Airfield Lighting

Product Description

Sequential Flash Light System

- Flash Controller IDM 8200
- Elevated Flash Light Unit IDM 6291
- Inset Flash Light Unit IDM 2061
- Junction Box IDM 8205

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1. INTRODUCTION

Sequential Flashing Lighting System (SFLS), also called “Running Rabbit”, is used as a complement to precision approach lighting systems (CAT I, CAT II and CAT III). This is applicable when the visibility of approach systems needs to be reinforced (in bad weather conditions or for aerodromes placed close to street lighting that may be mistaken with runway approach lighting).

SFLS comprises of 20 light units in CAT II and CAT III systems, respectively 30 light units in CAT I systems.

SFLS units are illuminated in sequence in the direction of the approach, two times per second.

Similarly, Runway Threshold Identification Lights (RTIL) are used as a complement to approach lighting systems when the visibility of runway threshold needs to be reinforced (in bad weather conditions or when it is not possible to install a complete approach system).

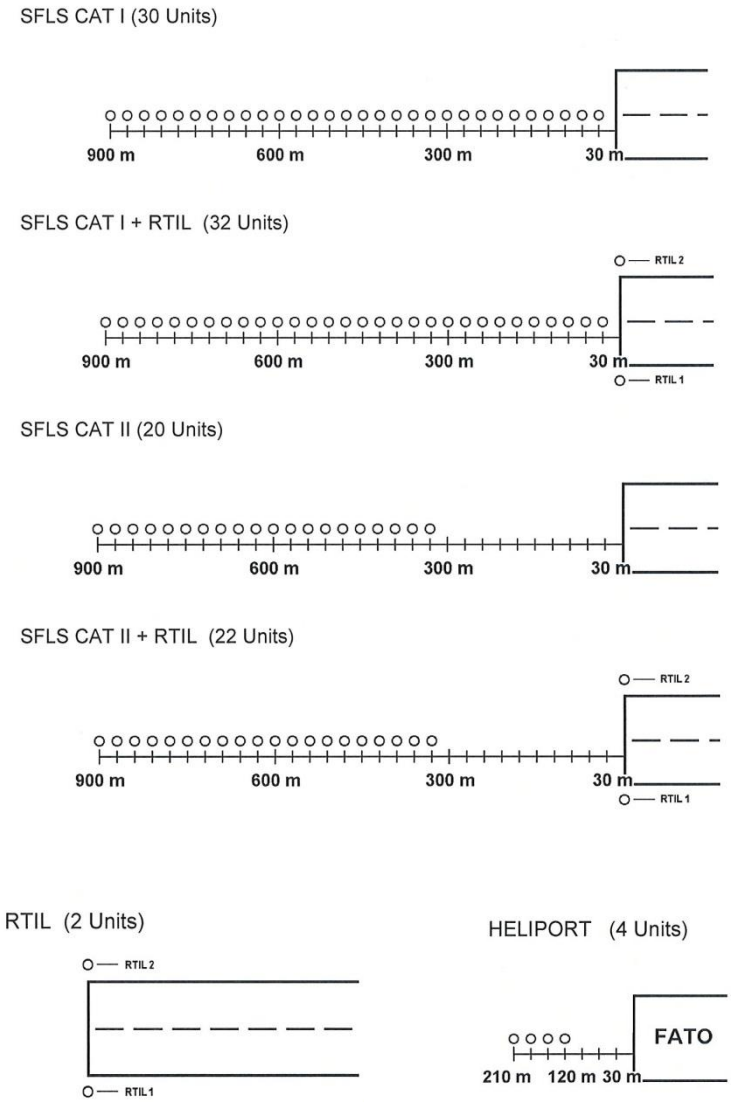
RTIL system comprises of two flashing units located on both sides of the threshold.

RTIL units are illuminated simultaneously one or two time per second.

Utilisation

- Sequential Flashing Lighting Systems (SFLS)
- Runway Threshold Identification Lights (RTIL)
- Sequential Flashing Lighting Systems for Heliport

Different kind of Flash systems setups are shown in the following figure.



Compliance

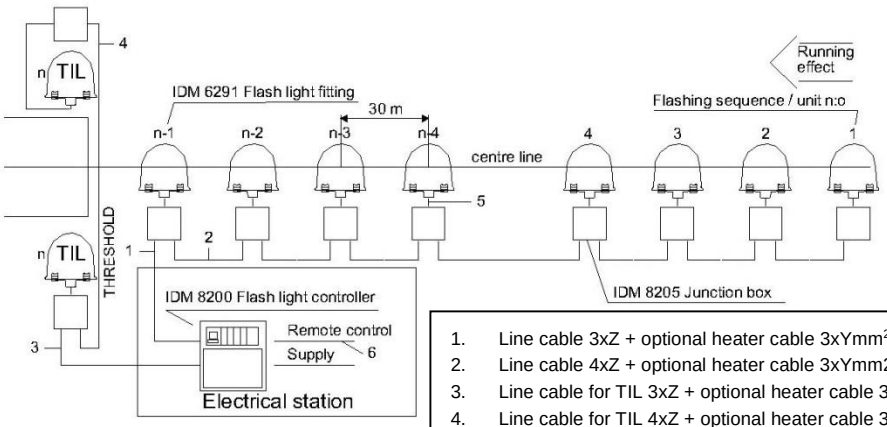
- ICAO: Annex 14, Volume I 5th edition, July 2009
- FAA AC 150/5345 51 L-849E
- STANAG 3316

2. MAIN ADVANTAGES

- SFLS is easy and quick to install. The system provides sequential flashing and complete monitoring of the light units with only a single power cable installed between the units – no control cabling is needed.
- SFLS is mains frequency based direct line coupled system which guarantees very reliable operation. Fault sensitive high voltage capacitors are not used in the system.
- SFLS can be operated at three different intensity steps (100%, 10% or 3%) and three different frequencies (2, 1,5 or 1 flash per second). System monitors all individual light units constantly. SFLS can be remote controlled using optional parallel connection adapter.

3. SYSTEM DESCRIPTION

SFLS provides sequential flashing and complete monitoring of the lamps with only a single power cable installed between the units. Light units are flashing sequentially from the beginning of the approach line towards the threshold with a frequency of 2, 1,5 or 1 per second. The frequency is selected by operator and it can be easily changed.



1. Line cable 3xZ + optional heater cable 3xYmm^2
2. Line cable 4xZ + optional heater cable 3xYmm2
3. Line cable for TIL 3xZ + optional heater cable 3xYmm2
4. Line cable for TIL 4xZ + optional heater cable 3xYmm2
5. Light fitting cable 3xQ (5xQ with heater)
6. Remote control cable

Z to be specified according to the cable length (loop resistance)
Y to be specified according to the cable distance
Q to be specified according to the cable length (loop resistance)

SFLS can operate on different intensity steps, 100%, 10% or 3%. The step can be selected locally on Controller or via remote control. If runway threshold identification lights are added to the system, the RTIL units flash very last in the system sequence. It is also possible to build up system so that SFLS line and RTIL can be operated separately.

Sequential Flash Light System consists of following components:

- Flash Controller IDM 8200
- Elevated Flash Light Unit IDM 6291
- Inset Flash Light Unit IDM 2061
- Junction Box IDM 8205

The fundamental component of the SFLS is Flash Controller IDM 8200 that is mandatory in all different setups. There are two different light units available for SFLS: Elevated Flash Light IDM 6291 and Inset Flash Light IDM 2061. The system can contain either one type of these light units or both types and number of light units can be from 2 to 32.

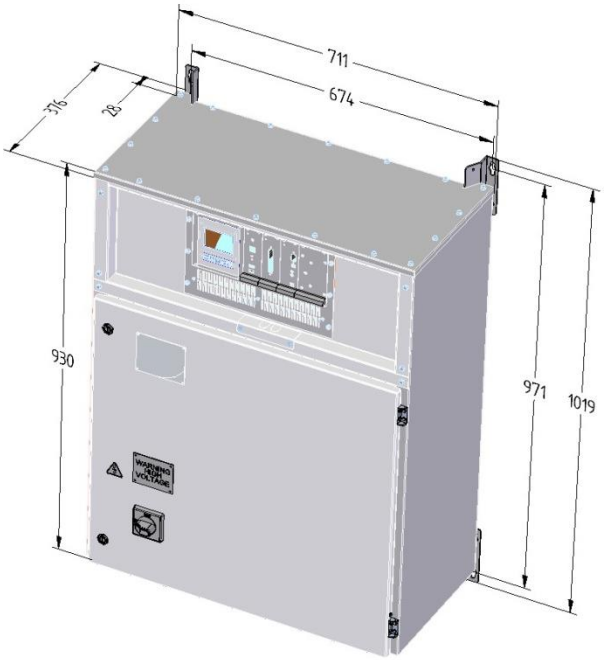
Junction Boxes IDM 8205 are used in points where main line cable branches to light fitting cable. It includes both terminals needed for cable branching and electrical safety components. With the Inset Flash Light IDM 2061, either Junction Box with a Residual Current Device (RCD) or a separate RCD is mandatory, due to safety reasons.

Main line cabling shall comprise a loop to ensure equal brightness for all light units connected. There are no special requirements for cable used in the system but cable has to be selected so that loop resistance will be between 3 and 6 ohms.

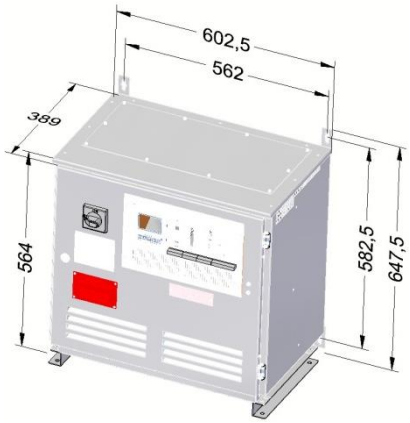
3.1 FLASH CONTROLLER IDM 8200

Flash Controller IDM 8200 is encapsulated in a wall mounted steel cabin. Protection degree is IP21 and the Controller has to be installed indoors.

There are two different cabin sizes for different types of Flash Controllers: standard size and smaller size (for systems that has only RTIL).



FLASH CONTROLLER STANDARD



FLASH CONTROLLER RTIL

Supply voltage for the Flash Controller is 400 VAC + N + PE, 50 Hz. The Controller requires a fuse bank of 40 A. It monitors and adjusts the energy supplied for each light unit. Adjusting is done by regulating current using thyristors.

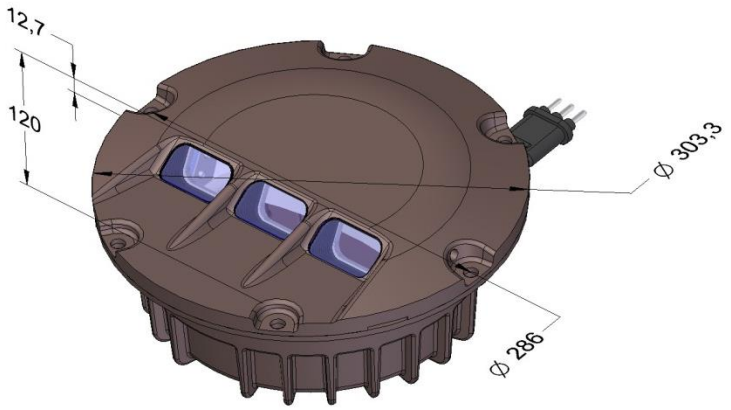
The Controller is a microprocessor based system. The intensity level can be selected locally with a rotary switch or it can be set to remotely controlled mode. The unit has also an user panel for control of system settings like: system status, detected lamp faults and other faults, etc.

The Controller has a built-in power supply for heaters installed on the Elevated Flash Light Unit IDM 6291. There are also options available such as:

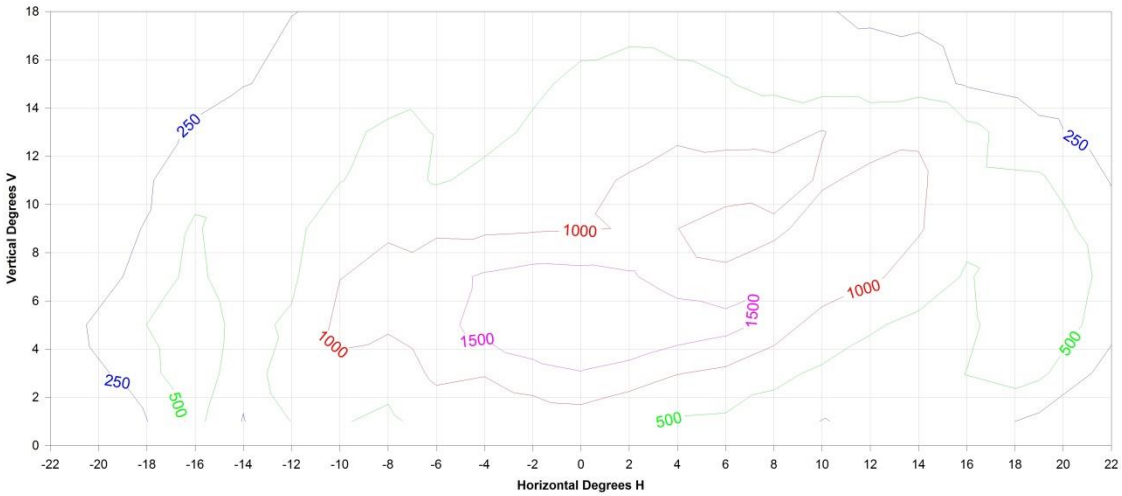
- runway threshold identification lights control which automatically shuts down both units in the case of lamp fault.
- surge arrester
- earth fault protection

3.2 INSET FLASH LIGHT UNIT IDM 2061

All components of IDM 2061 are made of high quality materials that guarantee reliability and long life-time of light unit. The prisms are sealed with silicon gaskets which enables easy replacement when prisms have become worn-out.

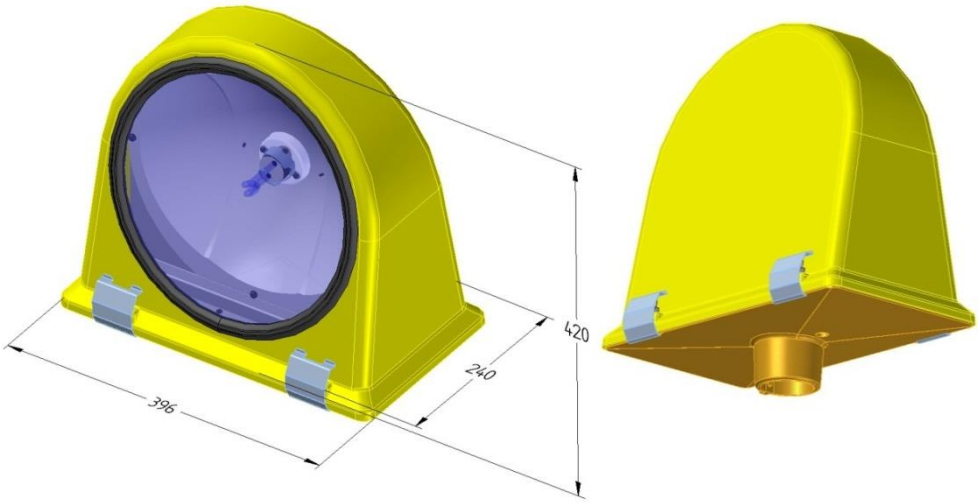


The light source of the unit is a 40 J xenon tube (same type that is used on Elevated Flash Light Unit IDM 6291). The unit is controlled by trigger PCB and installed on a standard 12” shallow (or deep) base with an operation temperature range between -40°C and +55°C.

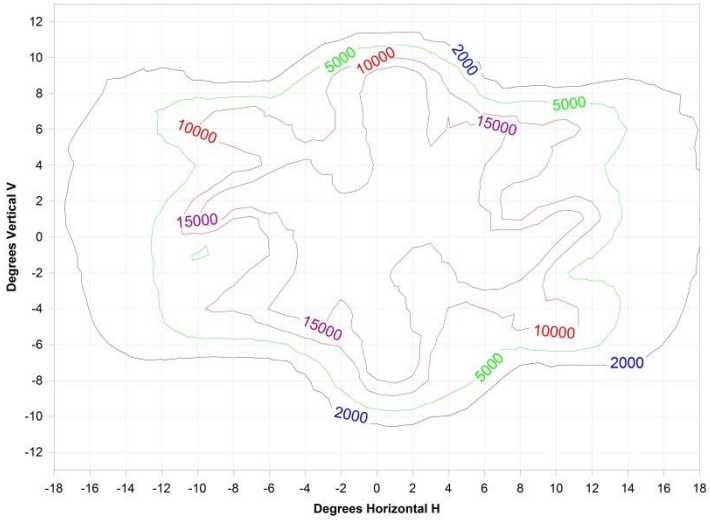


3.3 ELEVATED FLASH LIGHT UNIT IDM 6291

Elevated Flash Light Unit IDM 6291 has a fibreglass housing on cast aluminium assembly plate and mechanically strong front glass. This construction combines high protection degree with light weight.



The unit has a metal coated aluminium reflector and a built-in alignment device to adjust it to correct elevation angle (between 1°... 8°). The Light source of this unit is a 40 J xenon discharge tube.

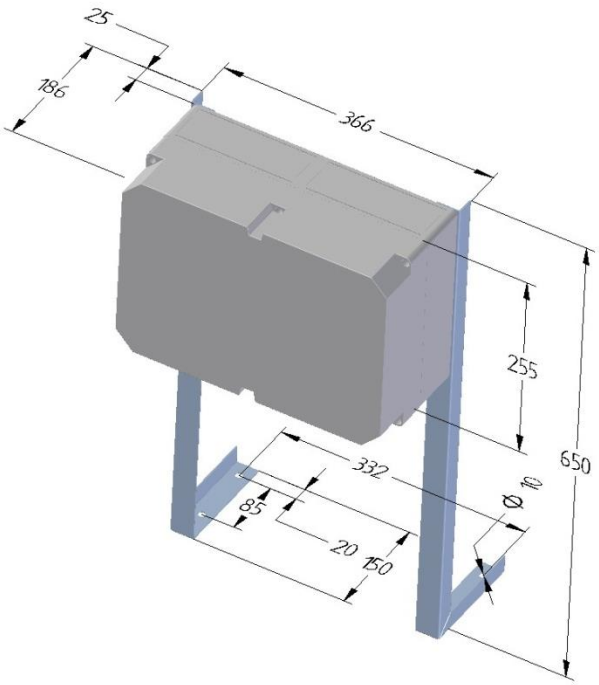


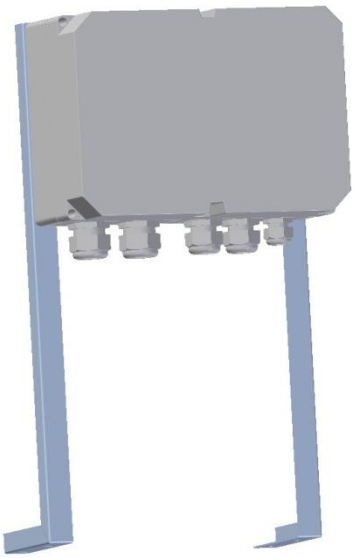
The unit is installed at the end of a ∅60 mm pipe and wiring is done through this pipe. Typically the unit is mounted on a safety mast and a mast adapter is to be used. Other types of adapters, pipes, frangible couple etc. can be also used as mounting base.

3.4 JUNCTION BOX IDM 8205

Junction Box IDM 8205 consists of a plastic enclosure and a stainless steel fixing frame. Protection degree is IP65 and the box is meant for outdoor installation connecting cables from the main cable line to single light unit.

Inside the box there are terminals for wires. The box is equipped with suitable cable inlets, necessary fuses and residual current protector (-I model applicable for Inset Light Unit IDM 2061 only). As an option, also a surge arrester is available.





4. TECHNICAL CHARACTERICS

4.1 FLASH CONTROLLER IDM 8200/ IDM 8200 –T

Characteristic	Description
Input voltage	400V +10/-10%, 50 Hz, 3 phase
Input current	25 A max. Upstream fuse recommended 40A 3-pole, max 125A
Output voltage	DC-pulses
Power rating	7,5 kVA
Efficiency	> 90% at maximum intensity
Remote control	Parallel: Selectable 24/48/60V DC, cont/imp modes. Galvanic grouping for controls, indications and alarms.
Ambient temp	0 C to +55 C, no condensing humidity
Protections	• Over current / primary, fuses • Input voltage: delay and 2 levels, warning and alarm with tripping. • Input frequency: delay and 2 levels, warning and alarm with tripping. • TIL-protection: shutdown of both if one unit fails. • Temperature: delay and 2 levels, warning and alarm with tripping. • Surge arresters (optional) • Earth fault: tripping (300mA level), (optional).
Monitors	• Lamp fault monitoring: Local and remote indication for preset number of total lamp faults. 2 levels with delay. Fault is considered when less than 50% of nominal flash energy is used.
Indications	All above protective and monitoring functions plus: Real time clock with time and date 10 row fault log with time and date labels Flash unit configuration information System information Remote control connection information
Dimensions: Cabinet Standard model	IP class IP21 Dimensions: Width 711 mm Height 1019 mm Depth 376 mm Weight 87 kg
Dimensions: Cabinet Small model (TIL)	IP class IP21 Dimensions: Width 603 mm Height 648 mm Depth 389 mm Weight 45 kg
Accessories	IDM 8200-RT remote control tester Terminal block interface for remote control cable

4.2 INSET FLASH LIGHT UNIT IDM 2061

Characteristic	Description
Light dimensions	Protrusion 12 mm Diameter 326 mm Depth 150 mm
Weight	6.7 kg 11.6 kg with base receptacle
Ingression Protection	IP67
Materials	Top cover, inner cover and base receptacle: aluminium alloy Sheet metal fastening parts: stainless steel Silicone rubber gaskets Stainless steel hardware
Surface treatment	Anodising on aluminium alloy parts
Cables and connectors	Plugs: FAA L-823 Style 6 Receptacles: FAA L-823 Style 12 Secondary cable: FAA 150/5345-70
Light sources	Xenon discharge tube, 40 J/flash U=400 V, trigger voltage 17 kV max 2 flashes at 40J Lifetime 3M flashes at 40J 8-pin base
Packing	Dimensions: 340x340x145 mm Weight: 6.8 kg
Accessories	Alignment device IDM 4306 Lifting hooks Set of maintenance tools
Application	• Approach centre line and crossbar clear unidirectional inset light for Cat. I, II and III operations. • Approach side row red unidirectional inset light for Cat. II and III operations
Specification	• ICAO Annex 14 Volume I 5th edition 2009. • Aerodrome Design Manual Part 4 Visual Aids, 4th edition 2004.

4.3 ELEVATED FLASH LIGHT UNIT IDM 6291

Characteristic	Description
Light dimensions	420 x 400 x 240 mm
Weight	6.5 kg
Ingression Protection	IP44
Materials	Glass fibre reinforced plastic cover with strong front glass Cast aluminium base Aluminium and stainless steel sheet metal and fastening parts
Surface treatment	Anodized aluminium parts Metalized reflector parts
Cables and connectors	∅14-21 mm 5-core wire cable
Light sources	Xenon discharge tube, 40 J/flash U=400 V, trigger voltage 17 kV max 2 flashes at 40J Lifetime 3M flashes at 40J 8-pin base
Packing	420 x 260 x 420 mm
Application	• Unidirectional discharge type sequential flash light
Specification	• ICAO Annex 14 Volume I 5th edition 2009 • Aerodrome Design Manual Part 4 Visual Aids, 4rd edition 2004.

4.4 JUNCTION BOX IDM 8205

Characteristic	Description
Dimensions	255 x 360 x 160 mm (enclosure), 650 x 366 x 310 mm (installed entity)
Ingression Protection	IP65
Weight	5 kg

For more information, contact Safegate Group or see www.safegate.com.

5. ORDER CODES

Ordering codes for Flash Controller IDM 8200:

IDM 8200	-L	**-S**	-E	-P	
				-P	= Parallel remote control interface
				-PB	= Parallel remote control interface with screw terminal block
				-E	= Earth fault protection
				-S	= Surge arresters option
				-L	= Line
				-L-T	= Line with RTIL option
				-T	= RTIL only (small cabin)

Ordering code for Inset Flash Light IDM 2061:
IDM 2061

Ordering codes for Elevated Flash Light IDM 6291:
IDM 6291

Ordering codes for Junction Box IDM 8205:

IDM 8205	-I	-S		
			-S	= Surge Arrester
			-I	= For Inset Light Unit (residual current protection

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SAFEGATE GROUP

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Earlier members of Safegate Group include Thorn AFL and Idman, who both have over 40 years of experience in airfield lighting solutions for airports and heliports. The latest member of Safegate Group is Avibit, a leading provider of next generation software applications and integration of efficient air traffic control systems. Safegate Group's complete range of products and services, a "one-stop shop", provides solutions to customers and airborne travellers around the globe.

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