

## Replacement of Fans at a Waste Incineration Plant – Dublin, Ireland

HLI was engaged to develop and implement a technological transport concept for the replacement of fans at a waste incineration plant in Dublin. The scope of work included two independent fan systems of significantly different dimensions and weights – two WP2 fans weighing approximately 10 t each and two WP7 fans weighing approximately 45 t each – whose replacement had to be carried out inside the existing industrial facility, while maintaining continuous compliance with safety requirements and taking into account numerous spatial constraints. The project represented a major engineering challenge due to the limited access to the equipment, the necessity to use the existing hall structure, and the impossibility of applying conventional crane lifting methods.

Each stage of the work required the prior design of dedicated auxiliary structures and detailed planning of the horizontal and vertical transport sequence. The HLI team was responsible for developing the fan replacement methodology, preparing technical documentation, analysing the loads occurring during the fan transport operations, and selecting and installing the transport systems. The entire operation was designed in such a way as to minimise interference with the existing infrastructure and ensure full control over the movement of large-size components within the confined technological space.



## Thanks to this extraordinary project

the HLI team gained further valuable experience, developing its competencies in advanced lifting operations. The scope of responsibilities of our team included:

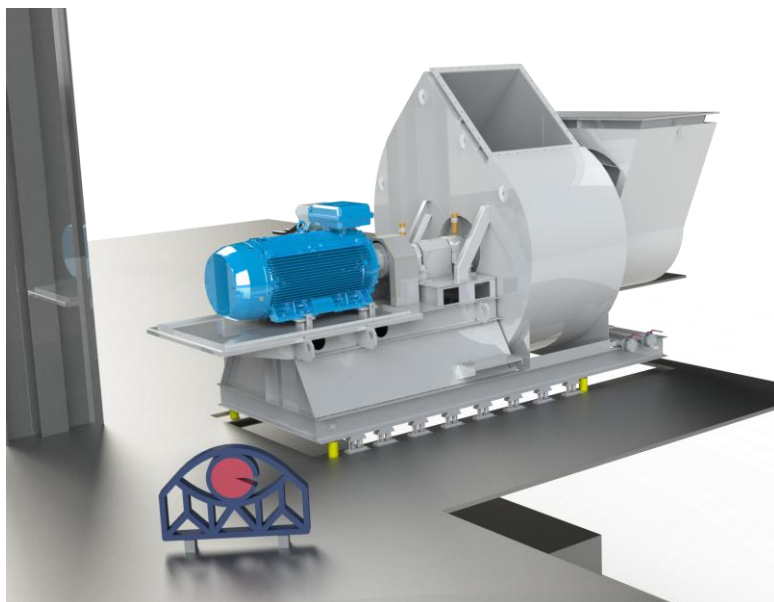
- Development of the complete methodology for the replacement of WP2 and WP7 fans
- Design of dedicated support structures and the transport system
- Performance of structural strength analyses of the structures used
- Planning of horizontal and vertical transport of the equipment
- Preparation of procedures for the safe dismantling and installation of the fans
- Supply, installation and operation of specialised transport systems
- Technical supervision over the execution of all stages of the works

## Sequence for the replacement of WP2 fans

### Phase I – Dismantling and transport of the old fan

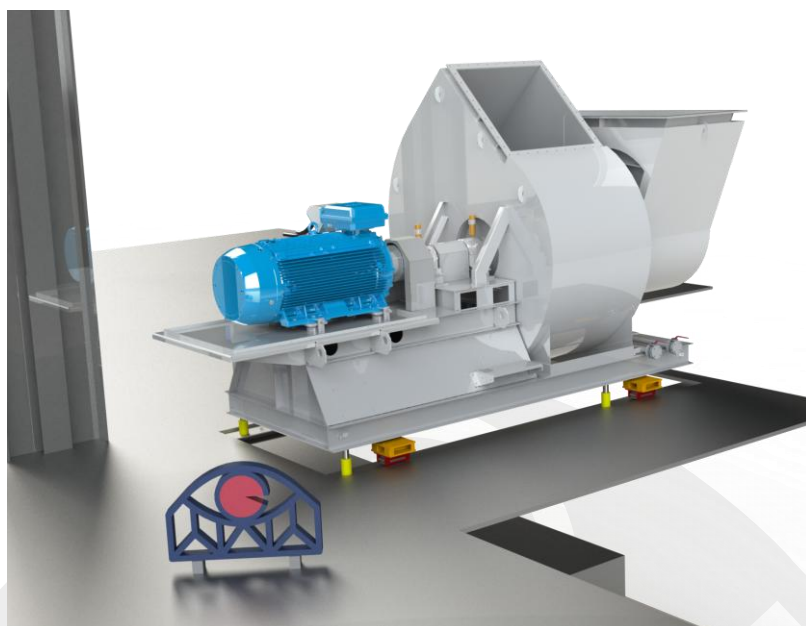
#### Step 1: Preparatory works

Preparation of the fan for replacement by disconnecting it from the installation, partially dismantling the ducts, securing the transport opening, and installing a temporary structure intended for vertical transport.



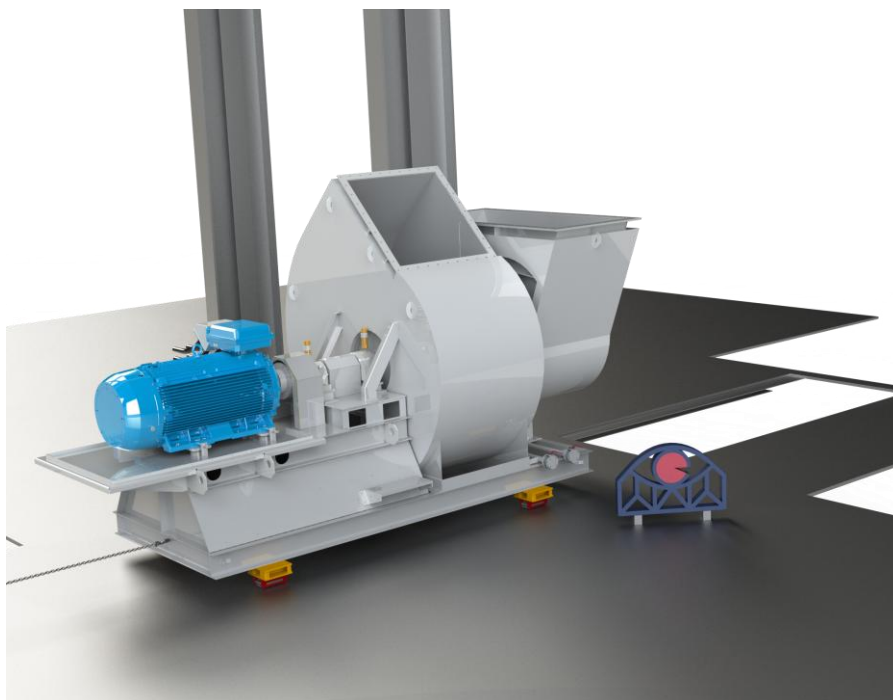
#### Step 2: Preparation of the fan for movement

Lifting the fan, dismantling the vibration isolation elements, and installing transport rollers to enable safe movement.



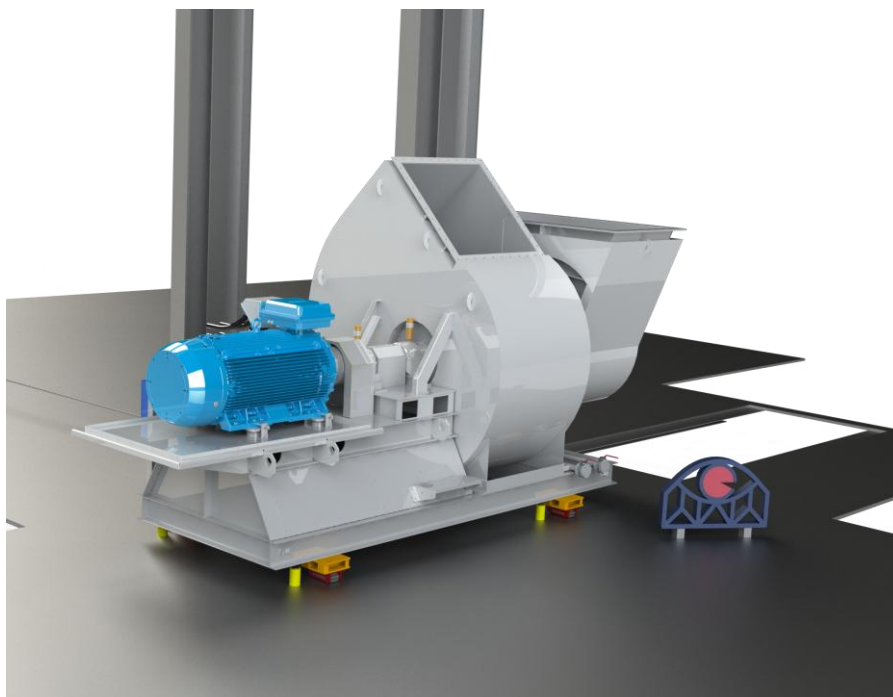
**Step 3:** Moving the fan out of its operating position

Horizontal transport of the fan forward from its operating position using transport rollers and hoists.



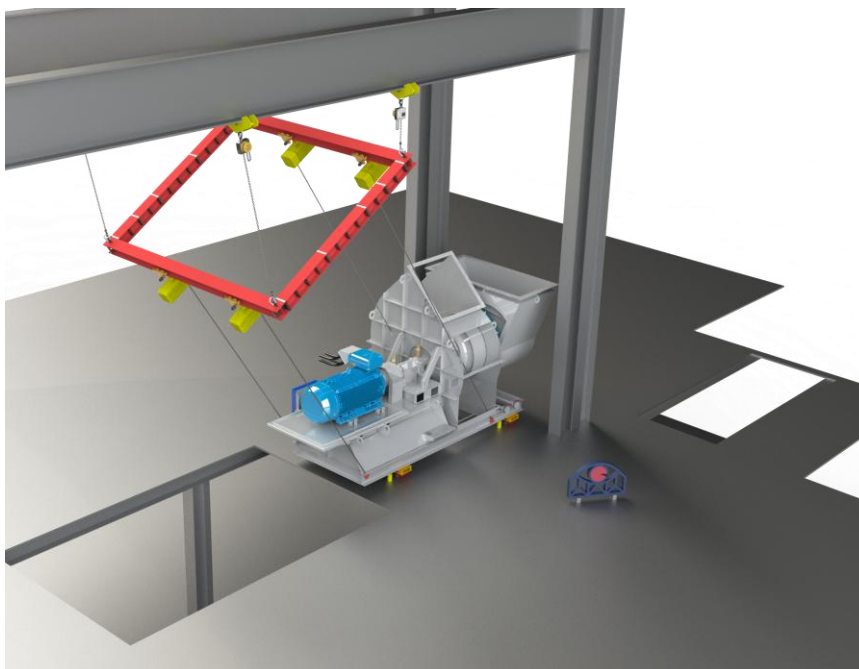
**Step 4:** Horizontal transport of the fan to the transport opening

Relocation of the hoist suspension points and horizontal transport of the fan towards the transport opening, without changing its orientation, using transport rollers and hoists.



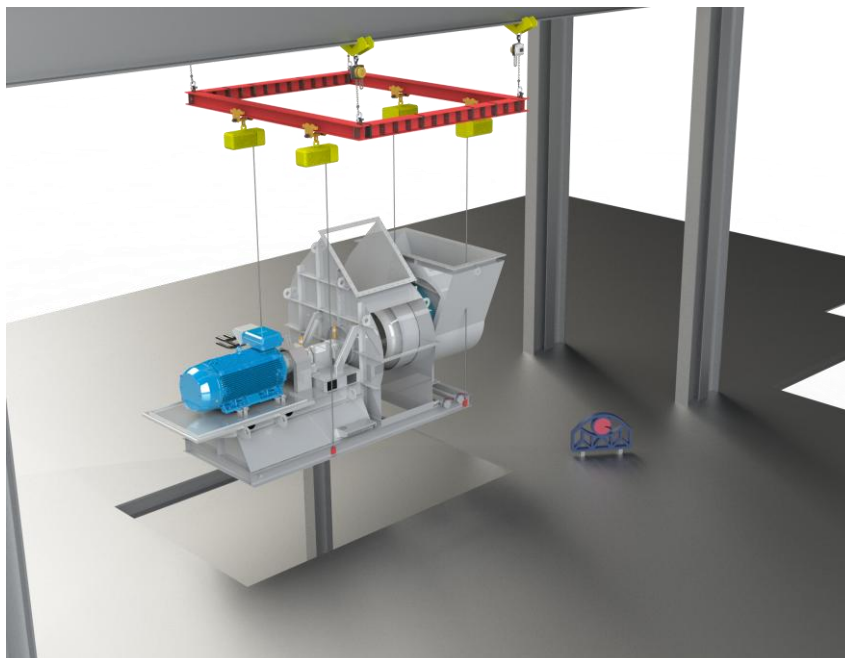
### Step 5: Securing the system for vertical transport

Attachment of the hoists to the fan lifting points and positioning of the fan above the transport opening using the suspended structure intended for vertical transport.



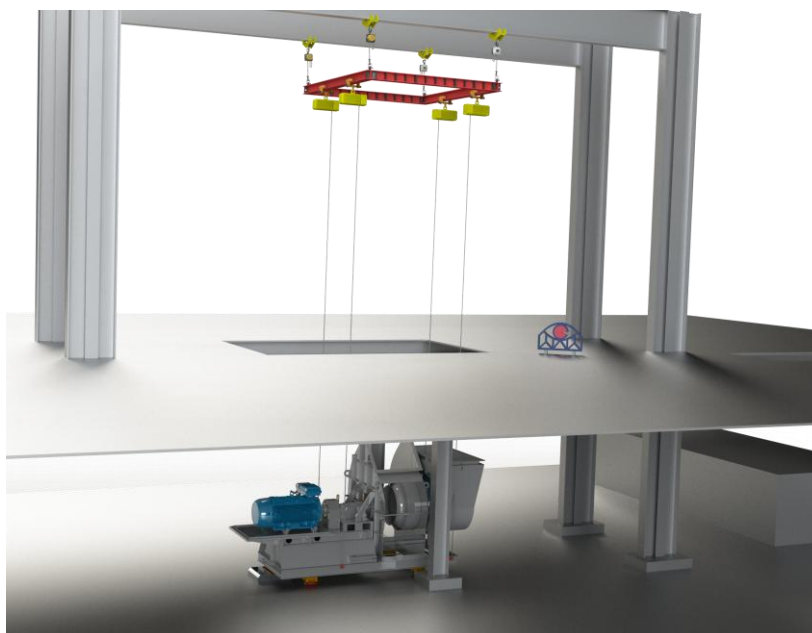
### Step 6: Positioning the fan above the transport opening

Movement of the fan using the suspended transport structure and hoists to a position directly above the transport opening.



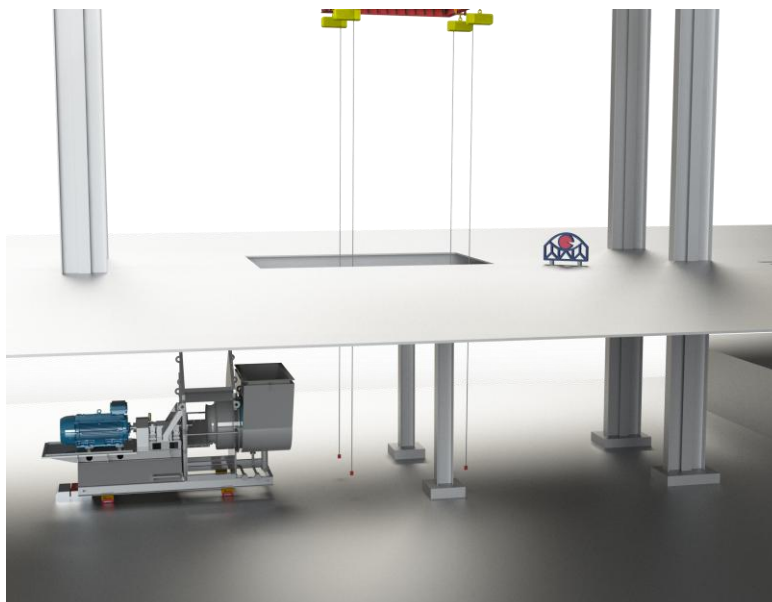
### Step 7: Vertical transport of the fan to the lower level

Lowering the fan through the transport opening to the lower level, followed by placing it on transport rollers and a mover.



### Step 8: Moving the fan out of the building

Disconnecting the fan from the vertical transport hoists and horizontal transport along the designated route to the outside of the building using transport rollers and a mover.



### Phase II – Transport and installation of the new fan

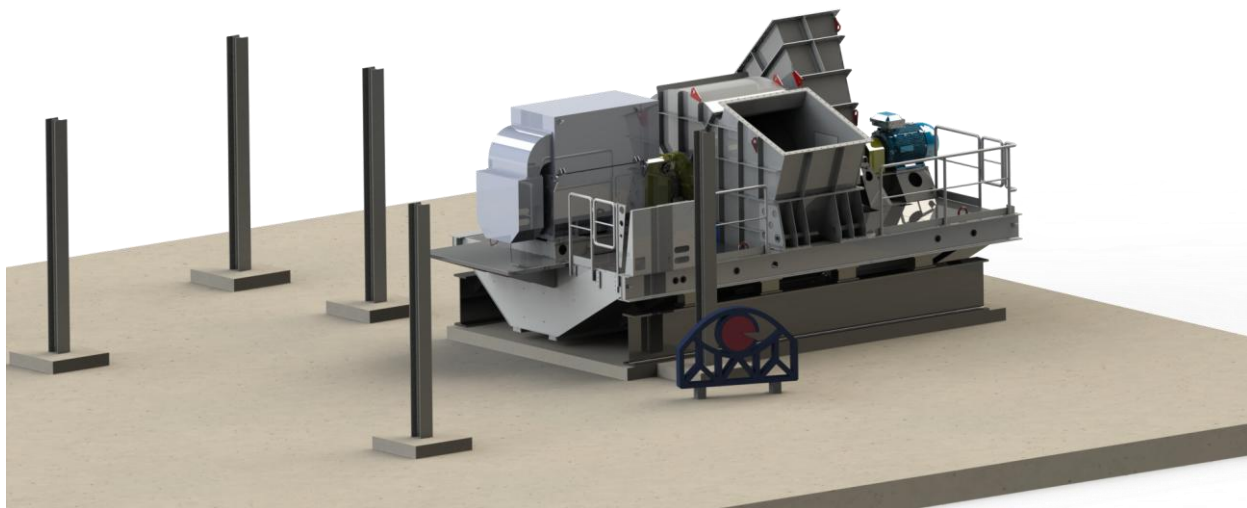
The new fan was brought into the building and installed in its final position using the same transport infrastructure, following the dismantling sequence in reverse order.

## Sequence for the replacement of WP7 fans

### Phase I – Dismantling and transport of the old fan

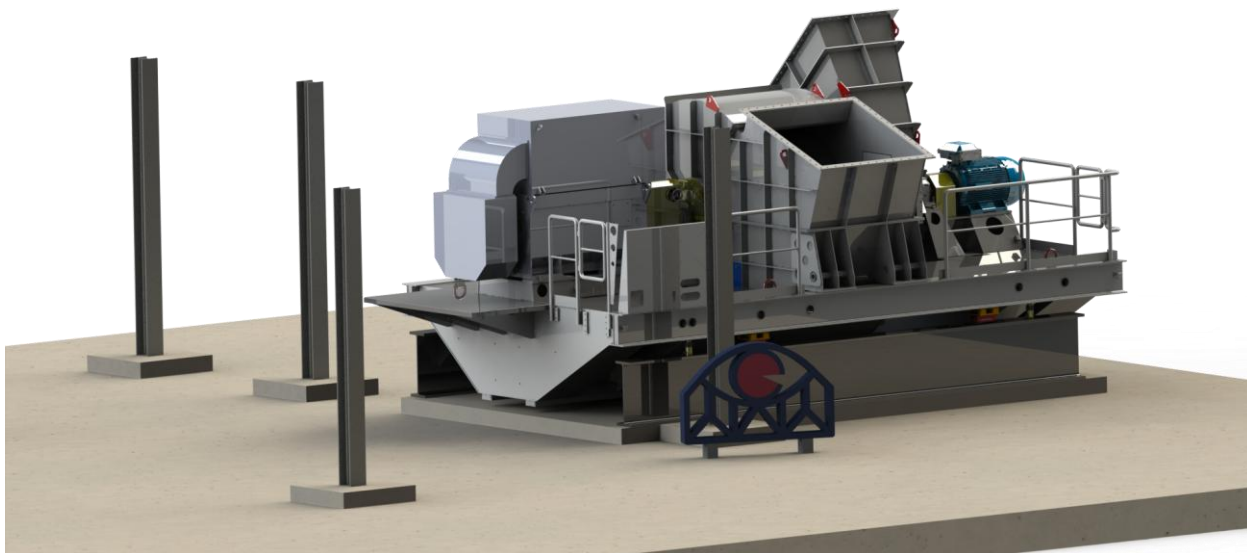
#### Step 1: Preparatory works

Preparation of the work area, including dismantling the interfering stairs along the fan transport route, disconnecting the fan from the installation, and partially dismantling the ducts.



#### Step 2: Preparation of the fan for transport

Lifting the fan using hydraulic cylinders, removing the vibration isolation elements, and installing transport rollers to enable its movement.



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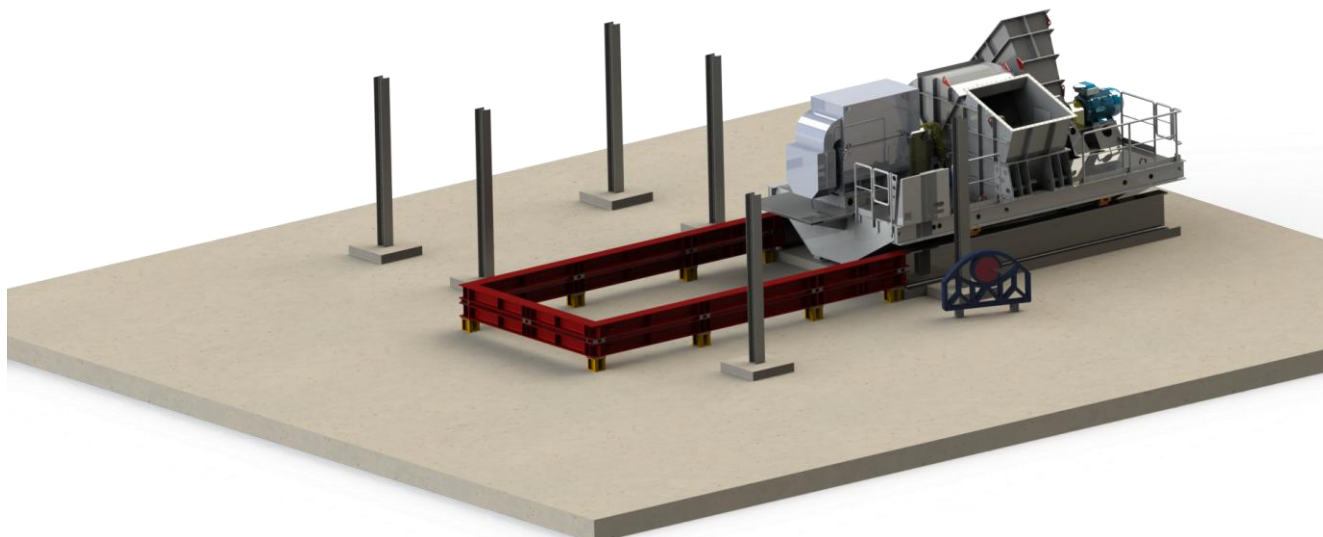
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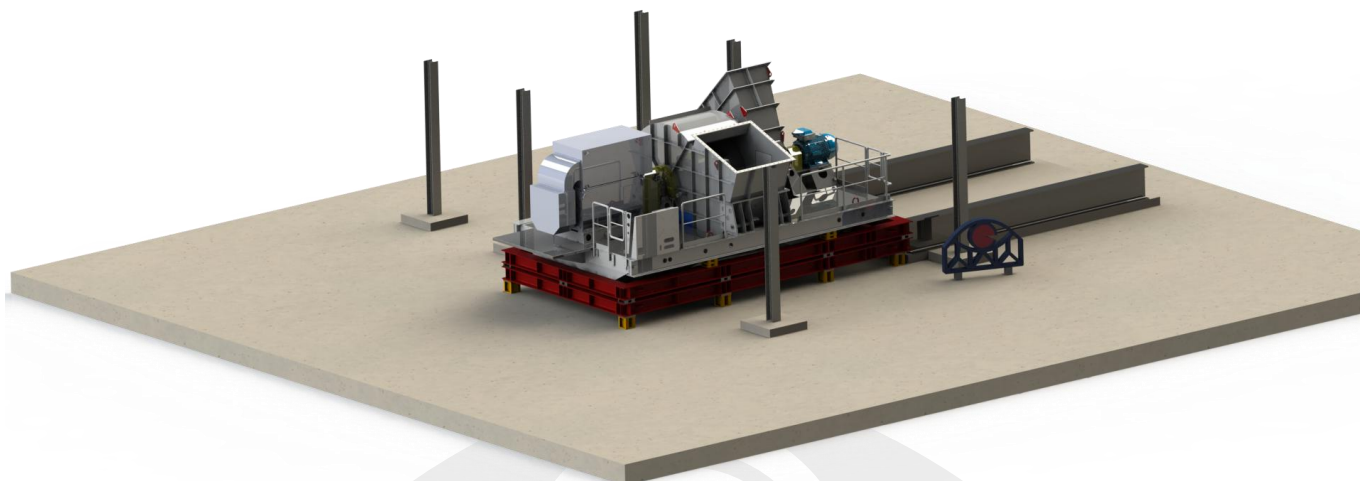
### Step 3: Installation of the transport frame

Positioning and securing the transport frame to the fan foundations in order to prepare the fan for further transport.



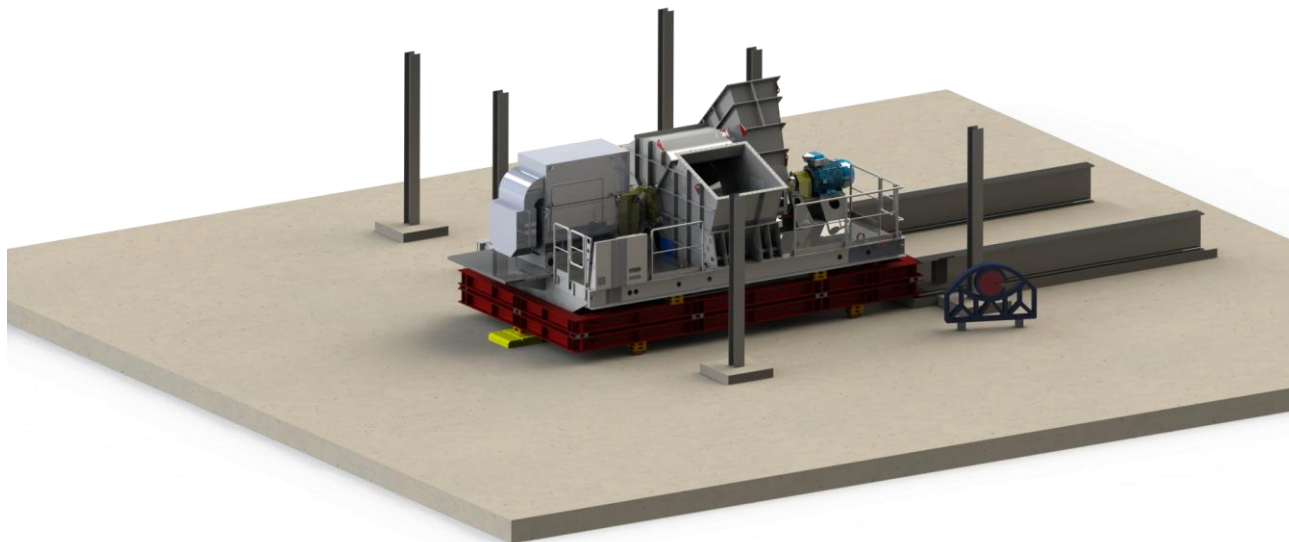
### Step 4: Moving the fan onto the transport frame and stabilising it

Pulling the fan from the foundation onto the transport frame using hoists. After positioning it on the frame, the transport rollers are removed, fixed supports stabilising the fan are installed, and a closing beam is fitted to the transport frame to secure the assembly against movement during transport.



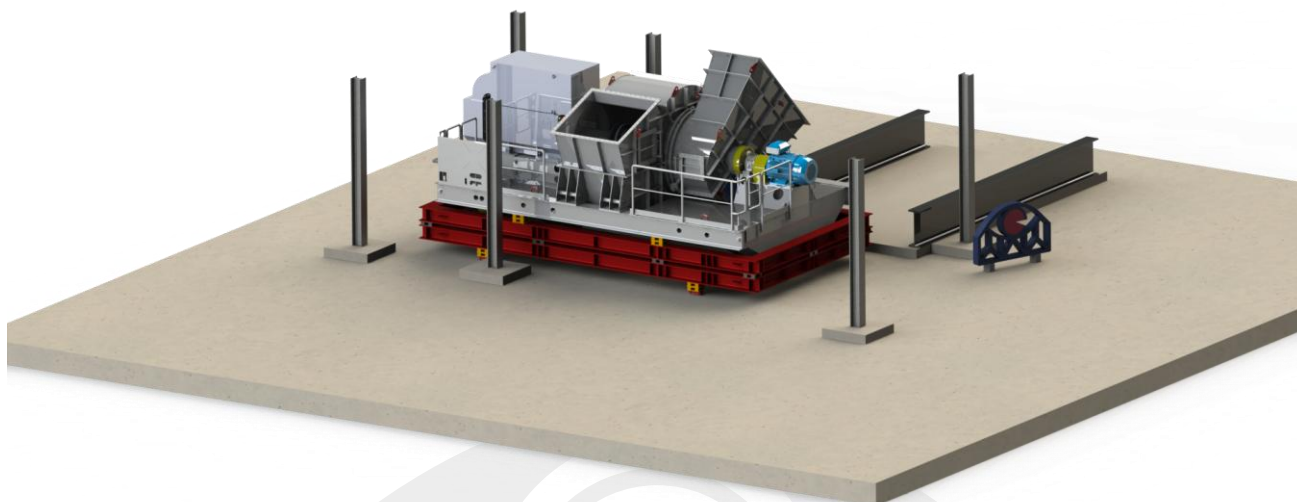
### Step 5: Installation of the transport system beneath the transport frame

Using hydraulic cylinders, the entire transport frame together with the fan is lifted. After reaching the required height, transport rollers and a mover are installed at the locations of the fixed supports. The frame is then lowered onto the transport system, enabling safe manoeuvring and movement.



### Step 6: Horizontal transport of the fan

Rotating the fan by 90° in order to align it with the direction of the transport route. The fan is then moved along the designated transport route and taken outside the building.



### Phase II – Transport and installation of the new fan

The new fan was brought into the building and installed in its final position using the same transport infrastructure, following the dismantling sequence in reverse order.



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