

CASE STUDY

AIRPORT SAVES MONEY ON MAINTENANCE THANKS TO TRADE-OFF ANALYSIS

The contractor for constructing, maintaining and renovating infrastructure of an international airport is committed to realize objectives related to asset return, innovation and digitalization. MaxGrip was asked to help with safeguarding the reliability and longer-term asset strategy focusing on the renovation of the busiest runway of the airport and a new to be built aircraft bridge.

OBJECTIVE: SAFEGUARDING ASSET PERFORMANCE

Every fifteen years a major overhaul of the asphalt, lighting and auxiliary systems is necessary for this busy runway to match performance criteria and make it future proof. For the overhaul of the runway and the connected new aircraft bridge the contractor needs to safeguard performance for many years to come. Assets such as asphalt, new lighting and backup power generators are updated on major projects to safeguard future performance. The reliability engineer will have to ensure that these new assets are just as reliable as the traditional assets.

APPROACH: BRIDGE TO SUCCESS

The first step that MaxGrip took was to identify the gap between the current performance and the future safety and performance requirements. On the one hand, the gap is based on analyzing work order history of preventive and corrective maintenance and experiences of the maintenance crew over the years. On the other hand, the gap is based on the customer requirement specifications; in the process of Systems Engineering multiple requirements regarding performance, safety and sustainability are agreed on by the contractor and client.

SUMMARY

Challenge:

Safeguarding the reliability and longer-term asset strategy focusing on the renovation of the busiest runway of the airport and a new to be built aircraft bridge.

Approach:

- Stakeholder management: being the pivotal link between the contractor's teams and the client's asset management organization.
- fit /gap analysis current and desired performance
- trade-off matrices to facilitate easy decision-making
- Risk-based prioritization and selection of work

Results:

Short term: Efficient and objective prioritization process helped to improve the partnership of the contractor and client in times of crisis.

Longer term:

- Benefits of over € 250.000,- in a 10 year life cycle at a higher performance
- Proving performance of assets as agreed in the partnership contract between contractor and client

Trade-Off-Matrix

Within a design, several design solutions are possible. To facilitate easy decision-making, MaxGrip created Trade-Off-Matrices in which solutions could be analyzed easily. In the Trade-Off-Matrix relevant criteria were identified and scored based on expert judgement. Criteria usually include key requirements, maintainability and Total Cost of Ownership. An example of use is a new asphalt mix chosen for the aircraft bridge. The transparent and well-documented Trade-Off-Matrix convinced the client to choose a new mixture of asphalt that has never been used before.

Variant		1	2	3
Criteria	Weight factor	Variant A	Variant B	Variant C
Impact on project deadline	1	2	1	4
Technical lifetime	1	1	3	1
Technical suitability	2	1	2	1
Reliability	1	1	3	1
Availability	1	1	2	1
Maintainability	1	2	1	4
Safety incident	1	1	2	1
Investment cost	0	2	1	3
Maintenance cost	0	1	3	1
Combined life cycle cost (LCC)	3	1	2	4
Total score (lower = better)		13	22	26

Figure 1) Excerpt from the anonymized trade-off matrix

Risk-based selection

Due to the COVID-crisis budgets are under pressure. To narrow the scope for the runway renovation, it was therefore necessary to prioritize and select the tasks for the overhaul to deliver the best outcome for long-term asset performance. We executed a risk-based selection and prioritization process to provide objective choices.

The MaxGrip consultant acted as the link between the contractor’s design and construction project team and the client’s maintenance and Asset Management organization. He made sure all organizations and departments were aligned with the plan, that the right prioritization was chosen and verified with the performance requirements. To promote continuous asset performance improvement the consultant also improved the PDCA (plan-do-check-act) way of working within the maintenance and design organization.

RESULTS: TRADE-OFF-MATRICES SAVES MONEY

Due to MaxGrip’s work, the contractor can prove that the performance of the assets will be as agreed in the partnership contract due to the improved maintenance program. The collaboration between the contractor and client has further improved because the risk-based selection and prioritization has aided the client in a difficult time. With the use of Trade-Off-Matrices we have shown benefits of over € 250.000 in a 10-year life cycle at a higher performance.

ABOUT MAXGRIP

MaxGrip consultants enable organizations in asset-intensive industries to achieve continuous improvements on their asset performance, also using the power of Digital Transformation. MaxGrip embraces APM 4.0 with a maintenance track record of over twenty years in industries like Oil & Gas, Food & Beverages and Utilities & Infrastructure. We operate on all continents and have a global presence with our main offices in the Netherlands (HQ), USA, and Malaysia.

WOULD YOU LIKE TO KNOW MORE?



Marcel Morsing
 SENIOR ACCOUNT MANAGER
 INFRA & UTILITIES
 +31307470138
marcel.morsing@maxgrip.com