## 1. Soldering flux control during the selective flux application

Selective soldering in combination with selective flux application becomes more and more popular.

Especially manufacturers of mixed assembled PCB boards benefit from this new technology. Only the areas which will be soldered will be covered from the soldering flux. To achieve this, a piezo nozzle is used to generate small flux droplets with a diameter of a few tenth of a millimeter. At this the scattering angle is very small which make sure, that the droplets strike only the scheduled area. Due to the fact, that the aperture of the piezo nozzle is very small, the nozzle tends to be blocked sporadically from remnants of the flux, thus the direction of flight as well as the size of the droplets can be negative influenced. With the spray jet control system **A-LAS-CON1** (formerly A-LAS-CON1-JET) in connection with an **A-LAS-…** analog laser sensor the amount of flux as well as the direction of flight of the droplets can be controlled. Mainly small apertures will be used for the respective **A-LAS** sensor, which helps to increase the signal attenuation due to a droplet. One dimensional as well as two dimensional systems (cross wise) exists. The scan frequency (10 kHz) of the **A-LAS-CON1** (formerly A-LAS-CON1-JET) system is adapted to the repetition rate of the droplets of approximately 5 ms. The screen shots show a sequence of four (six) droplets with a different diameter. For the evaluation of the spray volume INT of one sequence the area dA will be divided by the area A and multiplied with a certain constant factor. T inform
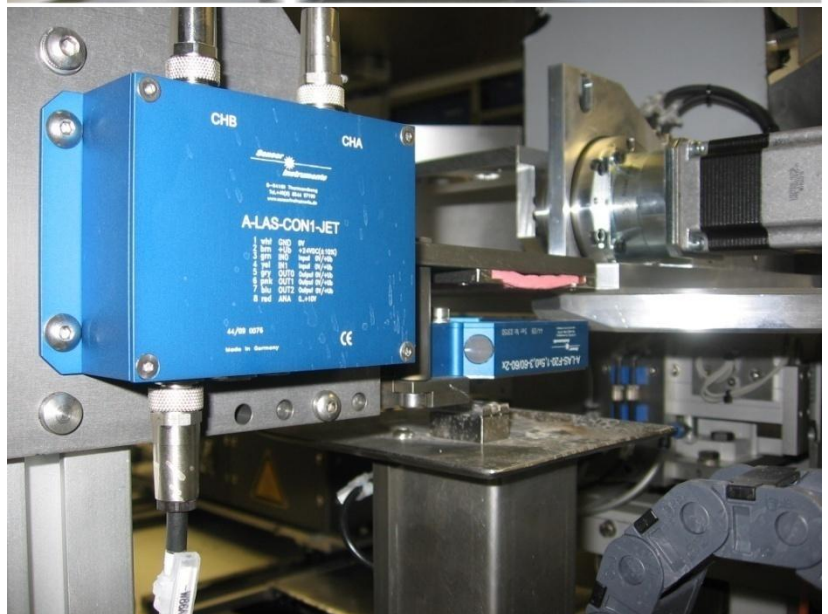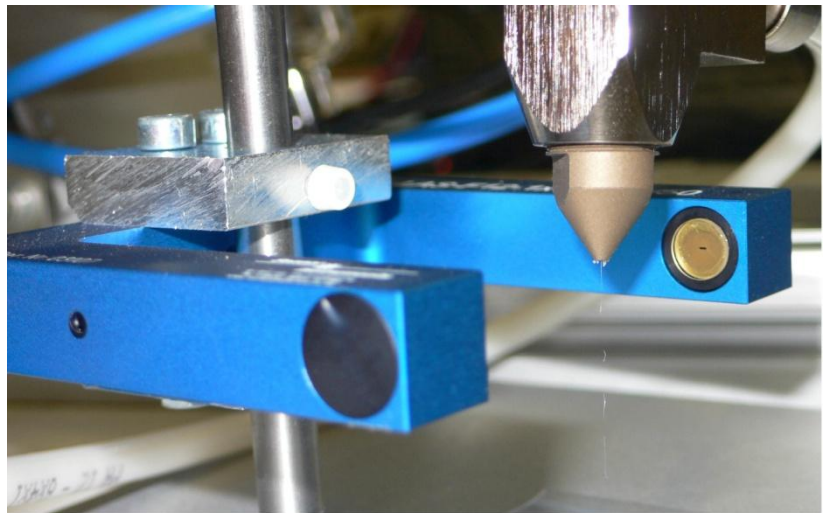
about the time length of the sequence. The system is working either in the self trigger mode or in the external trigger mode. In the self trigger mode the system is detecting the first pulse (droplet) and the values will be integrated as long as the last droplet has passed the laser light curtain. In the external trigger mode the values will be integrated as long as the external pulse is present. In the software an upper as well as a lower threshold can be set for the INT value, thus the operator will be informed about the correct spray volume with a digital signal (HI,LO,GO). Furthermore the system delivers an analog signal which is proportional to the INT value.

$$INT = C \times dA / A$$

Screen 1

Enter Expert Mode

Outputs | Parameter | Settings | Data Recorder | Detailed Data | Templates | View Data

PRINT   9.2477   9.2477   Recording ...   Evaluation 1 9
RESET
SET REF.   Evaluation 2 9
TEACH
SHOW DATA

RUN SCOPE
STOP SCOPE
VIEW DATA

Eval 1.

Reset B.
Reset A.

data points   128 512

RAM   SEND
EEPROM
FILE   GET   CONNECT   Rawdata (trigger data) received. Trigger rearmed.

Screen 2

PRINT   20.7449   20.7449   Recording ...   Evaluation 1 20
Evaluation 2 20

Screen 3

PRINT   36.9910   36.9910   Recording ...   Evaluation 1 36
Evaluation 2 36

Screen 4

PRINT   104.3495   104.3495   Recording ...   Evaluation 1 104
Evaluation 2 104

Screen 5

PRINT   151.8379   151.8379   Recording ...   Evaluation 1 151
Evaluation 2 151

Screen 6

PRINT   213.8228   213.8228   Recording ...   Evaluation 1 213
Evaluation 2 213

Screen 7

PRINT   370.9094   370.9094   Recording ...   Evaluation 1 370
Evaluation 2 370

Screen 8

PRINT   576.7341   576.7341   Recording ...   Evaluation 1 576
Evaluation 2 576