

# How to unclog/unblock CIJ nozzles

# Clogged/blocked CIJ nozzles

- **Symptoms of clogged nozzles**
- **Why do nozzles clog/block?**
- **Cleaning, Clearing and unclogging CIJ nozzles**

# Symptoms of clogged/blocked nozzles

- **Dirty jet start up**
- **Poor and incorrect jet break up shape – elongated, unsymmetrical or spinning drop**
- **No jet coming out of the nozzle at start up**
- **Jet flickering and moving in the gutter**
- **Charge fault or phasing fault**
- **Intermittent EHT trips or phasing fault (partial nozzle blockages)**
- **EHT trips**

# Why do nozzles clog/block?

**Continuous Ink Jet (CIJ) nozzles get clogged either during operation or at jet start up or both.**

- **Nozzle blockages during operation**
  - Internal debris/particulates from the ink system
  - Filter shedding
- **Nozzle blockages at jet start up**
  - Dried ink at the nozzle
  - Salt deposit at nozzle orifice

# Why do nozzles clog/block?

## Nozzle blockages during operation

### Internal debris/particulates from the ink system

- plastic or metal swarf. This normally occurs in newly installed machines that have not been thoroughly flushed before installation.
- It can also occur after replacing an ink system component.
- It also happen if an ink system metal component starts to corrode (welding of metal filter mesh, aggressive ink corroding solenoid valves)

### Filter shedding

- This normally occurs after installing a new filter that sheds particles from its filter element (bits of plastics or mould release substance)

# Why do nozzles clog/block?

## Nozzle blockages at Jet start up

**A clogged or blocked nozzle at jet start up is normally as a result of 2 main issues:**

- **Dried ink at the nozzle**

- After overnight or long time shutdown with no auto flush or ineffective auto flush

- **Salt deposit at nozzle orifice**

- This mostly happens after shutdown with what appears to be a good solvent auto flush. The salt\*, which is part of the ink formulation, comes out of the ink solution during auto flush and then adheres strongly to the nozzle orifice and its surrounding. This occurs overnight or during the long time shutdown.
- The salt or conductive agent is used in some ink formulations to obtain the required ink conductivity so that the drops can be easily charged and deflected.

\* Sellenis uses Scanning Electron Microscopy (SEM) and Energy Dispersive Xray (EDX) as well as other analytical methods to analyse and identified the materials in clogged nozzles.

# How to unclog/unblock CIJ nozzles?

Most of nozzle blockages, full or partial blockages, can be easily solved in most nozzles (ink chamber, drop generators, canons or gunbodies) designs. To overcome these blockages, it is normal practice:

- to put the ink system into bleed (ink circulation) mode
- to back flush the nozzle or
- to ultrasonic the nozzle for few seconds or minutes in the appropriate solvent

However in the case of some type of blockages the above mentioned nozzle blockage unclogging methods are not always effective, if ever at all.

# How to unclog/unblock CIJ nozzles?

## Stubborn, hard to clear nozzle blockages

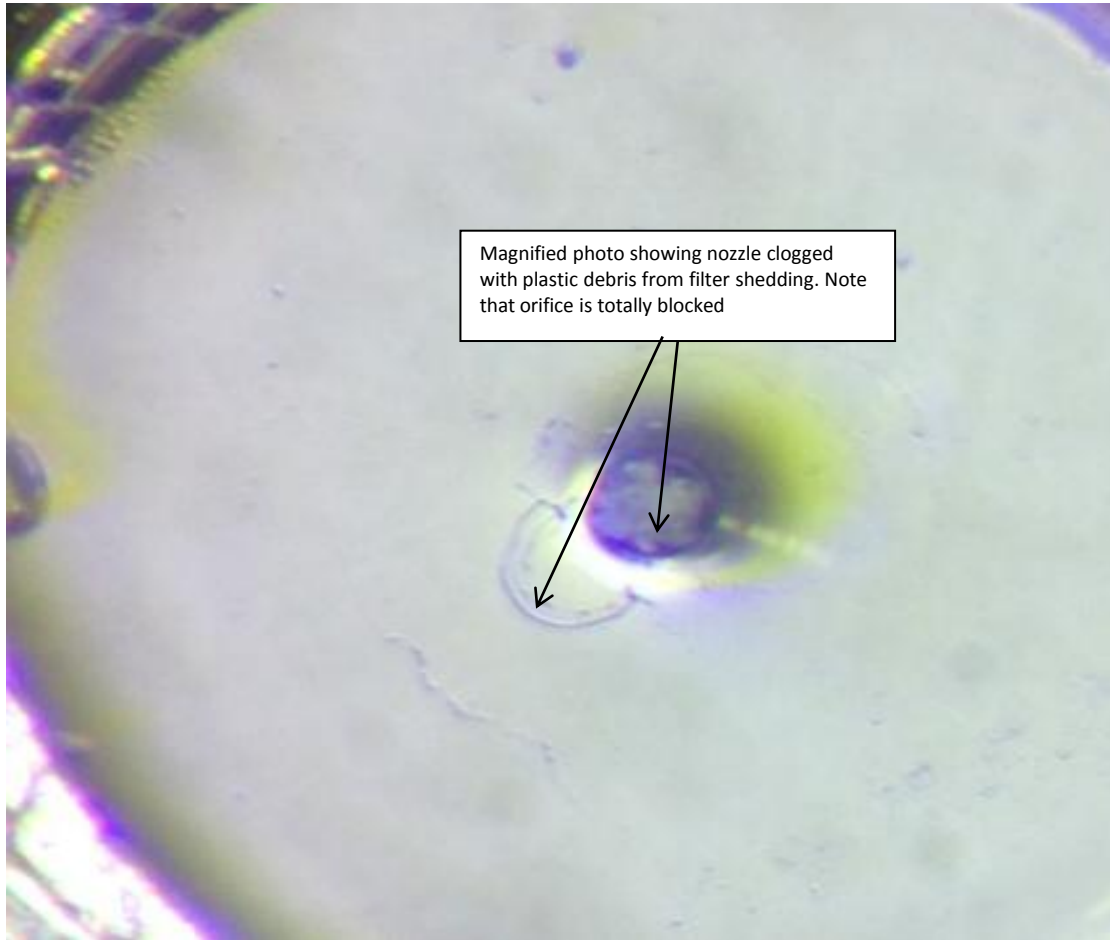
In the case of some nozzle designs and in the case of blockages as a result of salt deposit, the previously mentioned nozzle blockage clearing methods are not effective and do not unclog these types of nozzles blockages. To clear these blockages, Sellenis has developed 2 very effective solutions. These are:

- The implementation of removable and replaceable nozzle plate design. This allows for quick and easy removal of the nozzle plate to clean and replace. Thus avoiding lengthy stoppages and delays
- The use of “Sellenis nozzle deep clean fluid”. This is a proprietary deep cleaning fluid developed and supplied by Sellenis. It is very effective in totally clearing and unblocking salt crusted, blocked nozzles.



# How to unclog/unblock CIJ nozzles?

Nozzle clogged with particles from shedding filters



# How to unclog/unblock CIJ nozzles?

Stubborn, hard to clear salt encrusted nozzle orifice

