MODULAR ELEVATOR:
- COMPOSITION A LA CARTE
- DIFFERENT TECHNOLOGIES OF CABINETS
- DIFFERENT TECHNOLOGIES OF MECHANISMS OF DOORS
- COMMON OPERATIVE PART
- STUDY, MAINTENANCE, SETTINGS

TECHNOLOGY KITS:
- DETAILED STUDY OF THE ELEVATOR FUNCTIONS
- SUPPORTS INTENDED FOR THE REALIZATION OF PRACTICAL ACTIVITIES

STUDY SYSTEMS:
- COMPACT ELEVATORS WITH ELECTRONIC CARD OR PLC
- SUB-SYSTEMS OF FUNCTIONAL MOTORIZED ELEVATORS (WINCHES, DOORS)
- TECHNICAL STUDY / FUNCTIONAL APPROACH
**ASC 001**

**DIDACTIC ELEVATOR**

- Study of the operation of an elevator.
- Technological study of an elevator
- Parameterizing the elevator.
- Mechanical settings (sensors, brake, stop positions).
- Elevator installation maintenance.
- Identification of the source of electrical failures.
- Diagnosis and replacement of defective parts.

**EXPERIMENTAL CAPABILITIES**

The ASC 001 is a range of modular hardware dedicated to technical and vocational education around the theme of the elevator. This range is architecture around an operative part ASC 010, to which can be connected different typologies of control cabinets (ASC 051 and 053).

Different types of elevator doors (ASC complementary modules 311, 312 or 313) can also be associated to the control cabinets in order to form a complete elevator.

The operative part includes different types of sensors commonly found in tertiary elevators. The winch as well as the guides, counterweight, parachute, sensors… are real components of elevators.

Control cabinets and the doors mechanisms are also of type «real» in order to provide direct analogies between this system and an actual elevator.

The user can thus proceed with the commissioning and the parameterization / adjustment of an elevator installation (setting of sensors, assignment the rules of door openings or of interception of the cabin during its movement) but also perform maintenance and repair (defective component provided to create real failures).

To be functional, the elevator must be made of the operative part (ASC 010) and a control cabinet (ASC 051 or 053).

**TECHNICAL DETAILS**

- Supply: 400 Vac – 50 Hz – 20 A
- Type of electrical supply: 3 phase (+) + Neutral + Earth
- Dimensions: LxWxH: 2100x1400x3300 (mm)/Weight: 950kg

**SERVICES REQUIRED**
ASC 030

ELEVATOR DOORS MECHANISM

EXPERIMENTAL CAPABILITIES
- Adjustment of door guiding geometry
- Adjustment of doorstops for a safe closing
- Assembling / disassembling of different parts (opening cable, roller bearings, sliding bearings, driving belt...)

TECHNICAL DETAILS
- Anodized aluminum frame made of 45*45mm cross section beam with four rubber feet
- Painted Steel beam support all the opening mechanism for central opening
- PCV door panel thickness 8mm
- Real elevator sliding rail made of aluminum
- Motor and electronic card (not viewable – not electrically supplied)
- 4 rollers made of polyamide mounted on bearing
- Driving belt tightener adjustment by sliding
- Safe electrical contacts for door opening (not cabled)
- Cable and pulley for symmetrical opening

SERVICES REQUIRED

DIMENSIONS
- LxWxH: 1800x700x700 (mm) / Weight: 50kg

ASC 031

ELEVATOR DOORS MECHANISM SIDE OPENING

EXPERIMENTAL CAPABILITIES
- Adjustment of door guiding geometry
- Adjustment of doorstops for a safe closing
- Assembling / disassembling of different parts (opening cable, roller bearings, sliding bearings, driving belt...)

TECHNICAL DETAILS
- Anodized aluminum frame made of 45*45mm cross section beam – Four rubber feet
- Painted Steel beam – support all the opening mechanism – for central opening
- Door panel – PCV made of – thickness 8mm
- Real elevator sliding rail – aluminum made of
- Motor and electronic card (not viewable – not electrically supplied)
- 4 rollers – made of polyamide – mounted on bearing
- Driving belt tightener – adjustment by sliding
- Safe electrical contacts for door opening (not cabled)
- Cable and pulley –second panel drive while opening / closing

SERVICES REQUIRED

DIMENSIONS
- LxWxH: 1400x700x700 (mm) / Weight: 40kg
Elevators

ASC 032

LOCKING MECHANISM FOR ELEVATOR SWING DOOR

EXPERIMENTAL CAPABILITIES
- Adjustment of unlocking mechanism.
- Adjustment of locking mechanism.

TECHNICAL DETAILS
- Anodized aluminum frame made of 45*45mm and 18*31 mm cross section beam – Four rubber feet
- Swing door – reduced size (approx. 300*400mm)
- Locking mechanism
- Unlock lever
- Lock sliding pistons (two concentric pistons)
- Transparent part to observe the internal mechanism
- Screw for locking position adjustment (not viewable)

SERVICES REQUIRED

DIMENSIONS
- LxWxH: 700x600x700 (mm)/Weight: 10kg

ASC 040

SPEED LIMITER FOR ELEVATOR

EXPERIMENTAL CAPABILITIES
- View of dynamic behaviour.

TECHNICAL DETAILS
- Anodized aluminum frame made of 45*45mm cross section beam – Four rubber feet.
- Hand driven crank.
- O-belt.
- Transparent safety device (may be removed).
- Speed limiter – critical speed: 0.6 m/s -0.8m/s.
- Electrical contact (not connected).
- Locking pendulum made of cast iron.

SERVICES REQUIRED

DIMENSIONS
- LxWxH: 700x400x500 (mm)/Weight: 40kg
STUDY KIT SPEED LIMITER-TWO-WAY PARACHUTE

EXPERIMENTAL CAPABILITIES
- Removing and replacing of the limiter cable and system setting.
- Removing and replacing of a pad.
- Removing and replacing the limiter tensioner counterweight and adjusting it.
- Setting the linkage of the parachute.
- Adjustment of the parallelism of the elevator guides and lubrication thereof.
- Change the setting of the theoretical engagement speed of the limiter.
- Theoretical setting of operation of the bistable limiter catch sensor on the system.
- Theoretical setting of operation of the burst sensor of bistable cable on the system.
- Functional analysis, kinematics and dynamics, effort and time calculations of the limiter.

TECHNICAL DETAILS
- Speed limiter 2 ways with pulley 200 mm.
- Manual winch of displacement.
- Pendulum of the limiter.
- Guides of each side.
- Layout cabin elevator equipped with pads.
- Cable ø6mm passing through the two pulleys and connected to parachute linkage by the lever.
- Low traverse tb3 parachute dual direction.
- Operating lever of linkage of the parachute.
- Limiter tensioner dual directions with pulley 200 mm.
- Weight of tensioner.
- Two traverses for resting the cabin ensemble down.
- Aluminium structure anodised mounted on locking swivel casters.

SERVICES REQUIRED

DIMENSIONS
- LxWxH: 1000x800x1750 (mm)/Weight: 110kg
ELEVATOR WINCH

EXPERIMENTAL CAPABILITIES
- Setting the strokes and the stops of the brake shoes.
- Winch lubrication: Control of oil level and/or lubrication.
- Electrical wiring board.
- Parameterization of the controller.
- Study of low speed sequence/high speed and direction changes.

SERVICES REQUIRED

SUPPLY
- Electricity: 400V tetrapolar + earth/16A-50/60 Hz

DIMENSIONS
- LxWxH: 1250x1250x1800 (mm)/Weight: 350kg
- Oil volume reducer: 3.5 liters

TECHNICAL DETAILS
- The sub-system ELEVATOR WINCH allows the key maintenance of the lifting systems of elevator with winches.
- Maintenance interventions.
- The unit is delivered complete with teaching handbook and technical file.
- Material resulting from urban elevators.
- Teaching concerned: Maintenance and elevator manufacturers trainings.

SUBSYSTEM PRESENTATION:
- Winch:
  - Winch mounted on profile frame with wheels
  - Hoisting engine asynchronous three phase dual-speed
  - Braking system.
  - Shoes and linings with stroke and stop setting.
  - Double safety sink sockets for connecting the electrical box to the engine + brake

- 1 electric box including:
  - 1 isolator switch tetra
  - Differential + circuit breakers
  - On/Off button
  - 1 Cycle management PLC
  - 1 Switch revision mode/normal mode
  - Blinking lights (call buttons and cabin sending)
  - 1 reserve space for integration of boards described below

- 1 Power board «two speed» including:
  - 1 Quick connector allowing the connection of the board to the control and distribution system of upstream energy
  - The necessary switches for the control of engine with 2 speeds
  - Switches high speed/low speed

- 1 Power board «variator» including:
  - Quick connector allowing the connection of the board to the control and distribution system of upstream energy
  - A frequency converter
**ASC 150**

**ELEVATOR MANEUVER MAINTENANCE VIA PLC WITH REDUCED OPERATING PART**

**EXPERIMENTAL CAPABILITIES**

- Study and maintenance of an industrial maneuver cabinet with elevator converter and its operating part.
- Programming a logic controller Millenium type in Ladder language (LD) or function block diagram (FBD). Ability to operate via PLC TWIDO on request.
- Study and programming of a frequency converter ATV-type (acceleration phase / deceleration, multiple speed management, current limit, etc.). Visualization via software of physical variables (speed, torque, current, voltage, etc.).
- Study and setting of position sensors, limit switches, optical, optoelectronic laser distance, positioning flags...
- Study of the operation of a winch, of a two-way speed limiter, of the management of priorities housings and of revision, etc.
- System maintenance, mechanical adjustable (torque limiter, chain tension, slider ball skids, etc).
- Divisions and levels concerned: Elevator manufacturer, Automation, industrial maintenance, electrical engineering, of the Bac pro to BTS.

**TECHNICAL DETAILS**

The position of elevator maneuver maintenance ASC 150 allows to have a reduced dimensions bench for the study and maintenance of an variator elevator control cabinet. This system has the distinction of being controlled via a logic controller (or PLC type TWIDO on request) to allow the study and programming in different languages:

- With contacts (LD) is a graphic language. It allows the transcription of relay diagrams; it is suitable for combinatorial treatment. It provides basic graphic symbols: contacts, coils, and blocks. The execution of specific calculations are possible within operations blocks.
- FBD mode allows graphic programming based on the utilization of predefined function blocks. It offers a wide range of basic functionalities: timer, counter, logic ...

The reference programs incorporating the adjustment parameters «factory» are also provided to allow you, at any time to reset the machine.

- The robust design of this equipment makes it perfectly suited for school use.
- Its anodized aluminum support structure on wheels and gives it great strength as well as flexibility of integration into your premises.

- Support structure in aluminum profile adapted section representing an elevator shaft 3 levels, mounted on 4 swivel castors with blocking, of reduced dimensions for passageway through standard doorways.
- Electrical box incorporating the connector for connection to a door module and the control panel with the cabin buttons and landing, the display, the test / reset limiter, emergency stop, etc ...
- Technology dual optical sensor with flags 3 levels, uncrossed
- Cabin reduced with lighting, mounted on block guidance on rail equipped with protective stopper
- Recall box
- Box inspection / revision, with magnetic backing
- Asynchronous geared motor open loop equipped with a torque limiter (safety)
- 2 large doors with handle for easy access
- Two-way speed limiter to study the operation
- Box LED door area with magnetic sensor
- Set of rocker arms of limit switch, slowdown and revision
- Optoelectronic position sensor with laser light (varied technology)

**SERVICES REQUIRED**

**SUPPLY**

- Electrical supply: 400 Vac – 50 Hz – 20A

**DIMENSIONS**

- LxWxH: 1250x1250x1800 (mm)/Weight: 350kg
- Oil volume reducer: 3.5 liters
MANEUVERING MAINTENANCE OF ELEVATOR INVERTER WITH REDUCED OPERATIVE PART

EXPERIMENTAL CAPABILITIES

- Study and parameterization of industrial control cabinet with elevator inverter, absolute position sensor or flag system with dual-optical sensor, 3 levels: direct programming on electronic card using the buttons and integrated display or via a PC (RJ45 connection).
- Study of the operation of a winch, a speed limiter two ways, of the priority management of the inspection casings and of revision, etc.
- Setting the position sensors, limit switches, positioning flags…
- Diagnostic and maintenance

TECHNICAL DETAILS

- Supporting structure of aluminum profile with suitable section, representing the elevator shaft 3 levels, mounted on 4 pivoting locking casters, with reduced dimensions to pass through standard doorways.
- Electrical box transparent for viewing the display of the motherboard. It includes the connector for the connection to a door module and the control panel with the cabin and landing buttons, the display level, the test / reset limiter, emergency stop, etc.
- Dual Technology Optical Sensor with flags 3 levels, uncrossed.
- Reduced cabin with lighting, mounted on shoe guide rail equipped with thrust protection.
- Reminder casing.
- Casing of inspection / revision, with magnetic support.
- Asynchronous geared motor open loop 1.1kW, with brake and torque limiter of safety.
- 2 large doors with handle for easy access.
- Speed limiter two way for studying the functioning.
- Casing LED door zone with magnetic sensor.
- Ensemble of rocker arms of limit switch, slowdown and revision.
- Absolute sensor technology with magnetic strip.
LANDING DOOR AND CABIN DOOR OF ELEVATOR - LATERAL OPENING

TECHNICAL DETAILS
- Mobile anodized aluminum structure - 4 pivoting braked wheels
- 4 large access doors- polycarbonate panels. Locking control by safety switch.
- Electrical box- status lights and control buttons for use in autonomous post.
- Industrial connector - for connection to the control cabinet of the elevator (ASC 051 to 053) and the maintenance stations of elevator maneuver (ASC150 to 153)
- Operator for cabin doors with lateral opening + doors with reduced height
- Operator for landing doors with lateral opening + doors with reduced height
- 2 Suspended mobile chassis: each one support one of the operators presented above and the associated doors - these chassis are mounted on the mobile chassis suspended by cables - the vertical guidance of the chassis is achieved by flanged rollers - a handle for maneuver allows vertical sliding of the 2 chassis one relative to the other (see orange arrows below) to reproduce the actual conditions of intervention on the operators (elevator offset from the landing).
- Management card of the operating modes - inverter feature (for engine doors) - signal management of limit switch opening / closing
- Lock mechanism of landing door
- Light barrier

SERVICES REQUIRED

DIMENSIONS
- LxWxH: 2400x1000x2100 (mm)/Weight: 300kg
- 230V 50Hz – mono
LANDING DOOR AND CABIN DOOR OF ELEVATOR - CENTRAL OPENING

EXPERIMENTAL CAPABILITIES

- Functional analysis
- Technological analysis
- Reading of electrical diagrams
- Diagnosis
- Repair
- Improvement
- Settings

TECHNICAL DETAILS

- Mobile anodized aluminum structure - 4 pivoting braked wheels
- 4 large access doors- polycarbonate panels. Locking control by safety switch.
- Electrical box- status lights and control buttons for use in autonomous post.
- Industrial connector - for connection to the control cabinet of the elevator (ASC 051 to 053) and the maintenance stations of elevator maneuver (ASC 150 to 153)
- Operator for cabin doors with side opening + doors with reduced height
- Operator for landing doors with side opening + doors with reduced height
- 2 Suspended mobile chassis: each one support one of the operators presented above and the associated doors - these chassis are mounted on the mobile chassis suspended by cables - the vertical guidance of the chassis is achieved by flanged rollers - a handle for maneuver allows vertical sliding of the 2 chassis one relative to the other (see orange arrows below) to reproduce the actual conditions of intervention on the operators (elevator offset from the landing).
- Management card of the operating modes - inverter feature (for engine doors) - signal management of limit switch opening / closing
- Lock mechanism of landing door
- Light barrier

DIMENSIONS

- LxWxH: 2400x1000x2100 (mm)/Weight: 300kg
- 230V 50Hz – mono

SERVICES REQUIRED

ASC 312
EXPERIMENTAL CAPABILITIES

- Functional analysis
- Technological analysis
- Reading the electrical diagrams
- Diagnosis
- Repair
- Improvement
- Settings

SERVICES REQUIRED

DIMENSIONS
- LxWxH: 2400x1000x2100 (mm)/Weight: 300kg
- 230V 50Hz – mono

TECHNICAL DETAILS

- Mobile anodized aluminum structure - 4 braked swivel wheels
- 4 wide doors of access- polycarbonate panels. Closing control by safety switch.
- Electrical box- status LEDs and control buttons for use in stand-alone post.
- Industrial connectors - for connection to the control cabinet of the elevator (ASC 051 to 053).
- Operator of cabin door with lateral opening + reduced height doors.
- Operator of landing swinging door + reduced height doors.
- 2 movable suspended chassis: each support one of the operators listed above and the associated doors - these chassis are mounted on a mobile chassis suspended by cables, the vertical guide of this chassis is formed by flanged rollers - a handle for maneuver allows the vertical sliding of the 2 chassis one with respect to the other (see orange arrows below) to replicate real intervention conditions on operators (elevator offset from the landing).
- Card of management of operating modes - dimmer function (for doors engine) - management of end switches signals opening / closing.
- Landing door lock mechanism - locking bolt with electrical position control.
- Light barrier.