate their internal and collaborative business processes. We also offer standardised, modular supply chain solutions for Horticulture (ScanGreen), Asset Tracking (ScanTrack), biometric Time & Attendance registration (ScanTime), Linen Management (ScanBlue) and Apparel (TracEye). Mieloo & Alexander is based in Amsterdam and has a sales office in Düsseldorf, Germany.

For more information:

[www.mielooandalexander.com](http://www.mielooandalexander.com).