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# LAUDA LOOP – THERMOELECTRIC THERMOSTAT

Michael Seipel 2020-03-02

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# 01
# TECHNICAL INFORMATION

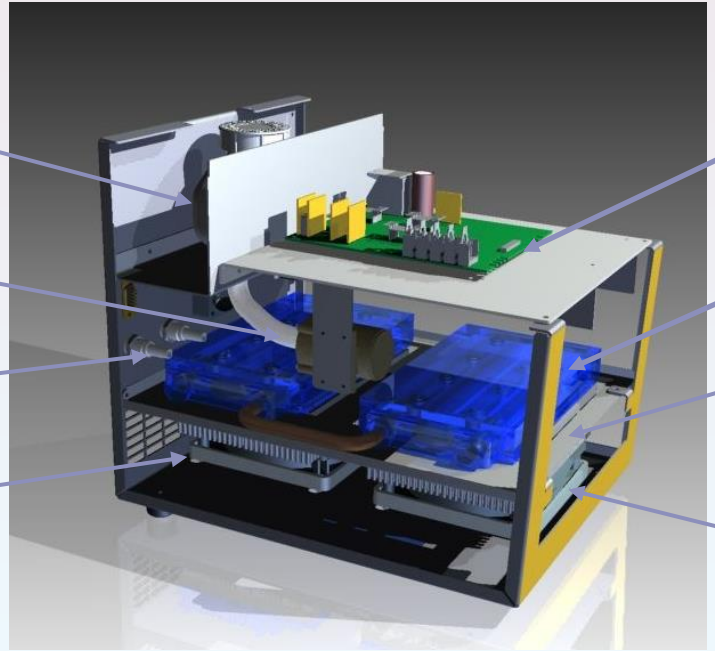
# TECHNICAL INFORMATION

Tank

Pump

Pump connectors

Fan



Electronic

Heat exchanger

Peltier elements
L 100: 6
L 250: 12

Cooling element

L 250

**Peltier effect**: Temperature difference created by applying a voltage between 2 electrodes connected to a sample of semiconductor material

Source Internal

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# 02
# START UP

# START UP


Power switch

RS-232-interface

Pump connectors

L 250

L 100

Fast connectors ¼“
(CPC-In-Line connector
Type PMC 2204 (EOA 077)),
self locking

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# 03
# OPERATION

# OPERATION

- OLED-display (like PRO Base)
- Menu guidance in plain text
- 5 languages





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# 04
# OPERATION – FAN LIMITATION

# OPERATION – FAN LIMITATION

Fan is adjustable between 70% und 140%
(Default setting is 100%)

- At lower fan capacity the sound pressure level will be reduced.
  But also the cooling capacity will be reduced
- At higher fan capacity the cooling capacity will be increased.
  But also the sound pressure level will be increased

| | L100 | | L250 | |
|---|---|---|---|---|
| | Cooling capacity | Sound pressure level | Cooling capacity | Sound pressure level |
| Fan capacity 70 % | - 15 to 20% | -40 to 50% | - 15 to 20% | -40 to 50% |
| Fan capacity 100 % | 120 W | 57 dB(A) | 250 W | 57 dB(A) |
| Fan capacity 140 % | + 10 to 15% | +40 to 50% | +10 to 15% | +40 to 50% |

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# 05
# TECHNICAL DATA

# TECHNICAL DATA

| | | L100 | L250 |
|---|---|---|---|
| Working temperature range | °C | 4...80 | |
| Temperature stability | ±K | 0.1 | |
| Cooling capacity @ (water) 20 °C | W | 120 | 250 |
| Cooling capacity @ (water) 10 °C | W | 60 | 130 |
| Heating capacity @ 20 °C ambient | W | 200 | 400 |
| Weight | kg | 6.9 | 11.9 |
| Pump pressure max. | bar | 0.8 | |
| Pump flow max. | L/min | 2.6 | |
| Filling volume | ml | 300 | |
| Pump connection thread | | Fast connectors ¼“ | |
| Interface | | RS 232 as standard | |
| Cooling of Peltier element | | Air cooled | |
| Dimensions (B x T x H) | mm | 175 x 301 x 266 | 261 x 368 x 312 |

- One power supply variant, globally usable: 100 - 240 V; 50/60 Hz / 8 different plugs
- Heat transfer liquid: decalcified water, water/glycol

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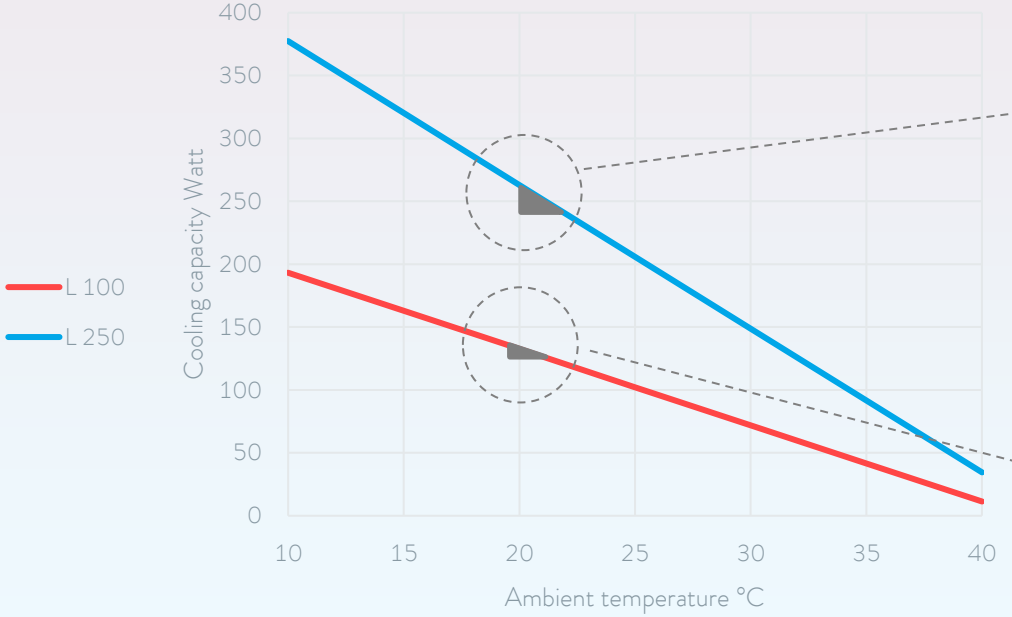
# 06
# INFLUENCE OF AMBIENT TEMPERATURE

# INFLUENCE OF AMBIENT TEMPERATURE

For thermoelectric systems the ambient temperature has a strong influence on the available cooling capacity




L 250: ~11 W/K
Increase of ambient temperature by 1 Kelvin decreases cooling capacity by 11 Watt

L 100: ~6 W/K
Increase of ambient temperature by 1 Kelvin decreases cooling capacity by 6 Watt

Source Internal tests

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# 07
# USP

# USP

- Low space requirement
- Energy efficiency (especially at partial laod)
- No refrigerants
- Attractive design
- Heating and cooling with same component, high control accuracy
- Reduced service need
- Low weight
- Low vibration level
- Power supply independent, 100-240 V; 50/60 Hz

Source Internal

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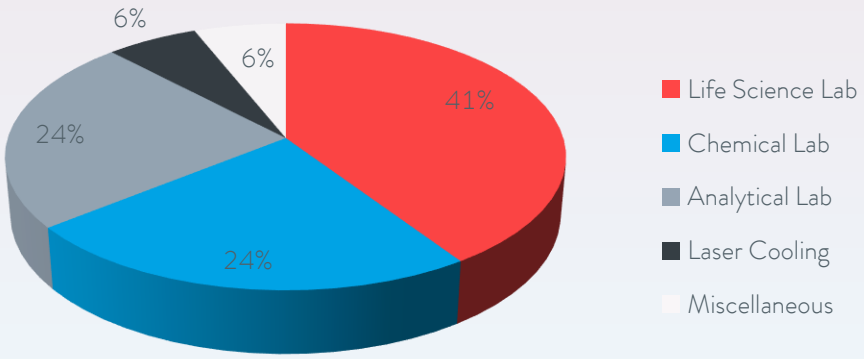
# 08
# TARGET GROUPS

# TARGET GROUPS




| | |
|---|---|
| Microscopes | 15 |
| Electrophoresis chambers | 17 |
| Bio reactors | 25 |
| Water bath temperature control | 33 |
| Sample preparation | 44 |
| | 134 |
| | |
| Cooling of heating thermostats/viscosity baths | 20 |
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| Small cold traps | 15 |
| Destillation systems | 15 |
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| | 78 |
| | |
| Refractometers | 22 |
| Polarimeters | 15 |
| Viscometers | 20 |
| Calorimeters | 21 |
| | 78 |
| | |
| Laser cooling | 20 |
| | |
| Miscellaneous | 20 |

Source Internal

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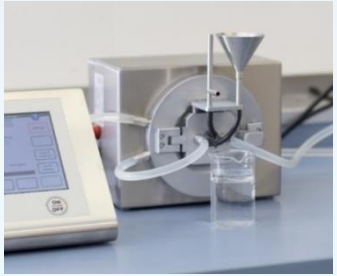
# 09
# TYPICAL APPLICATIONS

# TYPICAL APPLICATIONS

| Application | Typical temp. Range | Type |
|---|---|---|
| Cuvette thermostating in UV/VIS equipment | 10 – 80 °C | L 100 |
| Polarimetry | 20 – 25 °C | L 100 |
| Refractometer | 20 – 25 °C | L 100 |
| Bio reactors | 15 – 70 °C | L 100, L250 |
| Thermostating block (temperature control of samples) | 4 – 37 °C | L100, L250 |



Source Internal

# TYPICAL APPLICATIONS (CONTINUED)

| Application | Typical temp. Range | Type |
|---|---|---|
| Western-Blot Systems (protein samples) | 7 °C | L 250 |
| Electrophorese chambers | 20 – 25 °C | L 250 |
| X-ray heads | 20 – 30 °C | L 250 |
| Viscometer | 5 – 60 °C | L250 |
| LED-Arrays (water cooled LED-light source) | 20 – 30 °C | L100, L250 |

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# 10
# COMPETITIVE ENVIRONMENT

# COMPETITIVE ENVIRONMENT

| Manufacturer | Solid State Cooling Systems | | LAUDA |
|---|---|---|---|
| Type | UC 160 |  | LOOP L 100 |
| Temp.-range °C | 2...45 | | 4...80 |
| Cooling capacity W | 160 | | 100 |
| Price | | | |

Add your local prices

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# COMPETITIVE ENVIRONMENT (CONTINUED)

Compressor based devices

| Manufacturer | Laird Technologies | Solid State Cooling Systems | Huber | Julabo | LAUDA | LAUDA | LAUDA |
|---|---|---|---|---|---|---|---|
| Type | MRC300 | ThermoCube 300 | minichiller | F250 | MC 250 | RA 8 | LOOP L 250 |
| Temp.-range °C | -12...40 | 2...45 | -20...40 | -10...40 | -10...40 | -25...100 | 4...80 |
| Cooling capacity W | 299 | 300 | 300 | 250 | 250 | 225 | 250 |
| Price | | | | | | | |

Add your local prices


Source Internal