



Custom Microsystem Development and Production through
Design for Manufacturing and Horizontal Integration

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MEMSLand Business carrier 7

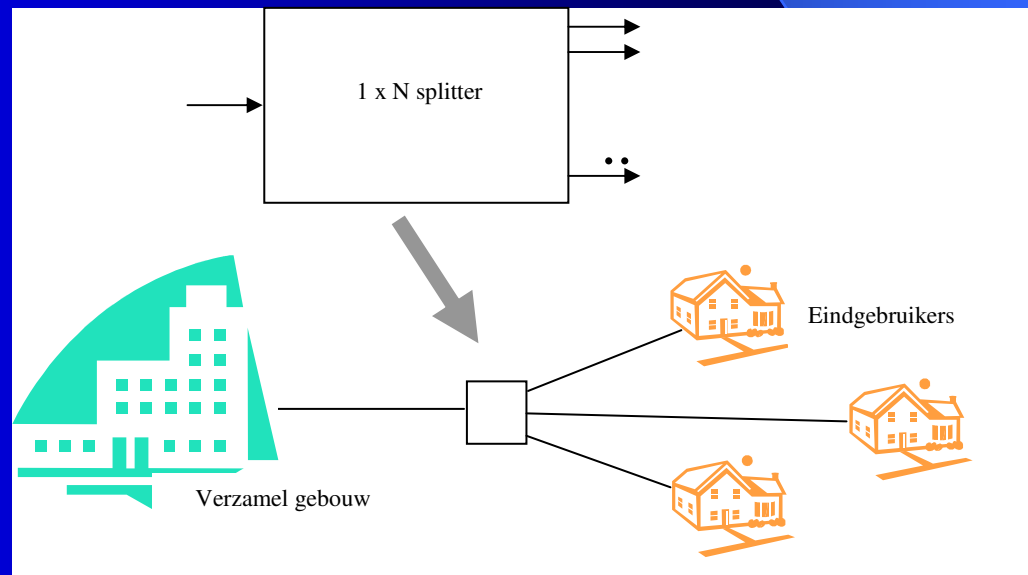
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1*32 Planar Optical Splitter

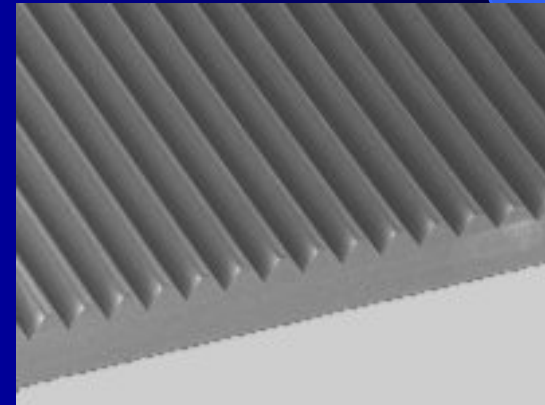
1*32 planar splitter

- The 1*32 planar optical splitter splits an incoming light signal into 32 output signals.
- For telecom applications this is very important as an enabler for the Fiber-to-the-Home implementations of Broadband connections to the end user premises.



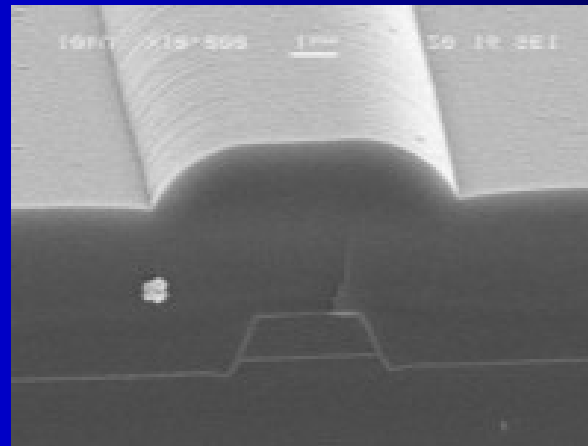
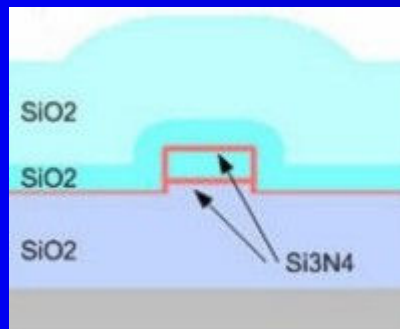
1*32 planar splitter

- It also act as a demonstrator for more complex devices, where routing of optical signals can be done.
- The optical chip has 33 fiber optical inputs, connected to the chip by a Fiber Array Unit



Technology

- The Splitter is build out of one or more waveguiding layers based out of Si₃N₄ and SiO₂ layers.
- The waveguiding layers are based on Lionix waveguiding technology called TriPleX.
- These combine low propagation losses with excellent polarization behaviour and good manufacturability.



Technology

- The optical characterization is performed using different techniques, including cut-back and interferometry.

	Group birefringence (Bg)	Channel attenuation (dB/cm)	Polarization dependent loss (PDL, in dB)	Insertion loss (IL) without spot size converter (dB)
A-shaped geometry	$< 1 \times 10^{-4}$	< 0.10	0.12	1.4

Optical sensor

- The first demonstrator of a 1*32 optical splitters has been realized as is shown in the figure below. For demonstration purposes visible light is used. The normal operation of the device is in the third optical telecommunication window.

