Student's Zone 2020 of the NICA Project



Contribution ID: 1

Type: not specified

Heat transfer simulation of the cooling system for NICA-MPD-Platform RACK cabinet.

Heat transfer simulation of the cooling system for NICA-MPD-Platform RACK cabinet

Contact to the supervisor: czarnynoga@jinr.ru

Description of topic:

The main goal of this internship topic is to conduct heat transfer simulation for the NICA-MPD-Platform RACK cabinet which using a new cooling system. Exactly for a set of two RACKs and one cooling cabinet. During the practice, student get skills of preparing the simply 3D model and conduct heat transfer simulation for it. Moreover, the student gets an overview of the whole NICA-MPD-Platform project and the issue of temperature stability.

Student internship goals: (estimated time of work)

- Get acquainted with basic technical documentation of NICA-MPD-Platform (3 days)
- Prepare geometry model of typical RACK equipment (3 days)
- Conduct heart transfer simulation for model of typical RACK equipment (3 days)
- Compare simulation results with measured values (2 days)
- Prepare geometry model of RACK with equipment (3 days)
- Prepare geometry model of cooling cabinet (2 days)
- Prepare geometry model of set two RACK and cooling cabinet (1day)
- Conduct heart transfer simulation for set two RACK and cooling cabinet (5 days)
- Prepare analysis of results (5 days)
- Prepare final report (5 days)
- Prepare final presentation (2 days) (34)

Total time of work: 34 days + preliminary consultation and lectures

Student Learning Outcomes:

- Interpret of technical documentation (of NICA-MPD-Platform)
- Use Autodesk Inventor Pro to create simply 3D geometry
- Use Autodesk CFD to conduct heat transfer and gas flow simulation
- Produce a formal technical documentation
- Produce a simply engineering drawing

Primary author: CZARNYNOGA, Maciej (WUT)

Co-author: Mr ROSLON, Krystian (WUT, JINR)

Presenter: CZARNYNOGA, Maciej (WUT)