15 Years of Service

OMI OPTIKA Engineering Ltd Mérnökiroda Kft

MMTP Magyar Magfúziós Technológia Platform

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Contribution in Plasma Diagnostics Projects

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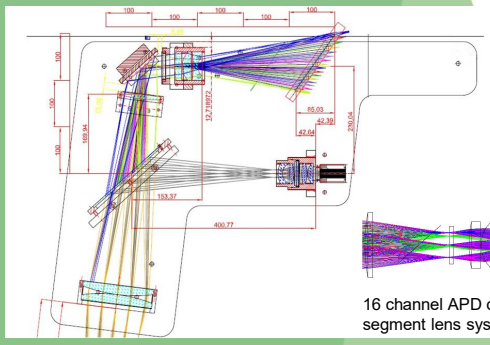
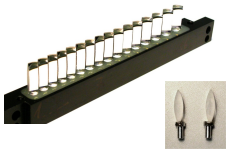
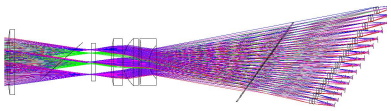
For decades, experts at the Wigner Research Centre for Physics of the Hungarian Academy of Sciences (MTA WIGNER RCP, former KFKI RMKI) work on the physics aspects of controlled fusion, i.e. the most promising large scale climate neutral energy production scheme on the long term. Most of the research activities are implemented through the EUROfusion consortium, the integrated fusion program of the EU, in which Wigner RCP is the national participant nominated by the Hungarian Government. WIGNER's Plasma Physics Department adopts its own developed technologies to improve, manufacture, and operate state-of-the-art measurement systems in former and present leading plasma and fusion devices in the EU and worldwide: TEXTOR (DE), JET(EU), MAST(UK), AUG(DE), W7-X(DE), KSTAR(KO), EAST(CN), JT60SA(JP), COMPASS(CZ).

During many years of successful cooperation OMI OPTIKA contributed with design, manufacture and test activities in projects as follows:
- Design and manufacture of a coupled camera and 16 channel APD optical system for the TEXTOR TOKAMAK (2006-2008);
- Design, manufacture and test of 10 pcs of pinhole objectives with 30º FOV for the Wendelstein 7-X (W7-X, 2012) 10-camera overview video system;
- Design of a coupled camera and APD periscope-like optical system for the EAST Li-beam (2013) diagnostics;
- Design, manufacture and test of a pinhole objective with 80º FOV for the JT-60SA (2018-2019) EDICAM camera system;

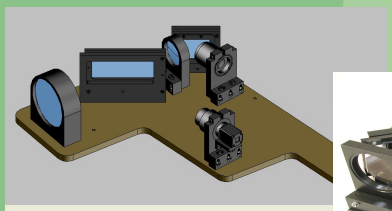
Coupled camera and 16 channel APD optical system, TEXTOR TOKAMAK Li-beam observing system

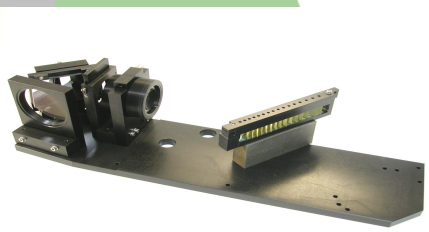






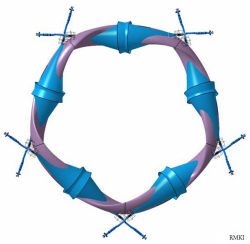
16 channel APD detector beam layout design with 16 segment lens system for higher collecting efficiency

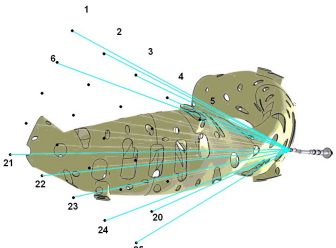




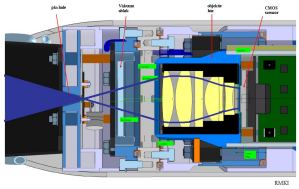
Optomechanical design and finished optical system with coupled camera and APD optics (without the APD detector)

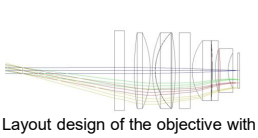
Pinhole objective with 30º FOV for the 10-camera overview video system, W7-X



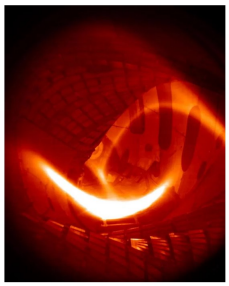


Layout design of Wendelstein 7-X video diagnostic system with 30º FOV objective and chamber during manufacturing process

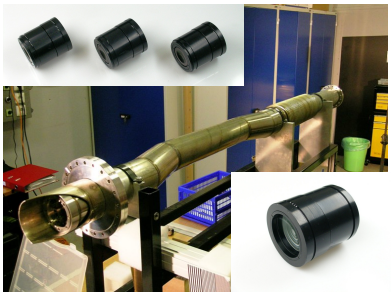




Layout design of the objective with key components at the chamber ending of the diagnostic tube

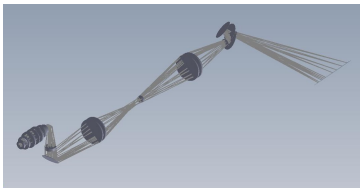


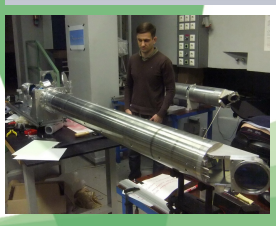
First hydrogen plasma of W7-X captured through the objective by the hungarian video diagnostics (© WIGNER RCP)

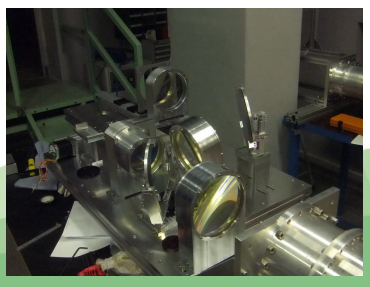


Finished objectives and complete diagnostics tube with objectives inside in Wigner's lab

Coupled camera and APD periscope-like optical system, EAST Li-beam

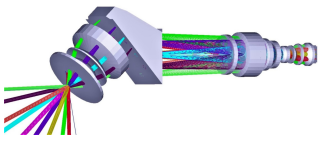




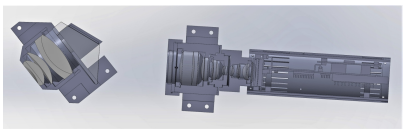


Design layout of detector and camera optical paths and views of assembled system

Pinhole objective with 80º FOV, JT-60SA

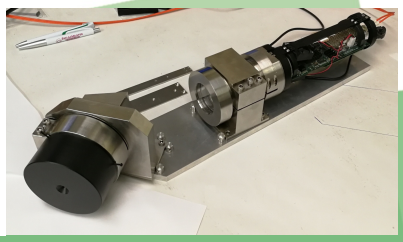


Optical design layout with Bauernfeind prism



Optomechanical design of mounted optics with EDICAM camera

Objective mount made of stainless steel



Assembled objective with EDICAM for inhouse test