Telecentric lens filters and plug-in filter holder

Light filtering is a typical need in machine vision measurement applications.
For instance, you may need to remove possible interactions between your machine vision LED illuminator and other lighting sources usually present in any industrial environment.

Moreover, sun light is very frequently causing faults in imaging systems due to unexpected reflections on the surface of the part being measured. In such cases a band-pass or long-pass filter matching the illuminator emission wavelenghts is usually integrated in front of the objective: this way only the light coming from the illuminator is collected, while the rest of the spectrum is cut out. Besides stray-light removal, many machine vision applications require monochromatic or pseudo-monochromatic illumination in order to enhance or suppress some object features: under these conditions only the features with a certain color are imaged and can be measured.

The main issue with integrating filters in telecentric lenses is the size of the front optical element which can also be very large. For this reason a filter in front of a telecentric lens would have to be very large and consequently very expensive.
To overcome size and cost issues, Opto Engineering® thought up a smart and cost-effective solution.

A simple filter adaptor can be easily placed inside the rear part of most of our C-mount telecentric lenses: all TC12yy and TC23yy Matrix Detector Telecentric lenses support this accessory, which is also suitable for the C-mount versions of OE TC4M and TC2M Series.
The bi-telecentricity of Opto Engineering® lenses makes this solution perfectly efficient, as the rays will pass parallel through the filter allowing for the optical bandpass to be maintained over the entire image surface.
The supported filter diameter is 17,50 mm and the maximum recommended filter thickness is 4 mm.

Since inserting the filter will increase the back focal length of the lens, spacers (included in the TC lens package) must be added to the C-mount in order to tune the lens back to its nominal working distance; the overall thickness of the spacers is usually 1/3 of the filter thickness.
Besides the **TC-FILTER** adaptor, Opto Engineering® also offers a selection of standard filters fitting OE Telecentric Lenses and Collimated Illuminators.

part number	description	matching products
Filter Mount		
TC-FILTER	Filter Mount for Telecentric Lenses	TC12yy and TC23yy lenses
Filters		
COBP470D17.5	Blue (470 nm) bandpass filter, 17.5 mm diameter	/B LED sources
COBP525D17.5	Green (525 nm) Bandpass filter filter, 17.5 mm diameter	/G LED sources
COBP635D17.5	Red (635 nm) Bandpass filter, 17.5 mm diameter	/R LED sources
COBP880D17.5	IR (880 nm) Bandpass filter filter, 17.5 mm diameter	/IR890 LED sources
COLP920D17.5	IR (920 nm) LongPass filter, 17.5 mm diameter	/IR940 LED sources
COPR032D17.5	polarizer, 17.5 mm diameter	