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# ADVANCEMENTS IN SAMPLE ENVIRONMENT AT MLZ

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Over the past several years, the Sample Environmental group at Julich Centre for Neutron Science (JCNS) at MLZ has made remarkable progress in updating and maintenance of the old cryogenic equipment and introducing the new ones. In addition to the tradition Orange-type wet cryostats, several cryogen-free closed cycle cryostats are in use. MLZ offers a wide range of dry and wet magnets with magnetic fields up to 12T and the temperature range 1.8-800K. To extend this temperature interval for 8T magnet an additional  $^3\text{He}$ - $^4\text{He}$  dilution insert was added. During preliminary tests of Kelvinox JT we reached 16mK in the absence of the neutron beam. An additional vacuum can allow using it also with the 12T magnet at PANDA instrument. In future we plan use this and similar Kelvinox JT inserts at other wet and dry cryostats, as well at the other magnets. The main advantage of such dilution insert is that due to the Joule-Thompson stage it is possible to run it directly from a 4K environment.

A new adiabatic demagnetization refrigerator (ADR) for PANDA can continuously operate in the temperature range from 0.3K to 300K. Moreover, in a single-shot mode cryostat can provide temperature as low as 100mK for a short period.

A new stop-flow setup for KWS instrument can provide fast mixing of two components with the high time resolution in a wide temperature and pressure ranges. MLZ also offers different high-pressure, low/high-temperature and specialized equipment.

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