LWS is a ventilated facade system specifically adapted for installation with rope access techniques, removing the need for scaffolding or auxiliary structures.

Developed within the European framework of sustainability programs, LWS system is the product of an investigation project carried out through a period of 3 years. This innovative investigation started when looking for alternatives to the more traditional techniques that currently exist in the market for multi-housing construction. The existing construction methods in Europe, and in Spain particularly, require a complex scaffolding structure. These structures add more time, noise, blocked windows... to the construction process. Once these problems were identified, the search for alternatives started.

After evaluating different options, the rope access industry offered the greatest advantages to the installation process. In this moment, a local rope access company from Spain was added to the research team and the development of LWS started.

Technology, prefabrication, and efficiency are the three fundamental pillars of this project, whose aim is to create a high-quality product resulting from a complex industrial development process.

LWS is a system with a high degree of prefabrication, which allows for an additional time reduction at the job site. Additionally, the mechanical assembly of the pieces provides a greater guarantee and durability to the facade system, reducing imperfections or installation errors.

The installation of the facade is one of the most revolutionary aspects of it. This process can be divided into five different steps:

**Step 1:** Attaching the vertical tracks to the structure of the existing building

The first step consists of installing the vertical tracks in a perfect vertical line. These should be fixed, preferably to the structural floors of each plant, providing a continuous cavity behind the ventilated facade.

**Step 2:** Installing the thermal insulation

Once the vertical aluminum tracks are placed the thermal insulation layer is installed. The insulation must be placed continuously, to avoid thermal bridges.

**Step 3:** Assembling the shutters into panels

The facade panels arrive at the site assembled in smaller sections. They are then joined together with an automatic seamer and they are then stacked.

**Step 4:** Raising the shutter panels along the tracks

The shutter panels are raised with the help of a worker at the street level. A system of triangulated pulleys located on the roof ensures the sliding of the panels safely. The tracks ensure the correct lifting of the facade.

**Step 5:** Attaching the shutter panels to the tracks

Once the panels are in place, they are mechanically attached to the tracks.

In 2015, the facade system was successfully installed in a multifamily housing block in Bilbao, Spain. The efficiency, fast installation of the facade, and aesthetics of the final product made the owners very satisfied with the result.

After installing the first system, some aspects of the system, like the gaskets, and tracks have been redesigned to be even more efficient. Since then, the interest in the system is growing in the area.
LWS
LIGHT WEIGHT SHUTTER
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MAIN ADVANTAGES

THE INSTALLATION PROCESS

1. ATTACHING THE VERTICAL TRACKS TO THE EXISTING BUILDING
   - The vertical tracks are used instead of installing the vertical tracks in a custom vertical line. This should be done to ensure compatibility with the structural elements of the facade, providing a continuous and efficient solution for the installation process.

2. INSTALLING THE THERMAL INSULATION
   - Once the vertical aluminum tracks are placed, the thermal insulation layer is installed. The insulation must be placed accurately to avoid thermal bridges.

3. ASSEMBLING THE SHUTTERS INTO PANELS
   - The shutter panels are assembled into panels in a smaller version. They are then joined together with an acrylic sheet and are then fixed onto the vertical tracks.

4. RAISING THE SHUTTER PANELS ALONG THE TRACKS
   - The shutter panels are raised with the help of a worker on the street level. A hydraulic actuator is used to ensure the safety of the panels. The tracks ensure the correct alignment of the facades.

5. ATTACHING THE SHUTTER PANELS TO THE TRACKS
   - Once the panels are in place, they are mechanically attached to the tracks.

SYSTEM DETAILS

- LWS box
- Shutter
- Air vent
- Insulation
- Keystoning template
- Stop gap

After evaluating different options, the box access system offered the greatest advantages to the installation process. In the event of a flood, the access system can be quickly dismantled, which makes it ideal for use in a fast installation process. In addition, the installation process can be modified without changing the facade, as it is designed to allow for an easy adjustment of the vertical tracks, which are not modified once they are installed. The installation of the facade is one of the most important aspects, as it forms the base of the system.

LWS is a system with a high degree of flexibility, which allows for an additional level of flexibility in the facade design. Additionally, the mechanical stability of the system provides a high degree of adaptability to the facade. In the event of a flood, the system can be easily dismantled, which makes it ideal for use in a fast installation process. The installation of the facade is one of the most important aspects, as it forms the base of the system.

In 2015, the facade system was successfully installed in a workshop located in the city of Barcelona. The efficiency of the installation of the facade was noted, and the facade was later modified without changing the system. After installing the first system, some aspects of the facade were slightly modified, and mechanical irregularities were fixed. This process can be repeated as many times as needed in the system, growing in the area.

SHUTTER DETAIL

- 1. Extruded profile
- 2. AluSTAR
- 3. Curved
t- 4. Bracket

STRUCTURE CONNECTION DETAIL

- 5. Joint
- 6. Pressure seal
- 7. Rubber gasket
- 8. Vertical track
- 9. Nut
- 10. Stop gap