

TREATMENT

QUALIFICATION



CONTROLLED IRRADIATION CONDITIONS FROM AMBIENT TO EXTREM TEMPERATURES

LAETICIA

80 K TO 600 K

CONTROLLED ATMOSPHERE AND TEMPERATURE

ACCELERATED AGING OF MATERIALS

Environmental conditions have a strong influence on aging of materials under irradiation.

The control of the temperature and atmosphere is essential when a treatment or a qualification of materials is carried out, whether for organic (polymers), metallic or mineral (ceramics) materials.

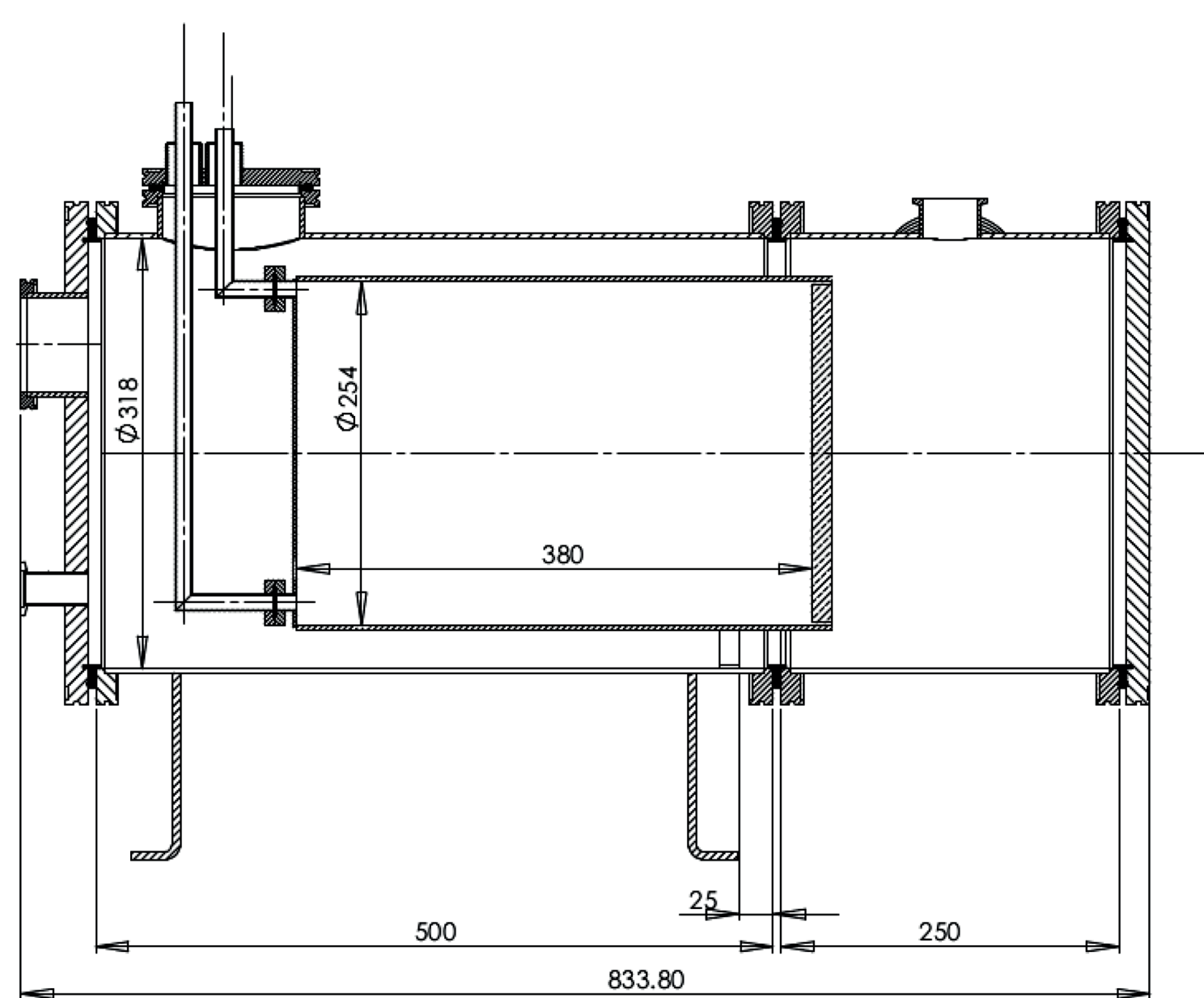
For this purpose, ATRON has developed the LAETICIA irradiation chamber, allowing to submit samples to extrem temperatures, from 80 K (temperature of liquid nitrogen) to more than 300°C. A cold source and heaters enable the regulation of this temperature during irradiation.

Furthermore, atmosphere can also be chosen to be air, nitrogen or vacuum to tune time effects of aging under radiation. However, electrons irradiation are only achievable under vacuum.

This chamber covers a broad spectrum of scientific applications to FELIX, the ATRON irradiation mean, which allows to reach dose rates up to 10 Gy/s with X-rays and up to 10 kGy/s in ebeam.

THE LAETICIA IRRADIATION CHAMBER IN DETAILS

It consists in a cylindrical irradiation chamber that encloses a cavity which can contain liquid nitrogen or cooled water as a cold source. The sample is then fixed to this cavity on a plate with heating resistors.



The temperature feedback of the sample is made possible by an external PID regulation device.

The sample can be further instrumented to follow its evolution during irradiation.

The size of the samples that can accommodate LAETICIA goes up to 200x200 mm².

PHYSICO-CHEMICAL PHENOMENA UNDERSTANDING

Irradiation of materials allows to measure their aging in a hostile environment. ATRON also helps to understand the physico-chemical phenomena that cause this aging.

To do this, ATRON has:

- recognized experts in the fields of ionizing radiation, physics of materials and organic chemistry
- dedicated simulation tools specially developed for this application
- partnerships with a network of regional laboratories

ATRON allows to meet your most varied irradiation needs and help you to understand the physico-chemical phenomena involved.



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