Belgocontrol

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CANAC 2: performance-oriented air traffic control

Belgocontrol is an autonomous public company, with the mission to guarantee the safety of air traffic in the airspace for which it is responsible and at the five Belgian public airports.

With the CANAC 2 system, this mission is entering a dimension of performance in which safety, efficiency and environmental protection are constantly optimised.

CANAC 2 implements an innovative operational concept designed by Belgocontrol experts, which encompasses the air traffic control centre and the control towers at Belgium's five public airports, in a coherent and dynamic system based on tactical air traffic control management. Based on the latest technological innovations, this system offers optimal efficiency and service quality at a lower cost. Definitely turned to the future, CANAC 2 has facilities for training air traffic controllers and for military air traffic control.

Scalable, perfectly interoperable and in line with the latest developments of the SESAR programme (Single European Sky ATM Research), the objective of which is to harmonise Air Traffic Management technologies and systems in Europe, CANAC 2 is positioning Belgocontrol as a leader in the Single European Sky. This European Commission initiative aims at coping with the expected increase in air traffic through the integrated management of Europe's airspace independent of national borders and focused on the reduction of costs for users.

CANAC 2

CANAC 2 integrates Belgium's five air traffic control towers as remote sectors to form a structured air traffic control system that manages all of the airspace under Belgocontrol's responsibility harmoniously.

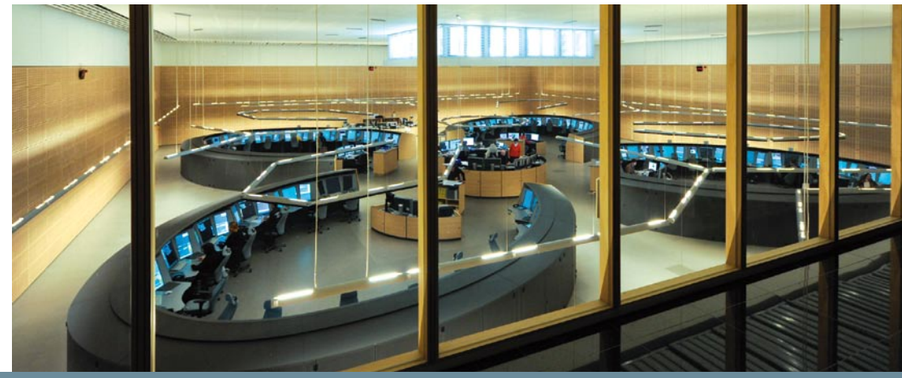
A control centre designed for efficiency

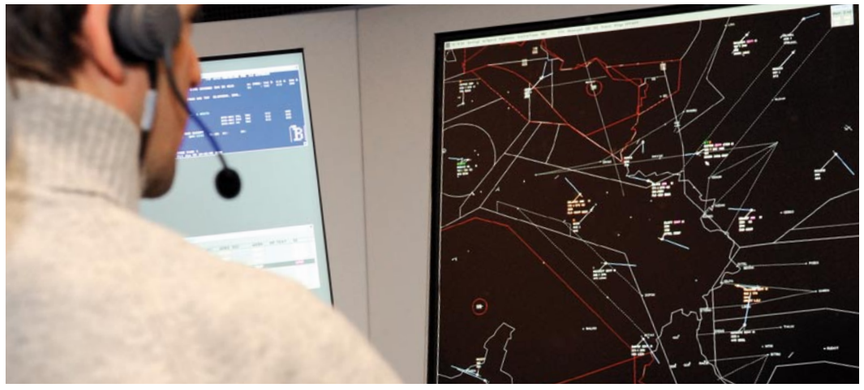
CANAC 2 was put into service in November 2009 and has a new operations room and two new technical rooms installed in one of the buildings at Belgocontrol's main operating site. Designed with the active participation of the air traffic controllers, the CANAC 2 centre is the fruit of advanced ergonomics studies that gave rise to the four flower petals' formation comprising the controllers' work positions in the operations room, as well as to the consoles in triptych.

The configuration of the work positions in the form of flower petals facilitates verbal and non verbal communication between air traffic controllers. The consoles, which feature screens in triptych, comprise all air traffic control tools. Whether a radar controller or a planner, he/she can configure his/her work position as appropriate and display and freely move applications across the three screens as they please. Work positions are no longer linked to a particular sector of the airspace. Any airspace sector can be displayed on any work position. This complete flexibility makes it possible to adapt the operations room configuration to different air traffic control situations in real time.

Air traffic controllers have adjustable consoles for maximum work comfort and an integrated voice communications system comprised of two touch screens, providing fast, easy access to radio frequencies and the telephone. The CANAC 2 concept was designed by and for its users, both in terms of the human-machine interface of air traffic control applications and the work environment.

In CANAC 2, ergonomics is at the service of air traffic safety and efficiency.





The radar colour image offers many assistance tools that produce a visual alarm and highlight specific airspace areas.

An air traffic control system for enhanced performance

Safety

Air traffic safety is paramount to Belgocontrol. With CANAC 2, safety has never reached such heights. At the heart of CANAC 2, a high-performance air traffic control system – delivered by Thales ATM and adapted to the needs of Belgocontrol – links radar and flight plan data and constantly extrapolates the trajectory of aircraft. This makes it possible to check the conformity of a flown trajectory in relation to the flight route and the flight profile in relation to the authorised flight level.

Moreover, the system provides air traffic controllers with state-of-the-art safety assistance tools that emit a sound and visual alarm whenever they detect a situation that could potentially become dangerous. These tools include: Short-Term Conflict Alert enhancement (STCA) and Medium-Term Conflict Detection (MTCD), which notify the controller of a risk of non-compliance with the safety distances between aircraft up to 20 minutes ahead of time. Many other safety nets and surveillance assistance systems are deployed by the CANAC 2 system and cover all situations that could generate a conflict during the different phases of a flight's progress.

In CANAC 2, there are several levels of redundancy of the systems crucial to air traffic safety: the Nominal, the Fallback and the Ultimate mode. The first is the normal operating mode. Fallback and Ultimate, respectively, are the first and second backup levels. They use independent systems which feed the work positions with radar and flight plan data and maintain vocal communications. In addition to these backup modes, these systems are physically duplicated and installed in two separate computer rooms, far apart from each other and powered by different electrical networks. All of Belgocontrol's operational systems are constantly monitored by technicians from the Technical Watch Centre set up next to the operations room.

One of the four petals with the air traffic controllers' work positions in the operations room. The four petals comprise ACC West, ACC East, APP and Training. The training petal is destined for the continuous training of air traffic controllers but can also be used for operational purposes if required by air traffic conditions.

The consoles which feature screens in triptych give immediate access to all operational information.

Capacity, punctuality, efficiency

Belgocontrol fulfils its safety mission while improving air traffic punctuality, capacity and efficiency, which has a direct impact on kerosene consumption and, consequently, airline costs and the environment. CANAC 2 breathes new life into this ceaseless quest for quality and performance. The new air traffic control system has made it possible to reorganise work in the operations room and in the control towers. Previously, the control of airspace sectors was linked to specific work positions. This implied a certain rigidity in how air traffic control was organised. CANAC 2 offers total sector flexibility, with a very broad capability to adapt to air traffic conditions and, therefore, very dynamic capacity management.

The strength of the applications, such as AMAN (Arrival Management), and their availability in the CANAC 2 air traffic control centre and the control towers permits the optimisation of tactical air traffic flow management, also reaping substantial gains in punctuality and efficiency. Thanks to the new system, controllers have real-time data on the status of the different airspace areas, such as those reserved for military use, for example. This enables them to take advantage of the temporary availability of these areas to create more direct routes for aircraft and to save on fuel and reduce greenhouse gases.

The advanced automation of certain tasks, the updating and the immediate availability of aeronautical, flight plan and radar information reduce the risk of error and allow air traffic controllers to concentrate more on the extremely accurate real-time image of traffic situations (situational awareness) afforded by CANAC 2.

European vision

CANAC 2 falls perfectly in line with the changes initiated by the Single European Sky and its technological component, SESAR (Single European Sky ATM Research).

The objective of the Single European Sky is to defragment the European airspace into Functional Airspace Blocks (FAB) independent of national borders in order to make air traffic control more efficient and as cost-effective as possible. With CANAC 2, one of the most advanced centres in Europe today, Belgocontrol is ready to bring to fruition its ambition of being an indispensable partner within the Single European Sky and FABEC (FAB Europe Central).

CANAC 2's technology, allied with the renowned, vast experience of Belgocontrol's air traffic controllers, who control Europe's most complex airspace, will make it possible to handle a greater demand in air traffic while improving safety, punctuality and the overall efficiency of air traffic control. It will also reduce the impact on the environment.

Created in collaboration with Thales ATM, an active member of the SESAR programme, CANAC 2 is based on an open architecture and will thus maintain a leading position among other European air traffic control centres.

In light of the airspace reorganisation implied by the Single European Sky, Belgocontrol, which has a capacity reserve, aims to extend its area of control with CANAC 2 so as to contribute to the construction of the Single European Sky in the safest and most efficient, economical and environmentally-friendly manner possible.

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