

# Autonomous Refilling System For Industrial Agricultural Sprayers

## Background

AGCO's agricultural sprayers are already highly automated, but cannot refill themselves without human intervention. This limitation holds back the development of a completely autonomous sprayer.



## Requirements

Autonomously:

- Detect and identify tender tank
- Create dripless connection between tender and sprayer tanks
- Pump fluid and disconnect when full

## Solution

**1 QR codes** provide a unique funnel identifier which is used to track tank contents

**2 Software** monitors and controls the system, responds to changes to the system and the environment, and displays information on a realtime user interface

**3 Reel** lowers and raises male valve assembly into and out of funnel

**4 Funnel** guides male valve into alignment with female valve

**6 Linear actuation** opens poppet valve; further actuation disconnects magnets

**5 Magnets** align and connect valve assemblies

**7 Poppet valve** provides dripless seal between sprayer and tender tank

