

# 3D RFID reading

## Monitoring of objects

• Wireless dynamic radio frequency identification - Object sorting

### > Description

Contactless system equipped with a customized planar antenna for volume identification. This system is able to read a TAG with random orientation of its antenna in the reading volume without specific action on it.



### Presentation

This system demonstrate assets of Leti in complex inductive antennas. RFID systems at 13,56 MHz are based on inductive coupling. The "reader" is generating a magnetic field with an inductive antenna. When you place an electronic device equipped with its own inductive antenna (TAG) in this field, the magnetic flow induces current in the antenna and allow the TAG to harvest energy. The system is also able to transmit data by modulating the coupling factor between antennas. One drawback of such system is that you may have conditions where you have no coupling because of the structure of the magnetic field ( e.g. the TAG antenna is parallel with field lines) If you cannot reorient the TAG it another method has to be studied. A solution is to move the direction of the field instead of the TAG. This is the purpose of this Leti patented "lucky clover" antenna (name due to its shape). This special antenna has the advantage of creating a rotating magnetic field in the volume parallel to the plane antenna. This rotating field is multiplexed with secondary perpendicular field to the reference and this combination allows the system to be coupled and to read a TAG in any orientation. The system uses also Leti patented algorithms dealing with anticollision problems when you are communicating with several TAG at the same time.

### Associated research topics

- RFID
- Contactless
- Anticollision algorithms
- Complex inductive antenna

### Technologies developed

- Complex inductive antenna

### Potential fields of application

- Traceability
- Logistics
- Stock management