

**Lezione di “Costruzione di Interfacce”**  
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**Case Study:**  
**wxWidgets come interfaccia**  
**per un plotter industriale**  
relatore: Marco Cavallini

Si ringrazia Neolt S.p.A. per la cortese disponibilità



## Caratteristiche del sistema **NeoltJet UV Printer**

**Stampante ink jet piezo di grande formato  
con fissaggio a lampade UV.**

**Tre formati per soddisfare le esigenze di tutti gli stampatori.**

**Stampa su materiale rigido e flessibile ad alta risoluzione.**

Roll & flat

Tecnologia Ink-Jet Piezo

Sistema di fissaggio con lampade UV

Larghezza di stampa 1800, 2500, 3200 mm.

Spessore massimo del supporto 50 mm.

Risoluzione di stampa selezionabile da 200 a 400 dpi

Velocità massima: 25 m<sup>2</sup>/h

Stampa su diversi materiali flessibili in rotolo e materiali rigidi quali Foam, Forex® , Plexiglass, Vetro, ecc.

Quadricromia: Ciano - Magenta - Giallo - Nero



## Case Study: NeoltJet UV Printer



### Richiesta iniziale del Cliente

- Sistema operativo Windows XP
- Interfaccia grafica intuitiva
- Possibilità di utilizzare un Touch-Screen

## Proposta di Koan

- **Utilizzare wxWidgets invece di MFC**
- **Possibilità di migrare a Linux in futuro**
- **Migliore ROI**

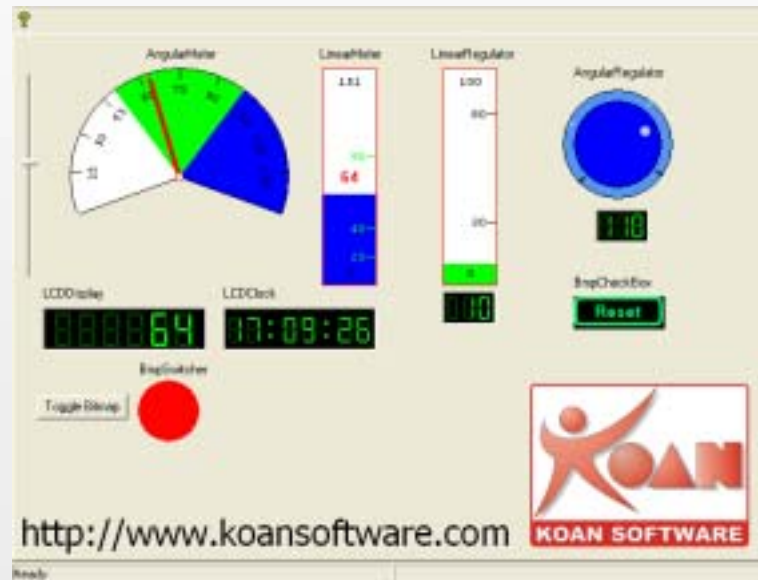
## Problematiche iniziali

- **Continua e costante considerazione della portabilità**
- **Necessità di customizzazione di alcuni widgets**
- **Necessità di interfacciamento seriale**
- **Comunicazione USB 2.0 (480Mbits/sec)**



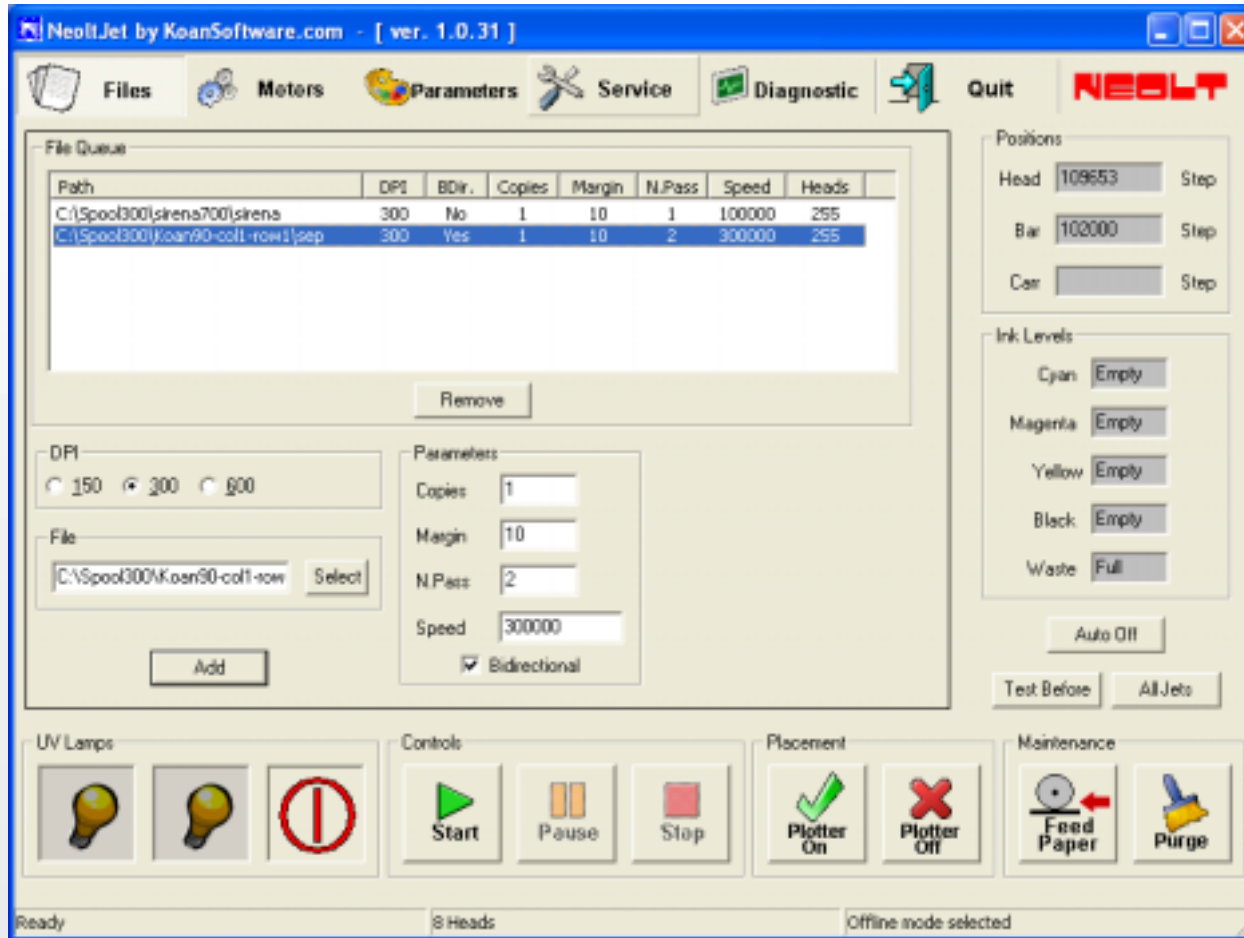
## Problematiche di interfaccia risolte con

- Libreria Koan **kwxIndustrialControls**
- Libreria Koan **kwxComm**



# Case Study: NeoltJet UV Printer

## Interfaccia NeoltJetWx per Windows XP



NeoltJet by KoanSoftware.com - [ ver. 1.0.31 ]

Files Meters Parameters Service Diagnostic Quit **NEOLT**

File Queue

Path	DPI	BDir.	Copies	Margin	N.Pass	Speed	Heads
C:\Spool300\shrens700\shrens	300	No	1	10	1	100000	255
C:\Spool300\Koan90-coll-row1\pep	300	Yes	1	10	2	300000	255

Remove




DPI  
 150  300  600

File

Parameters  
 Copies:   
 Margin:   
 N.Pass:   
 Speed:   
 Bidirectional

Positions  
 Head:  Step  
 Bar:  Step  
 Car:  Step

Ink Levels  
 Cyan:   
 Magenta:   
 Yellow:   
 Black:   
 Waste:

UV Lamps:   

Controls:

Placement:

Maintenance:

Ready 8 Heads Offline mode selected

# Case Study: NeoltJet UV Printer

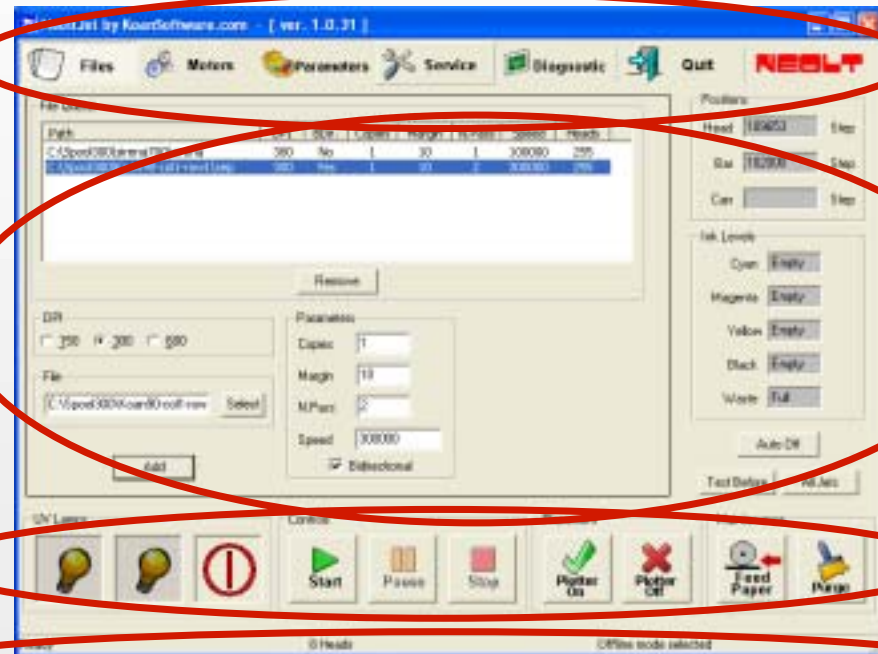
## Aree funzionali dell'interfaccia : insieme

ToolBar

Area Pannelli

Comandi

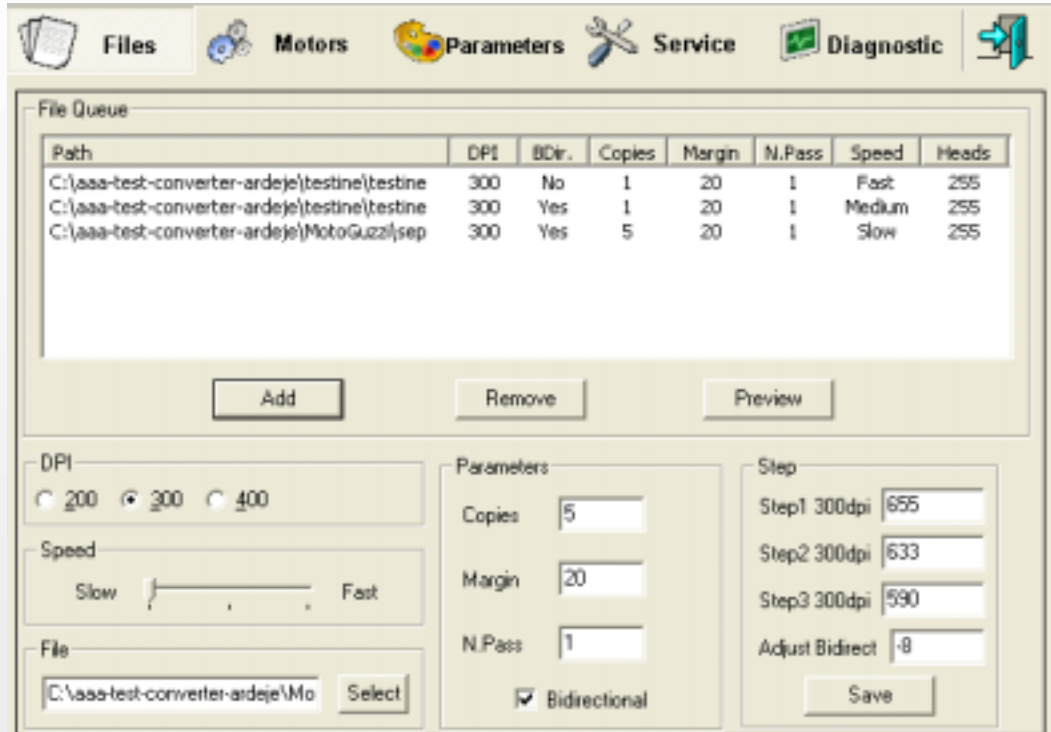
StatusBar





# Case Study: NeoltJet UV Printer

## Toolbar/Panel Files (1)



The interface features a toolbar with icons for Files, Motors, Parameters, Service, Diagnostic, and a printer icon. Below the toolbar is a 'File Queue' section containing a table of print jobs.

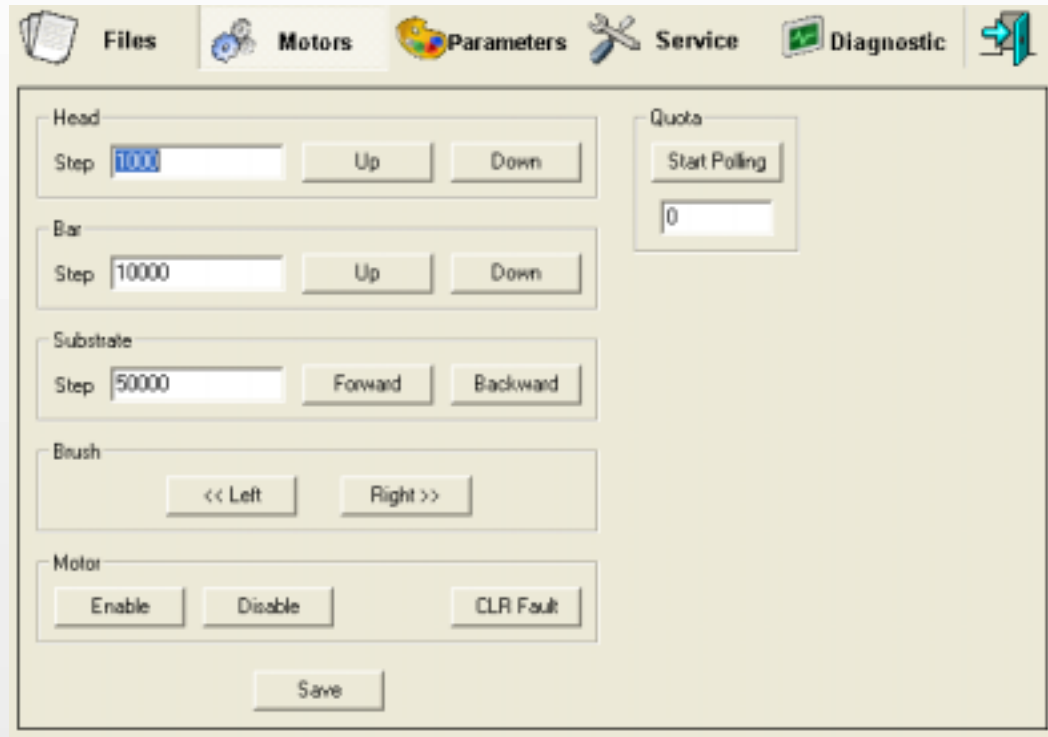
Path	DPI	BDtr.	Copies	Margin	N.Pass	Speed	Heads
C:\aaa-test-converter-ardeje\testine\testine	300	No	1	20	1	Fast	255
C:\aaa-test-converter-ardeje\testine\testine	300	Yes	1	20	1	Medium	255
C:\aaa-test-converter-ardeje\MotoGuzzi\sep	300	Yes	5	20	1	Slow	255

Below the table are buttons for 'Add', 'Remove', and 'Preview'. The configuration panel includes:

- DPI:** Radio buttons for 200, 300 (selected), and 400.
- Speed:** A slider between 'Slow' and 'Fast'.
- File:** A text field with 'C:\aaa-test-converter-ardeje\Mo' and a 'Select' button.
- Parameters:** Input fields for 'Copies' (5), 'Margin' (20), and 'N.Pass' (1). A checked 'Bidirectional' checkbox is also present.
- Step:** Input fields for 'Step1 300dpi' (655), 'Step2 300dpi' (633), 'Step3 300dpi' (590), and 'Adjust Bidirect' (-8). A 'Save' button is located below these fields.

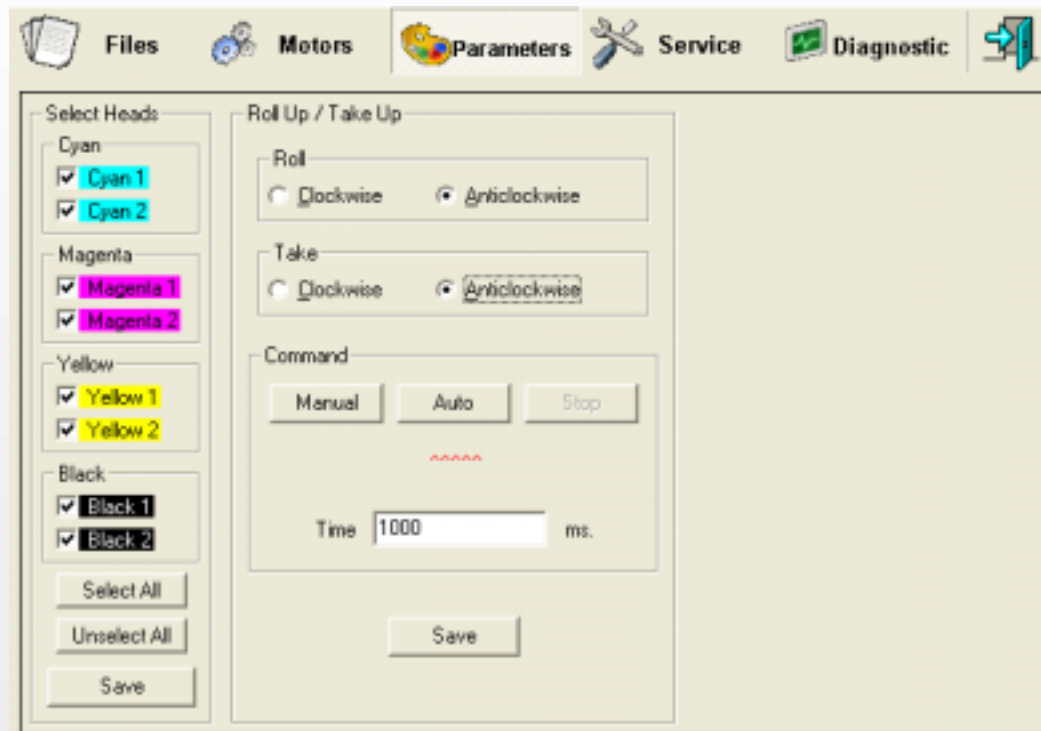
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## Toolbar/Panel Motors (2)



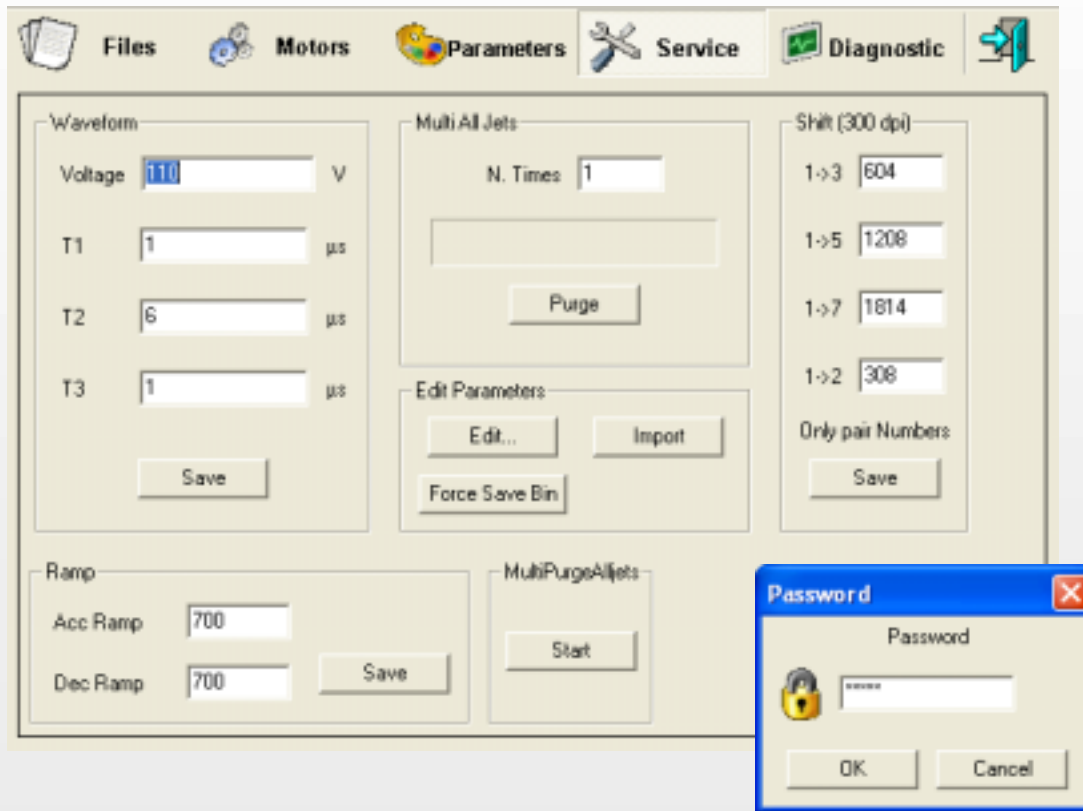
# Case Study: NeoltJet UV Printer

## Toolbar/Panel Parameters (3)



# Case Study: NeoltJet UV Printer

## Toolbar/Panel Service (4)



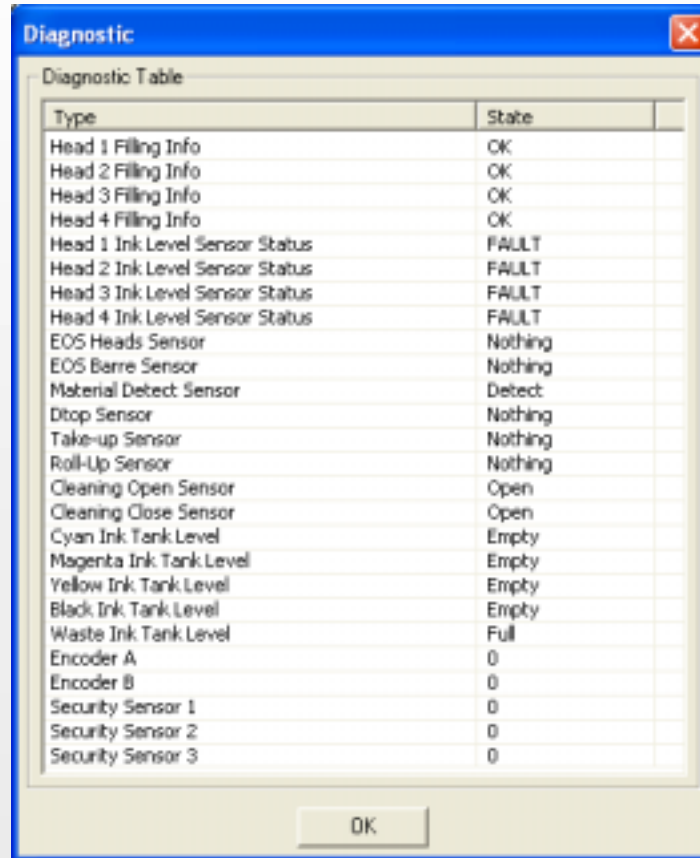
The screenshot displays the 'Service' panel of the NeoltJet UV Printer software. The panel is organized into several sections:

- Files**: A folder icon representing file management.
- Motors**: A gear icon representing motor settings.
- Parameters**: A gear icon with a color wheel representing parameter settings.
- Service**: The active panel, containing:
  - Waveform**: Fields for Voltage (110 V), T1 (1 μs), T2 (6 μs), and T3 (1 μs), with a 'Save' button.
  - Multi All Jets**: A field for 'N. Times' (1) and a 'Purge' button.
  - Edit Parameters**: 'Edit...', 'Import', and 'Force Save Bin' buttons.
  - Ramp**: Fields for 'Acc Ramp' (700) and 'Dec Ramp' (700), with a 'Save' button.
  - MultiPurgeAlljets**: A 'Start' button.
- Diagnostic**: A monitor icon representing diagnostic tools.

A 'Password' dialog box is overlaid on the bottom right, featuring a lock icon, a password input field, and 'OK' and 'Cancel' buttons.

# Case Study: NeoltJet UV Printer

## Toolbar/Panel Diagnostic (5)



Diagnostic

Diagnostic Table

Type	State
Head 1 Filling Info	OK
Head 2 Filling Info	OK
Head 3 Filling Info	OK
Head 4 Filling Info	OK
Head 1 Ink Level Sensor Status	FAULT
Head 2 Ink Level Sensor Status	FAULT
Head 3 Ink Level Sensor Status	FAULT
Head 4 Ink Level Sensor Status	FAULT
EOS Heads Sensor	Nothing
EOS Barre Sensor	Nothing
Material Detect Sensor	Detect
Dtop Sensor	Nothing
Take-up Sensor	Nothing
Roll-Up Sensor	Nothing
Cleaning Open Sensor	Open
Cleaning Close Sensor	Open
Cyan Ink Tank Level	Empty
Magenta Ink Tank Level	Empty
Yellow Ink Tank Level	Empty
Black Ink Tank Level	Empty
Waste Ink Tank Level	Full
Encoder A	0
Encoder B	0
Security Sensor 1	0
Security Sensor 2	0
Security Sensor 3	0

OK

# Case Study: NeoltJet UV Printer

## Struttura delle classi utilizzate

### Classe principale

```
class NeoJetApp : public wxApp
```

### Classe contenimento finestra

```
class NeoJetFrame : public wxFrame  
MainFrame *m_panel;
```

# Case Study: NeoltJet UV Printer

## Struttura delle classi utilizzate

### Classe contenimento pannelli

```
class MainFrame: public wxPanel  
wxPanel* m_pWorkPanel;  
wxToolBar* m_ToolBar;
```

```
class PnlXxx: public wxPanel  
class PnlXxx: public wxPanel  
class PnlXxx: public wxPanel  
class PnlXxx: public wxPanel
```

## Struttura delle classi utilizzate

### Classi varie

**class DlgXxx: public wxDialog**

*various dialog boxes*

**class CCommMotorDrv : public CKComm**

*CC motor servo driver control*

**class JetCmd**

*plotter commands interface*

**class CUsb**

*low level USB commands*



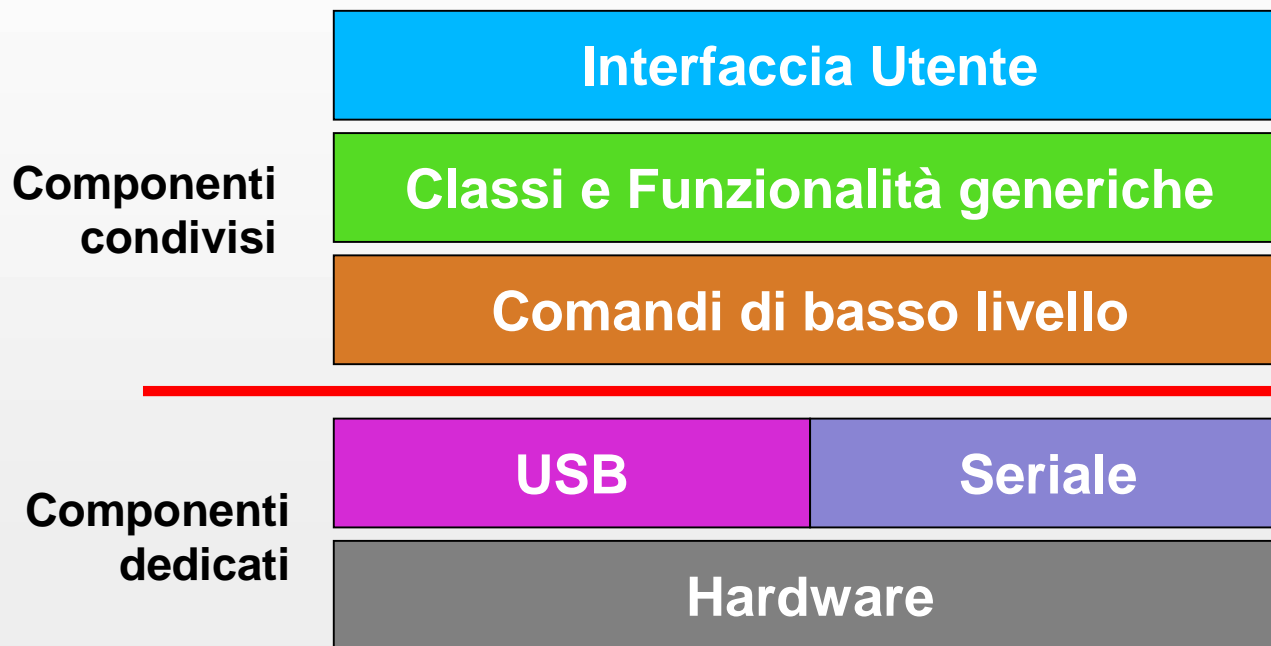
## Compilazione con linux

### makefile

```
PROGRAM = wxNeoltJet
CXX = $(shell wx-config --cxx)
CFLAGS = -I/home/koan/wxGTK-2.4.2/include
LFLAGS = -L/usr/local/lib -pthread \
    $HOME/wxGTK-2.4.2/lib/libwx_gtk-2.4.a \
    -L/usr/lib -L/usr/X11R6/lib -lgtk -lgdk -rdynamic \
    -lgmodule -lgthread \
    -lglib -lpthread -ldl -lXi -lXext -lX11 -lm -ldl -lm
```

# Case Study: NeoltJet UV Printer

## Stratificazione per portabilità



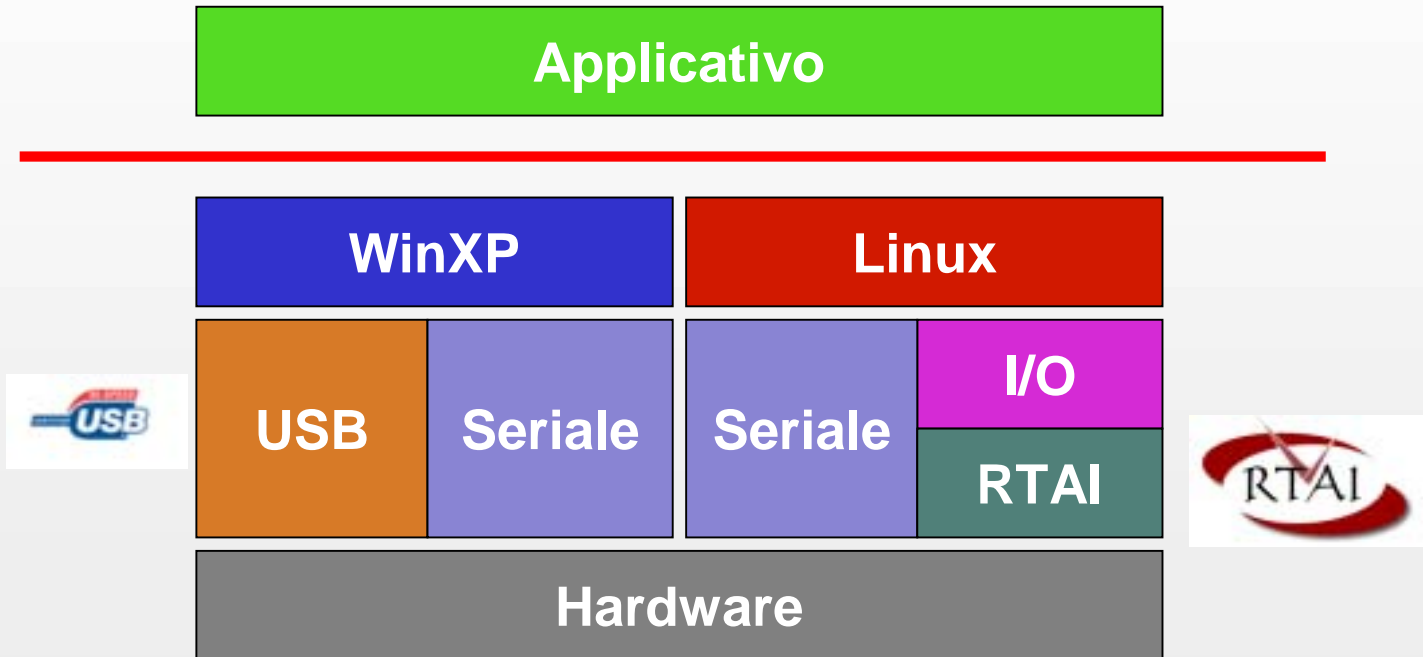
## Nuove richieste

- Migrazione a Linux
- Nuova gestione diretta degli I/O
- Necessità di interfacciamento seriale
- Comunicazione USB 2.0 (480Mbits/sec)



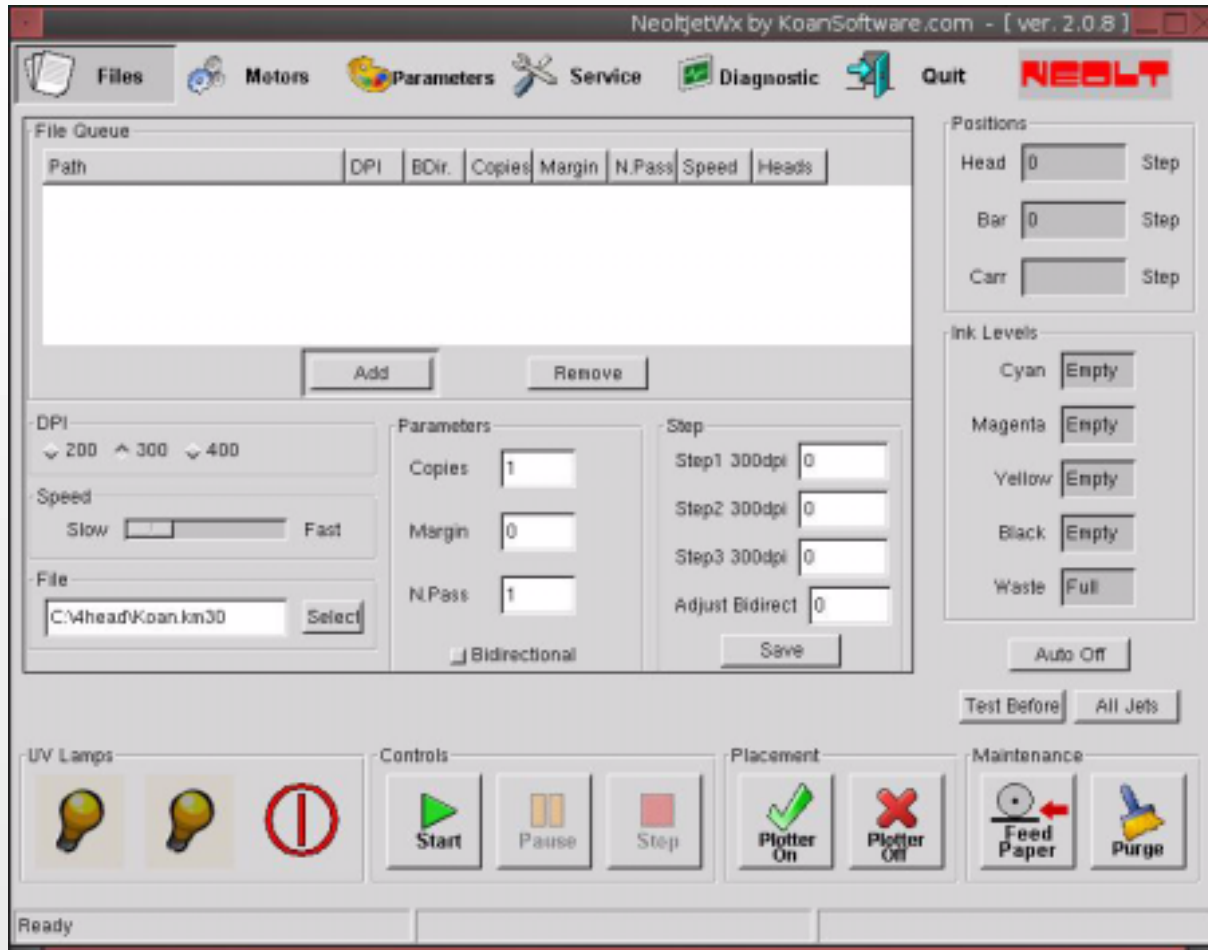
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Moduli dal punto di vista del S.O. usato



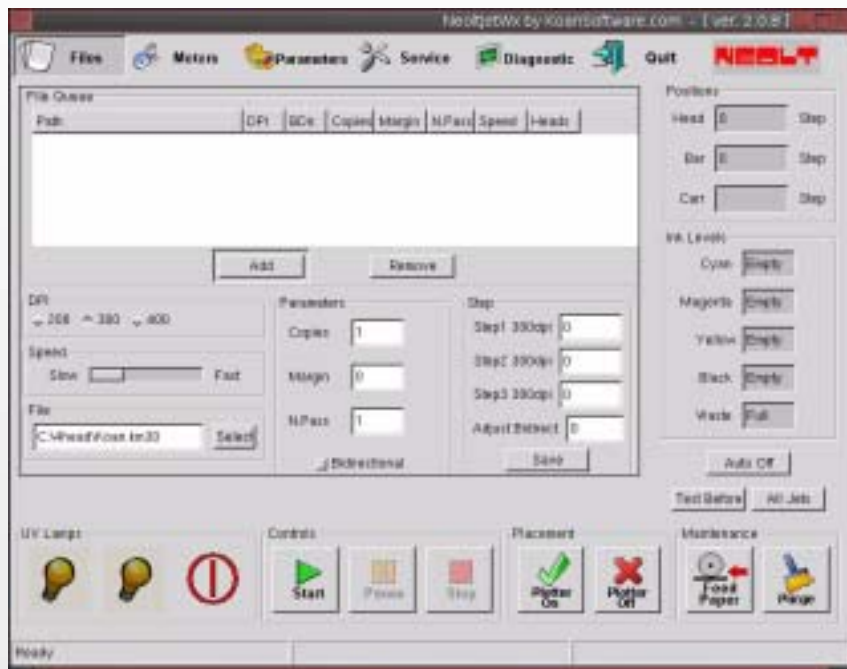
# Case Study: NeoltJet UV Printer

## Interfaccia NeoltJetWx per Linux (GTK)



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## Risultato



Linux



Windows

**Grazie per l'attenzione**  
**sito ufficiale della libreria**

**[www.wxwidgets.org](http://www.wxwidgets.org)**

**La presentazione sarà disponibile sul sito**

**[ftp.KoanSoftware.com](ftp://KoanSoftware.com)**

**[m.cavallini@koansoftware.com](mailto:m.cavallini@koansoftware.com)**