Improving civil aviation safety can boost African air travel

By Bennie Langenhoven   31 May 2017

African civil aviation is said to be five to nine times riskier than the global average. Therefore, investment in regional air and ground safety can contribute to the continent's attractiveness as a sought-after travel and business destination.

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What's needed in the long run is coordinated investment in leading-edge technologies to enhance safety and cost efficiencies, which will do much to develop smaller airports which are so important for the expansion of African business and tourism.

Promising developments in this regard include efforts to create a single upper airspace management capability in the SADC region.

African aviation stakeholders should further keep an eye on global air transportation and air traffic management advances in the US's NextGen and EU's SESAR projects – which would require modernisation of the air traffic control (ATC) communications infrastructure on the continent.

Remote air traffic control technology

In addition, installing remote air traffic control technology can provide a cost-effective improvement in ATC and safety at multiple airports while using fewer skilled air traffic controllers located at one control room - an effective way of managing ATC operating costs over the medium to long term.

We also note innovations in technology segments such as energy-efficient LED airfield ground lighting (AGL) as well as exciting advances in the areas of satellite-based navigation, and solar power solutions for AGL installations.

LED-ing the way

It's been 15 years since LED technology found application in AGL. Since then, its longevity has been assured by its energy efficiency, ease of maintenance, improved safety, lower environmental impact, and ultimately, cost-efficiency.

From an African perspective, the best-LED solutions offer backward compatibility with traditional halogen lighting implementations, protecting airport investments while embracing the low cost of ownership of LED lighting technology.

In addition, leading solutions feature intelligent designs, incorporating advances such as software-based manageability and dual-purpose powerline communications, which likewise look to the future while embracing cost efficiencies.

Solar

Adding to the advances in LED lighting in AGL applications, we've seen increasing use of solar energy in this technology area.

Harnessing the earth's most abundant energy source – the sun – solar cells collect energy and convert it into usable electricity. But solar is an intermittent energy source, which limits its use at night. Lately, however, breakthroughs in the use of rechargeable batteries for solar energy storage in GLS systems has been the cause of much interest, and smart systems take specific geographic conditions such as the minimum hours of sunshine into consideration, ensuring that solar AGL systems never run out of battery power.

Leading solar-powered AGL solutions further stand out for their smart management of the solar energy feeding into batteries – needed both for efficiency and to protect batteries from overcharging.

This will stand African airports in good stead as they seek to build low-risk investment cases that won't break the bank and bring cutting-edge safety to smaller airports.

Satellite

On the other end of the scale are future technologies such as satellite-based navigation systems, which are gradually replacing ground-based systems.

And, as noted above, airports must keep an eye on initiatives like Next-Generation and SESAR - specifically, integration between the two programmes. There's no indication currently that Africa will strategically modernise its airspace to the extent of the Next-Generation initiative, or overhaul its traffic management in emulation of SESAR, but various entities are investing in this area and will be looked to for leadership.

Remote control towers

Another avenue worth exploring for local use is remote control air traffic control towers (ATC), which replace on-site air traffic controllers using cameras and data communication links.

Where operational budgets are lacking, an ATC tower configuration consisting of a central hub managing multiple airfields remotely, provides a uniquely African-suited solution for air traffic control. It has the potential to quickly improve air traffic safety in outlying areas, bringing more destinations into the fold of achieving the required safety standards necessary for

airlines to permit the operation of scheduled flights to an airport. In turn, an increase in scheduled flights benefits the local economy by creating improved regional access for business and tourism.

Partner right

The latest technological advances are highly applicable to Africa's challenges around civil aviation safety, as well as its above-average budget constraints and creaky technological legacy. It's not just a matter of meeting the needs of airports previously considered sub-economical, it has enormous potential for regional air travel expansion, with knock-on economic benefits for African countries and the continent as a whole.

The continent's needs can best be met by providers with the skills, experience and vendor relationships to satisfy the needs of civil and military airports.

The credentials most needed are strong OEM relationships for cutting-edge navigational aid systems, including radar, instrument landing systems (ILS), runway lights, precision approach systems, direction finders and weather observation systems.

But no less critical is a full range of services, ranging from manufacturing to implementation, support and maintenance of cutting-edge, as well as legacy aviation equipment.

And to meet Africa's needs for new installations, as well as maintenance and repair of legacy equipment, which are still so prevalent in the region, providers need expertise in systems design, solution integration, installation, maintenance, obsolescence management and repairs.

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