



Industrial GEM production at Techtra.

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1. Introduction
2. Micro-Chemical-Vias technology
3. Gem technology
4. Gem-View detector for NDT



Wrocław Technology Park



„Microvia Technology” licence (2002)

ORGANISATION EUROPEENNE POUR LA RECHERCHE NUCLEAIRE
CERN EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH

AGREEMENT K 922/ETT

LICENCE AGREEMENT FOR MICROVIA TECHNOLOGY

Licensee: Technology Transfer Agency Techtra Ltd.

Technology suitable for:

- Multilayer PCB
- GEM foils



Eldos site

Kapton processing machinery



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MCV production
line based on
CERN technology

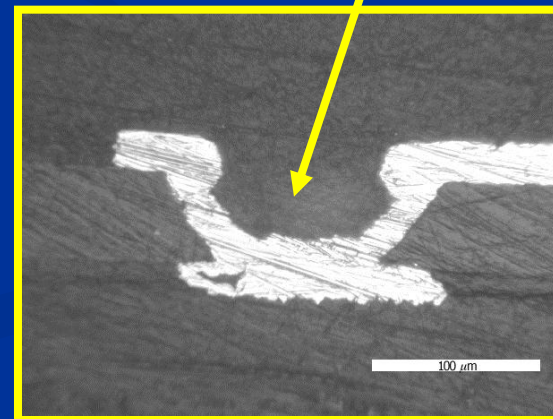
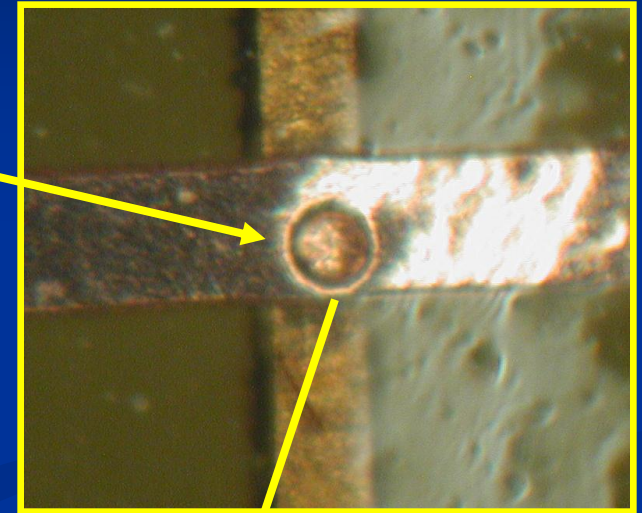
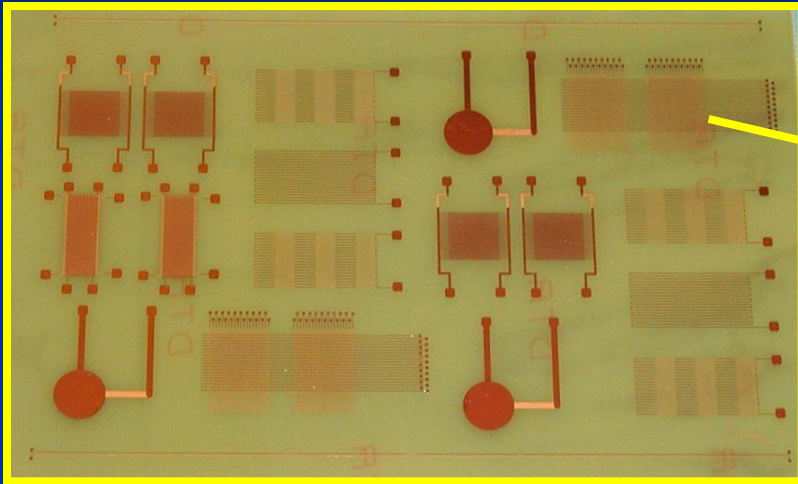
Vias cleaning machinery



Single-jet acid etching bath, CERN.



Multi-jet acid etching bath,
Techtra

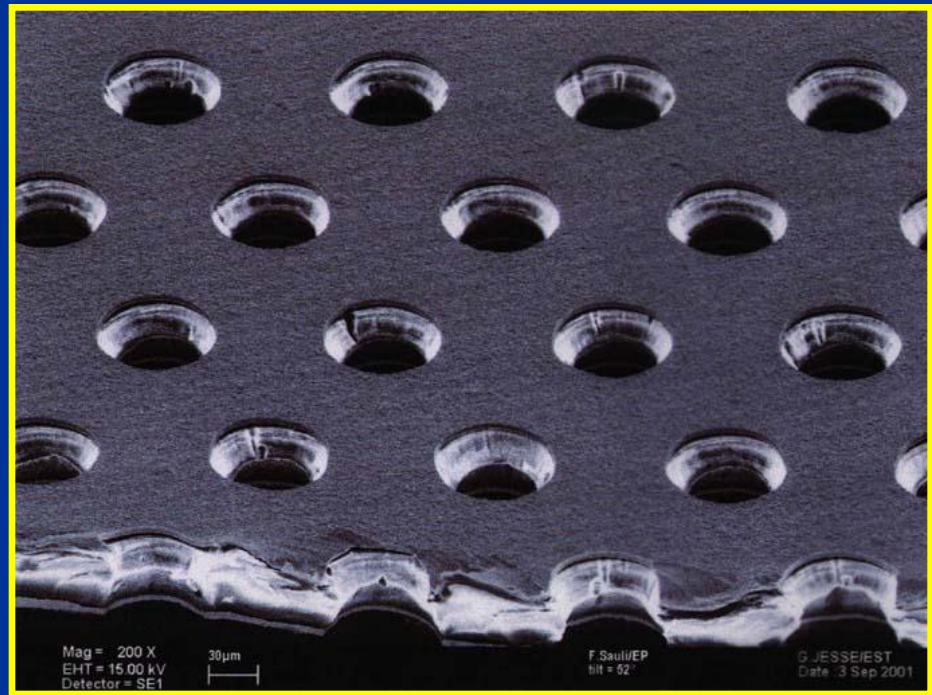
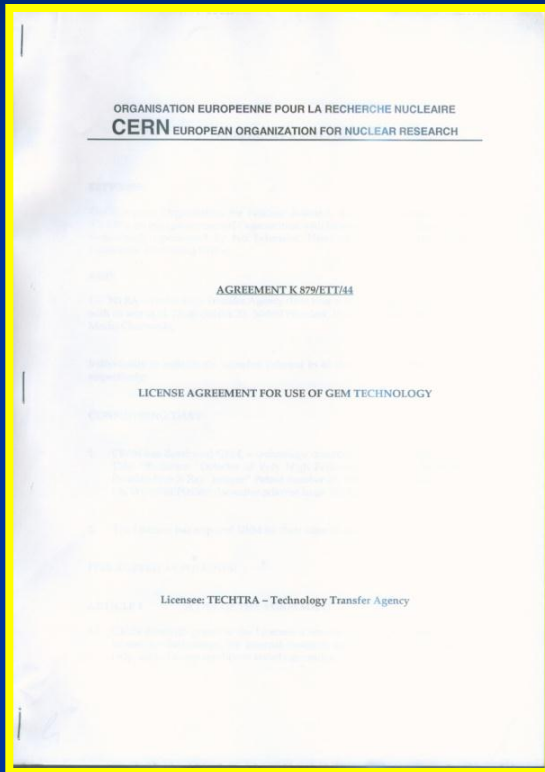


MCV test board

Problems with MCV (ELDOS):

1. Unknown technology
2. Dense acid spray needed
3. Flexible foil

„Use of GEM Technology“ licence (2004)



GEM foil, CERN.

Photolithography machines set in Techtra



Kapton etching device moved from Eldos to WPT.

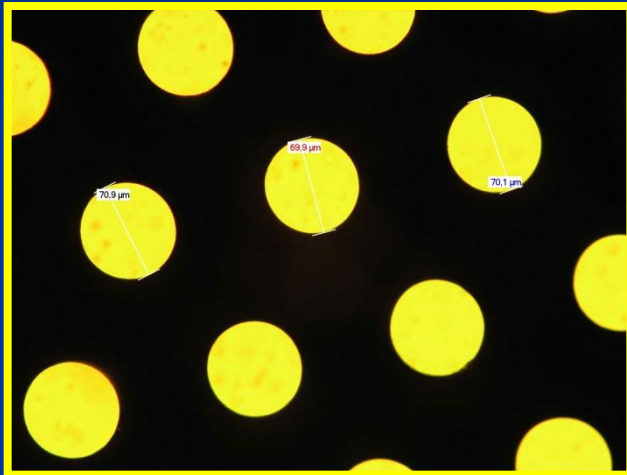


PCB laminator

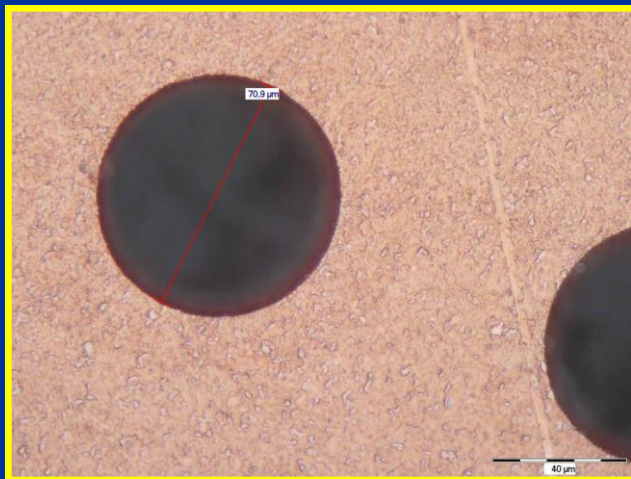


Exposure Unit

First GEMs made by Techtra.



GEM Vias.
magnification
of 200x



GEM Vias.
magnification
of 500x



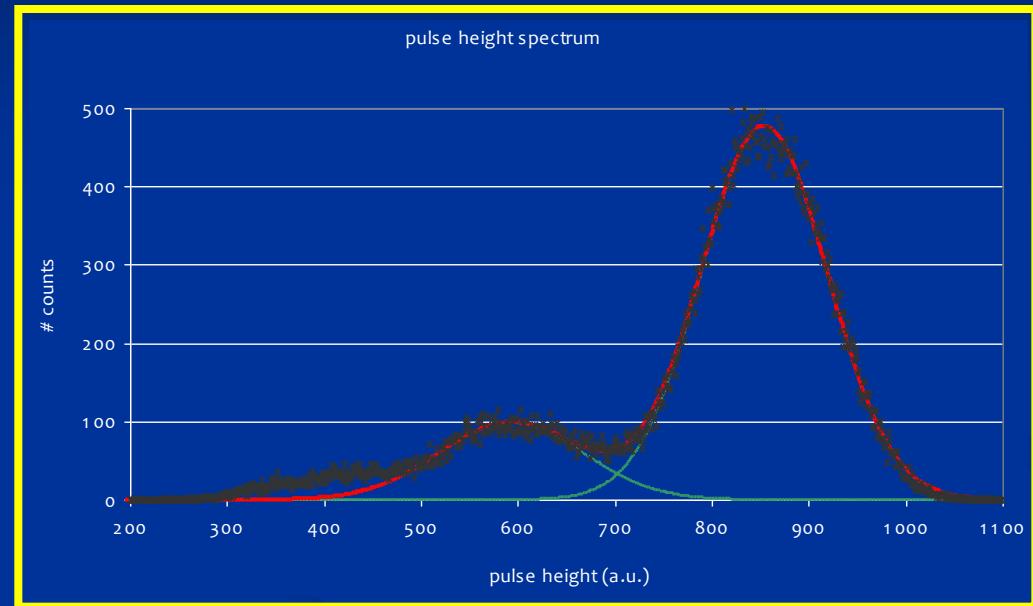
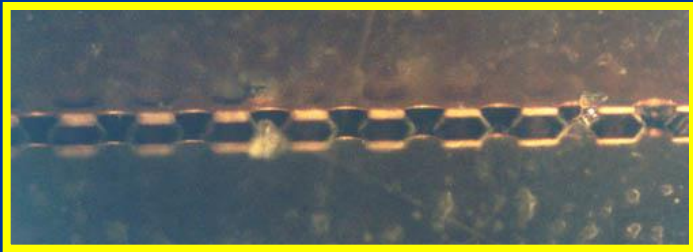
100x100 mm
framed GEM

Quality: optical and
electrical tests.



Geometry inspection

GEM cross section:

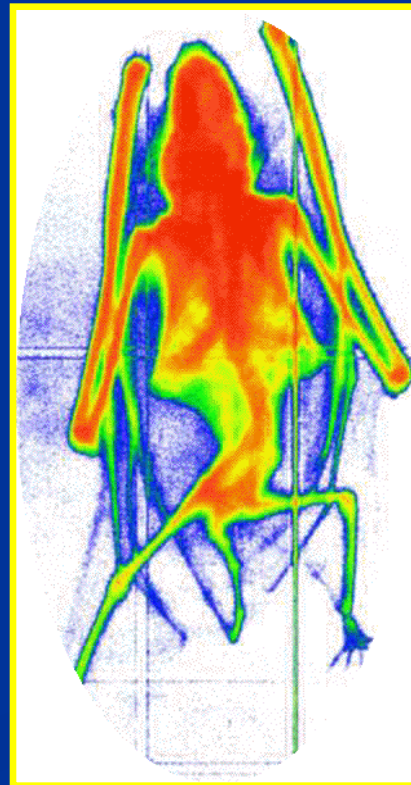
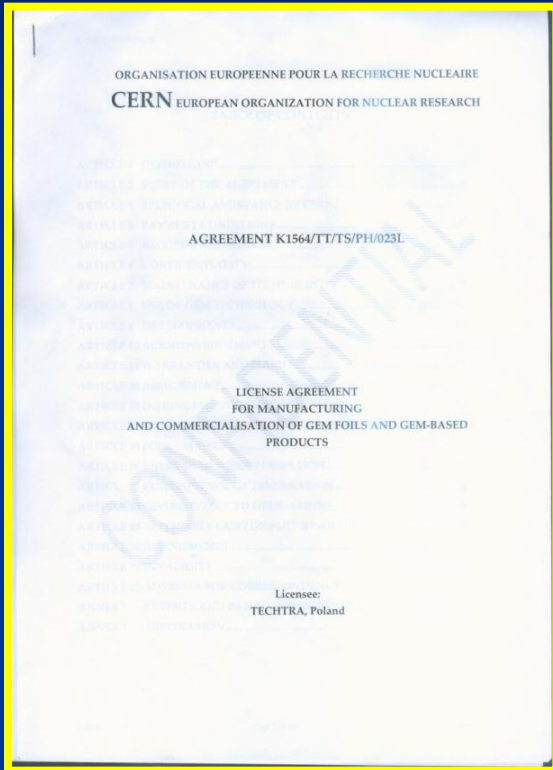


Techtra GEM test results and a double Gaussian.

Problems with GEMs (Techtra):

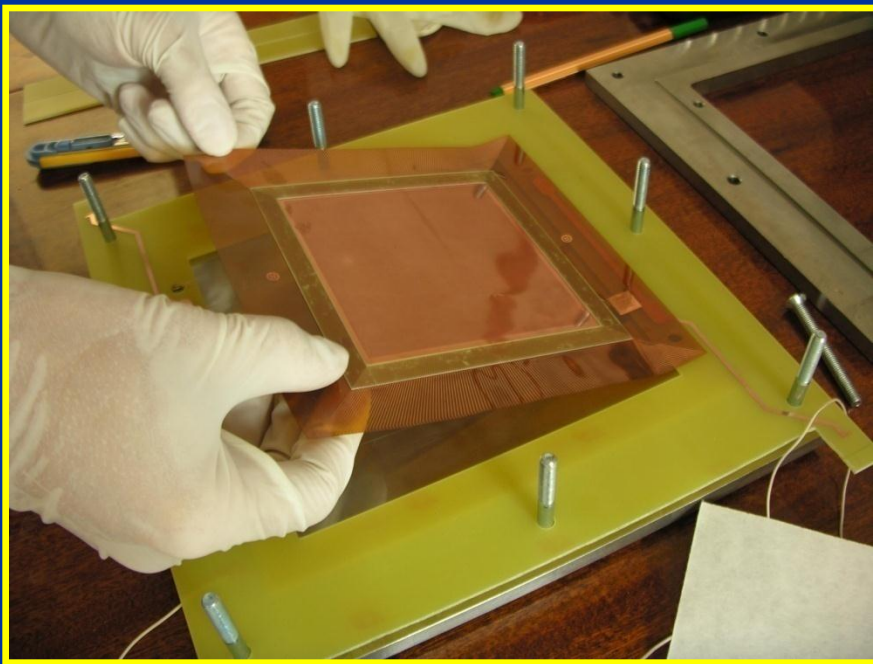
1. Limited market for foils.
2. No industrial application.

„Manufacturing and commercialization of GEM and GEM-Based products” (2009)



GEM radiograph, CERN

Towards the „GEM-View” detector



GEM implementation

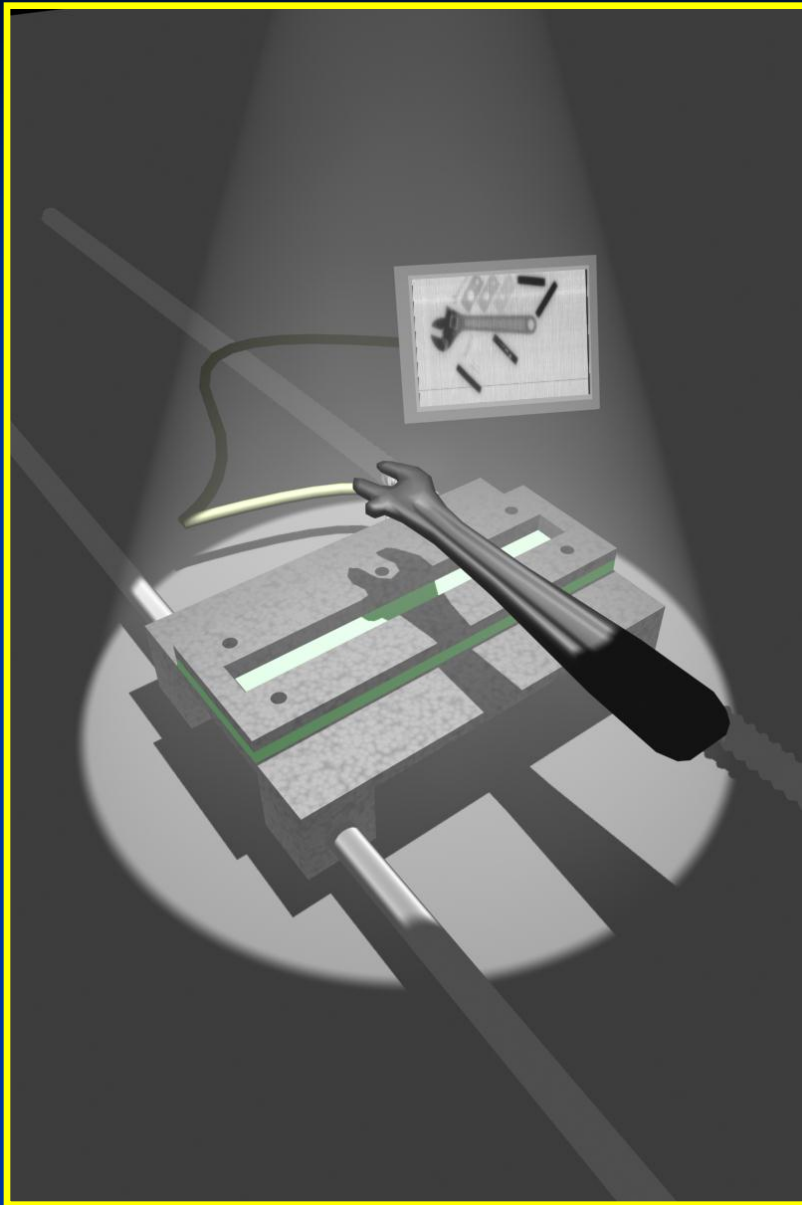


The very first prototype

**GEM-VIEW: Direct Data Radiodetector dedicated to
Non-Destructive Testing**



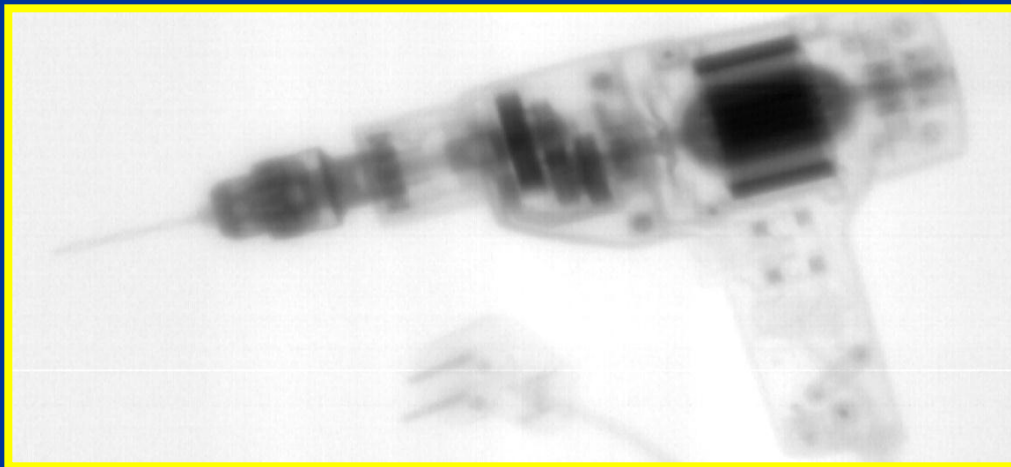
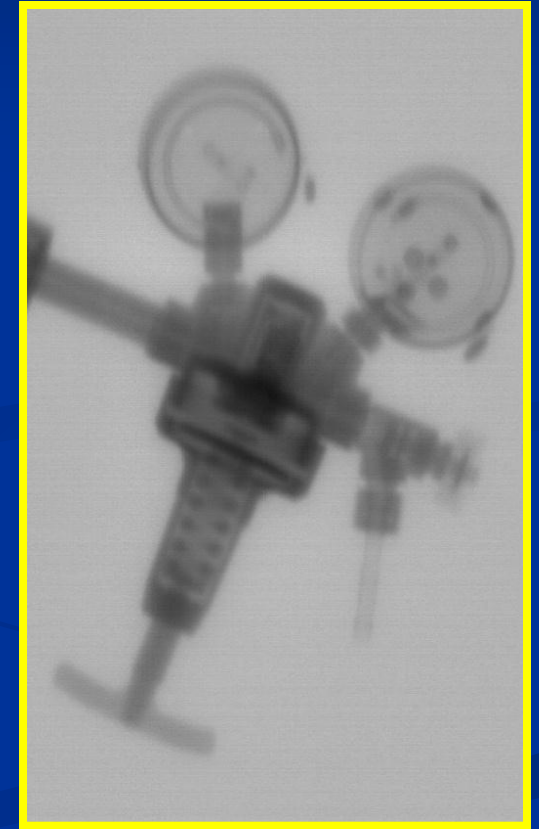
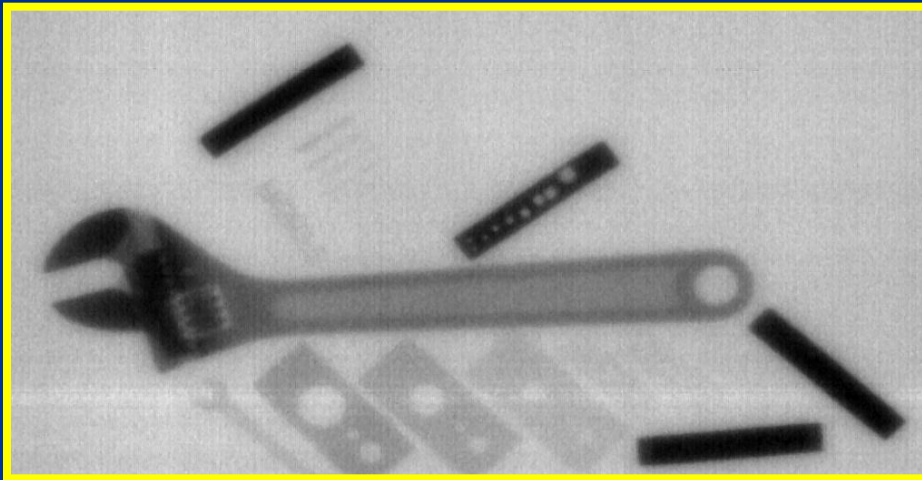
Commercially available: GEM-VIEW DDR detector, TTA Techtra.



In comparison with the existing solutions, the main advantages of the *GEM-VIEW* include:

- resistance to ageing effects
- on-line operation
- high resolution
- universal applications
- low costs

Radiographs made with GEM-VIEW



Plans for the future:

- improving „GEM-View” technology
- “single mask” technology
- large GEM foils

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Thank you for
your attention