SEQUENCE

- Various Smoke Sources
- Existing Procedures
- Smoke Procedure
- Smoke Removal
- Conclusion
VARIOUS SMOKE SOURCES

- CARGO
- LAVATORY
- CREW REST COMPARTMENT (A330/A340)

- AVIONICS
- AIR COND
- CABIN EQUIPMENT

- Easy to Identify
- Hard to Identify
EXISTING PROCEDURES

**Easy to Identify**

Supported by **ECAM** Procedure

Always the same process:

- **Isolate** (close door / hatch, close isolation valve…)
- **Extinguish** (automatic system or manual)

**Hard to Identify**

Supported by **ECAM** or **Paper** procedures

More **difficult to locate** and to treat

Process depends on the situation
EXISTING PROCEDURES

**Easy to Identify**

Supported by **ECAM** Procedure

Always the same process:
- **Isolate** (close door / hatch, close isolation valve…)
- **Extinguish** (automatic system or manual)

**Hard to Identify**

Supported by **ECAM** or **Paper** procedures

More **difficult to locate** and to treat

Process depends on the situation

In all cases, application of the **SMOKE REMOVAL PROCEDURE** may be necessary.
EXISTING PROCEDURES

When **ECAM supported**:

- Carry out **ECAM actions**

When **not supported by ECAM or ...**

- **ECAM not readable**

Refer to: **SMOKE /AVNCS SMOKE paper procedure**
In the QRH, the **SMOKE REMOVAL** procedure is facing the **SMOKE** procedure.
Standard actions: must be applied in all cases of smoke.
Dense smoke recommendations:

- AT ANY TIME of the procedure, if SMOKE/FUMES becomes the GREATEST THREAT:
  - SMOKE/FUMES REMOVAL … CONSIDER
  - ELEC EMER CONFIG ……….. CONSIDER

Refer to the end of the procedure to set ELEC EMER CONFIG
General guidelines to determine the smoke source:

(available in FCOM Volume 3 but not in QRH)

- If smoke initially comes out of the ventilation outlets in the cockpit...
  - Suspect AIR COND SMOKE.
  (In addition, very shortly after, several SMOKE warnings (cargo, lavatory, avionics) will be triggered)

- AVIONICS SMOKE warning with a piece of equipment declared faulty...
  - Suspect smoke from that piece of equipment.

- AVIONICS SMOKE warning alone ...
  - Suspect AVIONICS SMOKE.

- Avionics or forward galley smoke may be smelt or may enter the cockpit before ECAM warning activation (A320 family only).
Specific actions:

AIR COND SMOKE

- If AIR COND SMOKE SUSPECTED:
  - APU BLEED ....................... OFF
  - BLOWER .......................... AUTO
  - EXTRACT .......................... AUTO
  - PACK 1 ................................ OFF

- If smoke continues:
  - PACK 1 .............................. ON
  - PACK 2 .............................. OFF

- If smoke still continues:
  - PACK 2 .............................. ON
  - BLOWER ............................ OVRD
  - EXTRACT ............................ OVRD
  - SMOKE/FUMES REMOVAL . CONSIDER
SMOKE PROCEDURE LAYOUT

Specific actions:
CAB EQUIPMENT SMOKE

- IF CAB EQUIPMENT SMOKE SUSPECTED:
- If smoke continues:
  - EMER EXIT LIGHT ................. ON
  - COMMERCIAL ................... OFF
  - SMOKE DISSIPATION ........ CHECK
  - FAULTY EQPT ...... SEARCH/ISOLATE
- If smoke still continues or if faulty equipment confirmed isolated:
  - COMMERCIAL .................. NORM
  - SMOKE/FUMES REMOVAL . CONSIDER
SMOKE PROCEDURE LAYOUT

Specific actions:

If smoke source cannot be determined or AVNCS/ELEC smoke suspected:

- **Shed AC BUS 1 as follows:**
  - GEN 2 ......................... CHECK ON
  - ELEC page ...................... SELECT
  - BUS TIE .......................... OFF
  - AC ESS FEED ..................... ALTN
  - GEN 1 ............................. OFF
  - SMOKE DISSIPATION ............. CHECK

  **If smoke continues:**
  - GEN 1 ............................. ON
  - AC ESS FEED ..................... NORM

- **Shed AC BUS 2 as follows:**
  - GEN 1 ............................. CHECK ON
  - ELEC PAGE ........................ SELECT
  - AC ESS FEED ..................... CHECK NORM
  - BUS TIE .......................... CHECK OFF
  - GEN 2 ............................. OFF
  - SMOKE DISSIPATION ............. CHECK

  **If smoke continues:**
  - GEN 2 ............................. ON
  - BUS TIE ........................... AUTO
  - SMOKE/FUMES REMOVAL ... CONSIDER
  - ELEC EMER CONFIG ............. CONSIDER
How to set ELEC EMER CONFIG

TO SET ELEC EMER CONFIG

- EMER ELEC GEN 1 LINE ............... OFF
- EMER ELEC PWR .................... MAN ON

WHEN EMER GEN AVAIL:

- APU GEN ................................ OFF
- GEN 2 .................................... OFF

ELEC EMER CONFIG

- APPLY ECAM PROCEDURE
- IF AVIONICS SMOKE ECAM NOT TRIGGERED DO NOT PERFORM THE GEN RESET
SMOKE REMOVAL PROCEDURE

**Smoke Removal without window opening**

- Use the smoke removal procedure if there is dense smoke, toxic fumes (smell), or if smoke generation cannot be stopped.

  - **EMER EXIT LIGHT** ......................... ON
  - If fuel vapors:
    - **CAB FANS** ................................. ON
    - **PACK 1+2** ................................. OFF
  - If no fuel vapors:
    - **CAB FANS** ................................. OFF
    - **PACK FLOW** .............................. HI
    - **LDG ELEV** ............................... 10000 FT/MEA
    - **DESCENT (FL 100, or MEA, or minimum obstacle clearance altitude)**  .... INITIATE
    - **ATC** ........................................ NOTIFY
    - **SMOKE/FUMES/ AVNCS SMOKE PROC** ........ CONTINUE

  While descending, continue applying the appropriate steps of the SMOKE/FUMES/AVNCS SMOKE procedure depending on the suspected smoke source.

  - **At FL100 or MEA**:
    - **PACK 1+2** ................................. OFF
    - **MODE SEL** ................................. MAN
    - **MAN V/S CTL** ............................. FULL UP
    - **RAM AIR** ................................. ON
  - If smoke persists, cockpit window opening:
    - **MAX SPEED** ............................. 200 KT
    - **COCKPIT DOOR** ........................... OPEN
    - **HEADSETS** ................................. ON
    - **PNF COCKPIT WINDOW** ............... OPEN
  - When window is open:
    - **NON-AFFECTED PACK(s)** ............. ON
    - **VISUAL WARNINGS**
      (noisy CKPT) ............................... MONITOR
    - **SMOKE/FUMES/ AVNCS SMOKE PROC** ... CONTINUE

**If cockpit window opening required …**
Apply the procedure (regardless of whether a warning is triggered or not)

Apply the “standard actions”.
Determine the smoke source.
Depending on the smoke source, apply the specific actions.

At any time, if necessary:

EMER EXIT Lights ON
Descend to 10,000ft or MORA for smoke removal.
Set ELEC EMER CONFIG.
General guidelines to determine the smoke source:

(available in FCOM Volume 3 but not in QRH)

Guidelines to determine smoke source:

- If smoke initially comes out of the ventilation outlets, the crew may suspect AIR COND SMOKE. In addition, very shortly thereafter, several SMOKE warnings (cargo, lavatory, avionics) will be triggered. The displayed ECAM procedures must be applied.
- Following an identified ENG or APU failure, smoke may emanate from the faulty item through the bleed system and be perceived in the cockpit, and/or in the cabin. In such a case, it will be recirculated throughout the aircraft, until it completely disappears from the air conditioning system.
- If only the AVIONICS SMOKE warning is triggered, the crew may suspect avionics smoke.
- If the smoke is detected while an equipment is declared faulty, the crew may suspect that smoke is coming from this equipment.
- Avionics or forward galley smoke may be smelt, or may enter in the cockpit before ECAM warning activation.