

New High Power Laser Future Facilities at CLF

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Over the years, the Central Laser Facility provided to the user community state of the art high power laser facilities to support world leading experiments. To keep up with the request from the user community two major projects are on going. The first project is aiming to expand the capability of the Gemini laser facility. The new facility is called EPAC and it is aiming to provide a 1PW laser system, 30J in 30fs, with 10Hz repetition rate. In addition to the laser, it is planned to deliver to the user an electron beam accelerated by the laser for application. A new building has been recently completed and the design phase is almost complete. The installation phase is now starting. Some remaining technical challenges are still under investigation, mostly related to the 10Hz repetition rate and the high pointing stability requirement.

On the other hand, the high energy laser facility Vulcan is now more the 30 years old and it is reaching the end of the interest from the user community. In this direction, few years ago the development of the new petawatt beamline, called VOPPEL, started. At the same time, the proposal for a major upgrade to the Vulcan, called Vulcan 20-20, was started and it has been recently approved. The formal announcement is expected soon with the project starting stray after. The aim of this project will be to deliver a 20PW laser pulse, 400J 20fs, within long laser pulses around 10ns and up to 10kJ of energy.

In this communication will be presented the start of the art of the EPAC project and the challenges for the new facility Vulcan 20-20.