Industrial dust emanating from various processes, gets deposited on the structural roofs in steel plant. The dust needs to be cleaned on a periodic basis as it causes the roof to collapse. The roof collapses as the dust starts accumulating and reaches thickness of >30mm. Cleaning the dust is a tedious process as the dust solidifies and is very hard to remove from the roof. Cleaning and transporting the dust from the roof top is also a very hard task and involves hard labor.
In addition, the dust also chokes the drains and gutters.

Currently a person visits and inspects roof tops on a regular basis. The period of inspection ranges from three months to a year. The designated person checks the dust thickness and prepares inspection report. Another group organizes to clean it using shovels and plastic bags. Dust is manually collected & transported from the roof, through stairs/lifts and then brought to ground, before it is disposed.

The implemented solution should provide an early warning when the thickness of the dust deposited gets closer to 25mm. Once the dust reaches 25mm and beyond, it should also alert for an automatic cleaning before the thickness reaches 30mm. A successful system should have
1. An automatic system to alert before hand on the thickness reaching critical levels (30mm) and an indication regarding the choking of gutters.
2. Mechanized method of roof and gutter cleaning and transportation of dust to ground for disposal purpose.
Solution involving a camera is explored and it was not very successful as the environment is very dusty and the pictures are not very clear. In addition, quantification of thickness is not possible.
A cleaning system with a portable vacuum cleaner was also deployed. This however, did not help as the dust sticks to the roof and does not detach very easily.