# Development of a sample changer for low temperatures

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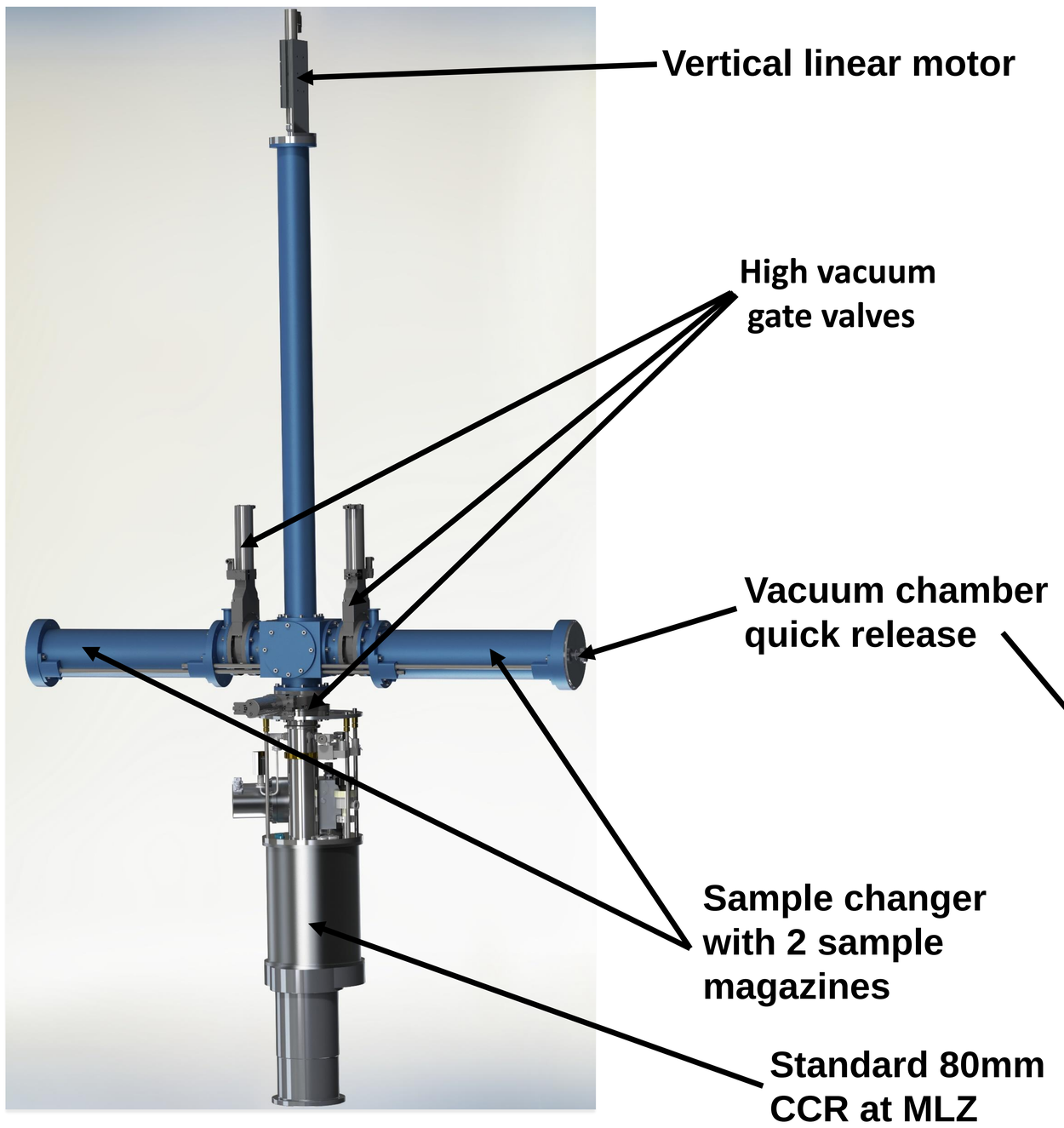
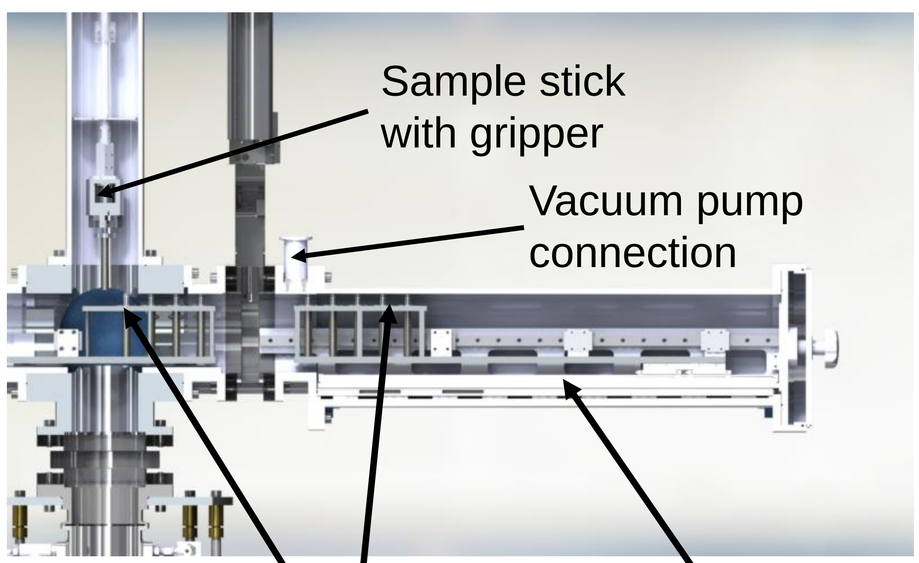
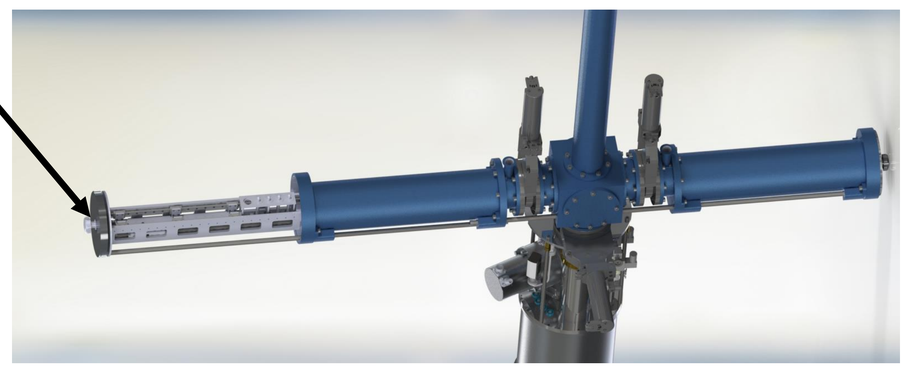
## Introduction

**To better serve user needs and to allow automated and high – throughput operation we have developed a new sample changer for the high-resolution powder diffractometer SPODI. We have developed an automated sample changer for low temperatures for the standard 80 mm Closed Cycle Refrigerator (CCR) at MLZ, which allows the measurement of up to 10 samples without operator attendance. The equipment consists the following major components: (i) 2 horizontal linear motor with sample magazines, (ii) vertical linear motor with a passive sample gripper for picking up the sample and moving the sample to beam height. The sample magazine is separated from the rest of the system by locks. This allows the magazine to be loaded during a measurement and independent of each other.**

## Design



## Gripper




**No additional external medium is required to grasp or unlock.**
**By pressing the red push button the gripper is unlocked once and locked once**

## Summary

- **The sample changer has a modular structure; Depending on the instrument the number and length of the sample magazines can be designed variably. For example, 4 arms and shorter chambers are also possible**
- **The gripper and magazine can also be changed for other sample geometries**
- **The system is integrated into the instrument control software and controlled by it**

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