

Use of a microfluidic disc in Point-of-Care applications

Workshop „Medical Microtechnology“

February 22, 2023

Benjamin Albrecht – Dialunox GmbH

Use of a microfluidic disc in Point-of-Care applications

Content

- Company profile
- Development of the discreader platform
- From the application to product requirements
- Different fields of application

DIALUNOX @ a glance



- CDMO (Contract Development and Manufacturing Organisation)
- Engineering Services for optical measurement instruments
- Contract manufacturer for instruments



- Located in the south of Germany
- Founded 1997
- > 80 employees
- Since 2010 part of QIAGEN



- One-Stop-Shop for customers from all industries
- Broad expertise in engineering (Software, mechanics, optics, electronics)
- State of the art production facility
- ISO 9001 & EN13485 certified

DLX Product Portfolio

OEM Instrument Supply



Sold > 20.000 units

- 5 different instrument platforms

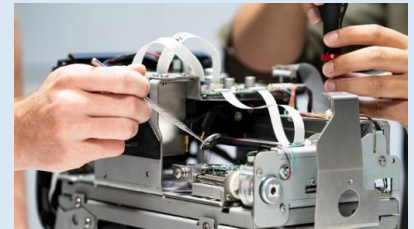
Optical Detector



Built > 40.000 Units

- Unique highly sensitive fluorescence detector

Engineering Service

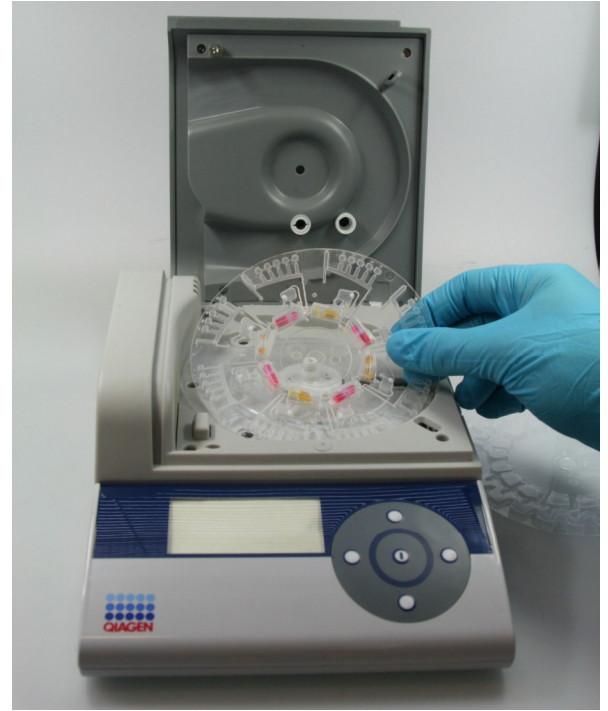


25yrs experience

- Starting point of all business/customization tasks

Development of the discreader platform

- BMBF and EU funded project, started in 2012
- Record player for a fast diagnosis
- For Immunoassays as well as PCR



DIALUNOX

Development of the discreader platform

- Development Project started in 2017
- Triangle project
- Initial plan: MRSA -> Covid
- Increase of test portfolio



DIALUNOX

From the Application to product requirements



Different type of samples
* swab, skin, liquid
* Weight in
* Homogenize

-> **Spinning**

Extract DNA from cellular components (Lysis)
* mechanical
* enzymatic
-> **Positioning**

* Denaturation
* Annealing
* Elongation
-> 30-40 cycles

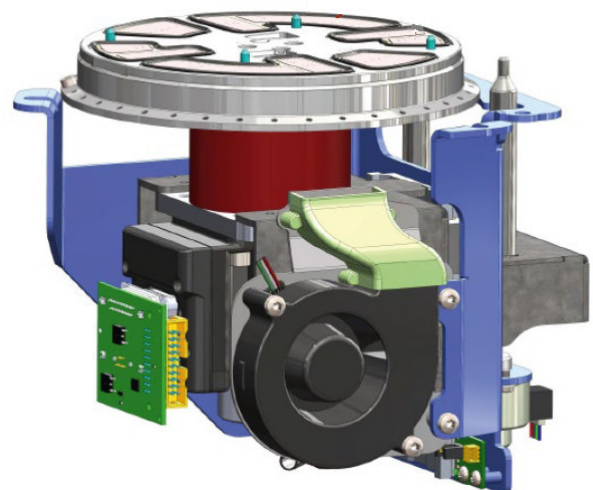
-> **Temperature control**

* Calculation of C_T value
* Display of the Amplification curves
* Connection to LIS

-> **Fluorescence detection**

From the Application to product requirements

- **Spinning -> Up to +/- 60Hz to create the correct centrifugal force**
 - Pumping liquid from one chamber to the next
 - Rehydration of reagent in the stickpack and release
- **Heating and Cooling Unit**
 - Different zones for independent temperature control
 - Fast heating and cooling rates for good TimeToResult
 - Good heat transfer from heating plate to liquid
- **Fluorecencs detection**
 - 4 channel Multiplexing
 - Fast measurement frequency



Different fields of application



Spindiag (2016)

- Molecular diagnostics at point-of-care for infectious diseases



DERMAGNOSTIX



Dermagnostix (2020)

- Identification of inflammatory skin diseases through molecular diagnostics

Endress+Hauser



Endress+Hauser BioSense (2021)

- Rapid on-site molecular analyses for bacterial or viral contamination in water and beverages as well as genetic changes in food

Contact

DIALUNOX GmbH
Bodenseeallee 20
D-78333 Stockach

+49 7771 9166-0
info@dialunox.com



Thanks for your attention!



Benjamin Albrecht
+49 7771 / 9166 - 236
benjamin.albrecht@dialunox.com