

**HAN soldering contest PCB**

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**Client**: Remko Welling

**High School:** HAN Arnhem

**Education:** Embedded Systems Engineering

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[Goal 3](#_Toc119660214)

[PCB requirements 3](#_Toc119660215)

# Goal

Main Goal: Creating an small and easy PCB that learns the student how to solder a variant of SMD and THT components.

# PCB requirements

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| Requirement number | Description |
| T1.0 | Contains THT components |
| T1.1 | Contains different sizes of THT components |
| T1.1 | Contains “standing up” and “laying down” components |
| T1.2 | Contains at least one header |
| T2.0 | Contains SMD/SMT components |
| T2.1 | Contains different sizes of SMD components: 1206, 0805, 0402 and SOT23 |
| T3.0 | The PCB should be a squire, smaller than 10 by 10 cm |
| T3.1 | The PCB must contain mounting holes of 5 mm |
| T3.2 | The PCB design should be single layer |
| T3.21 | Ground planes shall not be used due to heat dissapation |
| T3.3 | The PCB silkscreen should contain the logo of the HAN, Wurth Electronics, Eurocircuits |
| T3.31 | The Logo’s should have roughly the same size |
| T3.32 | The PCB silkscreen should contain 2 white bars where the students name and grade can be written on |
| T3.33 | The PCB silkscreen could contains soldering tips on flux, temperature settings for relflow ovens and hand soldering |
| T3.34 | The silkscreen should clearly state the polarity of all components that have polarity |
| T3.4 | All components must be orderd by Wurth Electronics (requirement by sponsor) |
| T3.5 | The circuit used will be: Verstelbare Transistor Astabiele Multivibrator Circuit Leren Kit, Led  Knippert.|kit kits|circuit kitkit circuit - AliExpress  Astable multivibrator |
| T3.51 | (VR1 and VR2 will be replaced by fixed resistors) |
| T3.52 | Q1 and Q2 should also have alternative options listed for both SMD and THT components |
| T3.53 | LED1 and LED2 may have different colors |
| T4.0 | Soldering the PCB should roughly take 10 minutes |

# Soldering (safety) tips/hints:

* Wear safety goggles
* Avoid breathing in the solder fumes
* 350°C-400°C are usual soldering temperatures
* “Pre tin” components/wires
* Heat the pad and the component while adding tin
* Use a helping hand or board clamp
* Pliers make you live better and fingers happier
* Solder paste requires lower temperature to melt
* Low melt solder/hot air is the easiest way to remove components with many pins
* Dull solder joints aren’t great

# Sponsors/logos

Wurth electronics



Eurocircuits



HAN university of applied sciences

