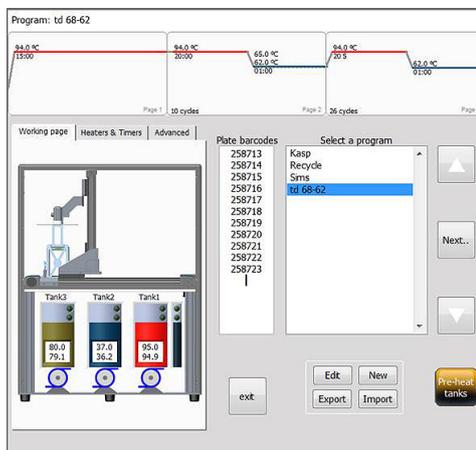




# How does the Hydrocycler<sup>2</sup> work?

(For research use only. Not for use in diagnostic procedures.)

The Hydrocycler<sup>2</sup>™ thermal cycler uses three precise temperature controlled water baths to modulate the temperatures of the PCR reaction. A robotic arm is used to move plates between the three water baths, achieving a rapid thermal cycling profile. The result is higher throughput and higher data quality compared to standard thermal cyclers.



Where cooling and heating speeds in standard peltier-based thermal cyclers rely on ramping the temperature of a metal block up and down the Hydrocycler<sup>2</sup> only needs ~ three seconds to change to the next water bath. As shown below, this translates into 18 - 44% reduction depending on chemistry and protocol.

## PCR for KASP chemistry

**Peltier PCR**

15 min @ 95 °C  
 10 cycles of:  
 20 sec @ 95 °C  
 1 min @ 61-55 °C  
 26 cycles of:  
 20 sec @ 95 °C  
 1 min @ 55 °C  
**Total: 2 h 5 min**

**Hydrocycler<sup>2</sup>**

15 min @ 95 °C  
 10 cycles of:  
 20 sec @ 95 °C  
 1 min @ 61-55 °C  
 26 cycles of:  
 20 sec @ 95 °C  
 1 min @ 55 °C  
**Total: 1 h 10 min**  
**55 min less,  
 44% reduction in  
 total time.**

## PCR using alternative chemistry

**Peltier PCR**

15 min @ 95 °C  
 35 cycles of:  
 1 min @ 95 °C  
 1 min @ 58 °C  
 1 min @ 72 °C  
**Total: 2 h 45 min**

**Hydrocycler<sup>2</sup>**

15 min @ 95 °C  
 35 cycles of:  
 1 min @ 95 °C  
 1 min @ 58 °C  
 1 min @ 72 °C  
**Total: 2 h 15 min**  
**30 min less,  
 18% reduction  
 in total time.**

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