



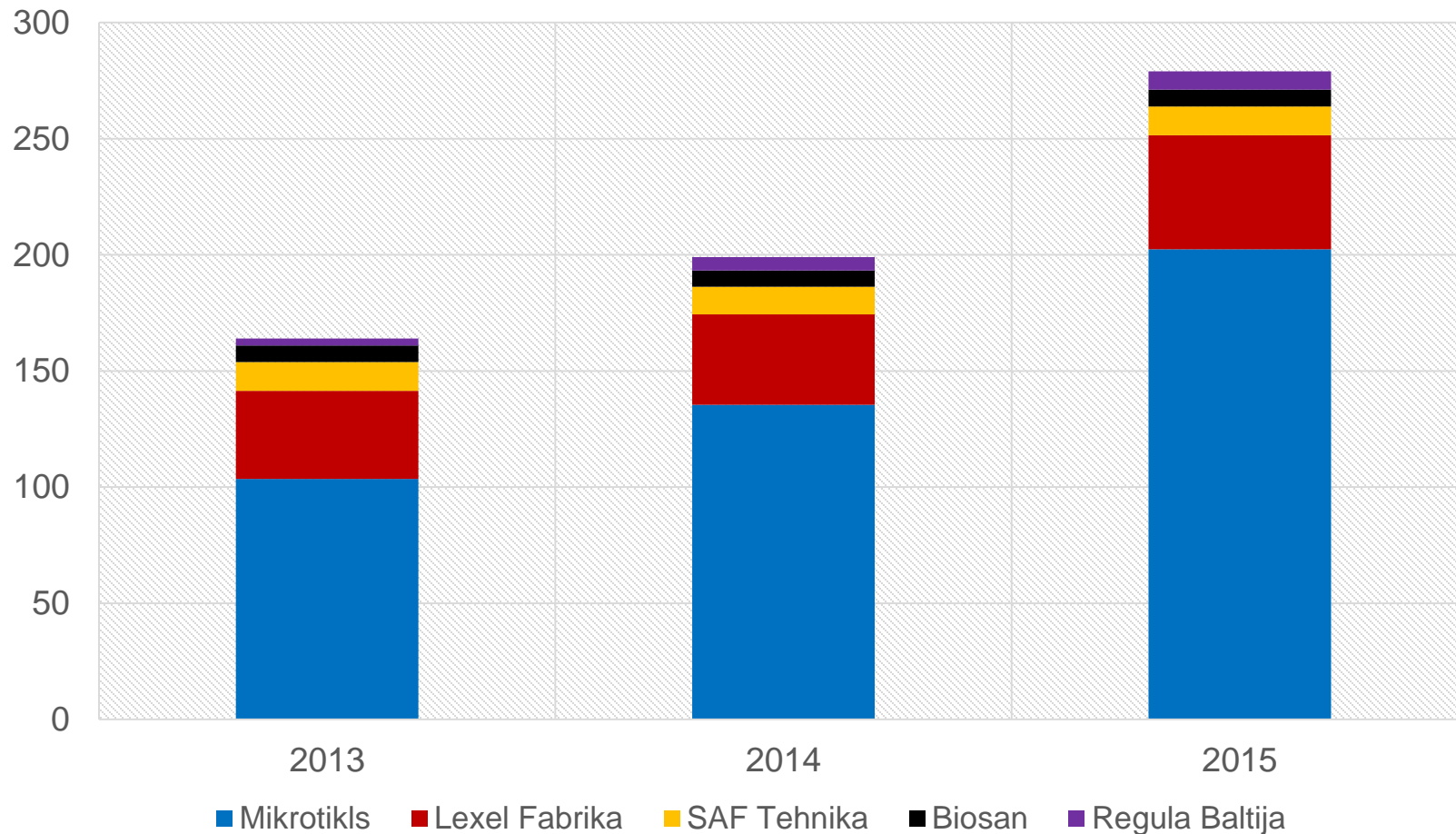
# High-tech cluster of Electronics and Optics, Telecommunications and related industries

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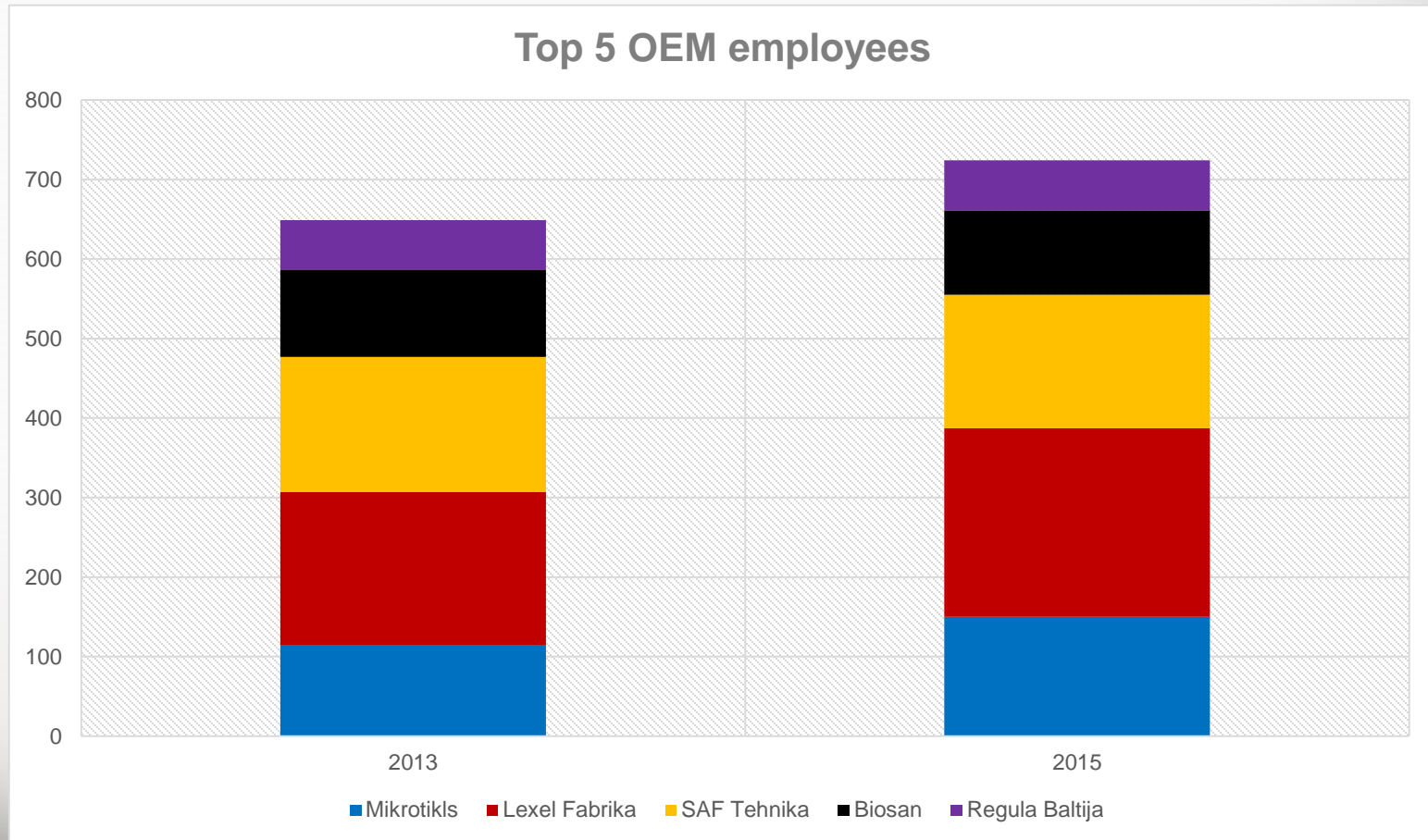
*Riga, March 23, 2017*

- **Mikrotīkls** – internet data routers, software & hardware – Product development, manufacturing marketing and sales. «Exporting champion» – most of products manufactured in Latvia (2015 = 202.4 MEUR/150)
- **Lexel Fabrika** - Schneider Electric group plant located in Riga, electronic products manufacturing hub (2015 = 49.1 MEUR/237)
- **SAF Tehnika** – microwave radio manufacturer. Product development, manufacturing, production. (2015 = 12.3 MEUR/168)
- **Regula Baltija** - Development and manufacturing of banknote verification equipment. (2015 = 7.9 MEUR/63)
- **Biosan** – Development and manufacturing of scientific equipment. (2015 = 7.3 MEUR/106)
- **other OEM** – Baltic Scientific Instruments, Plockmatic Riga, JZ Microphones, etc.
- **Total (top 5) 2015 = 285 MEUR/724**

### Top 5 OEM Sales, M EUR



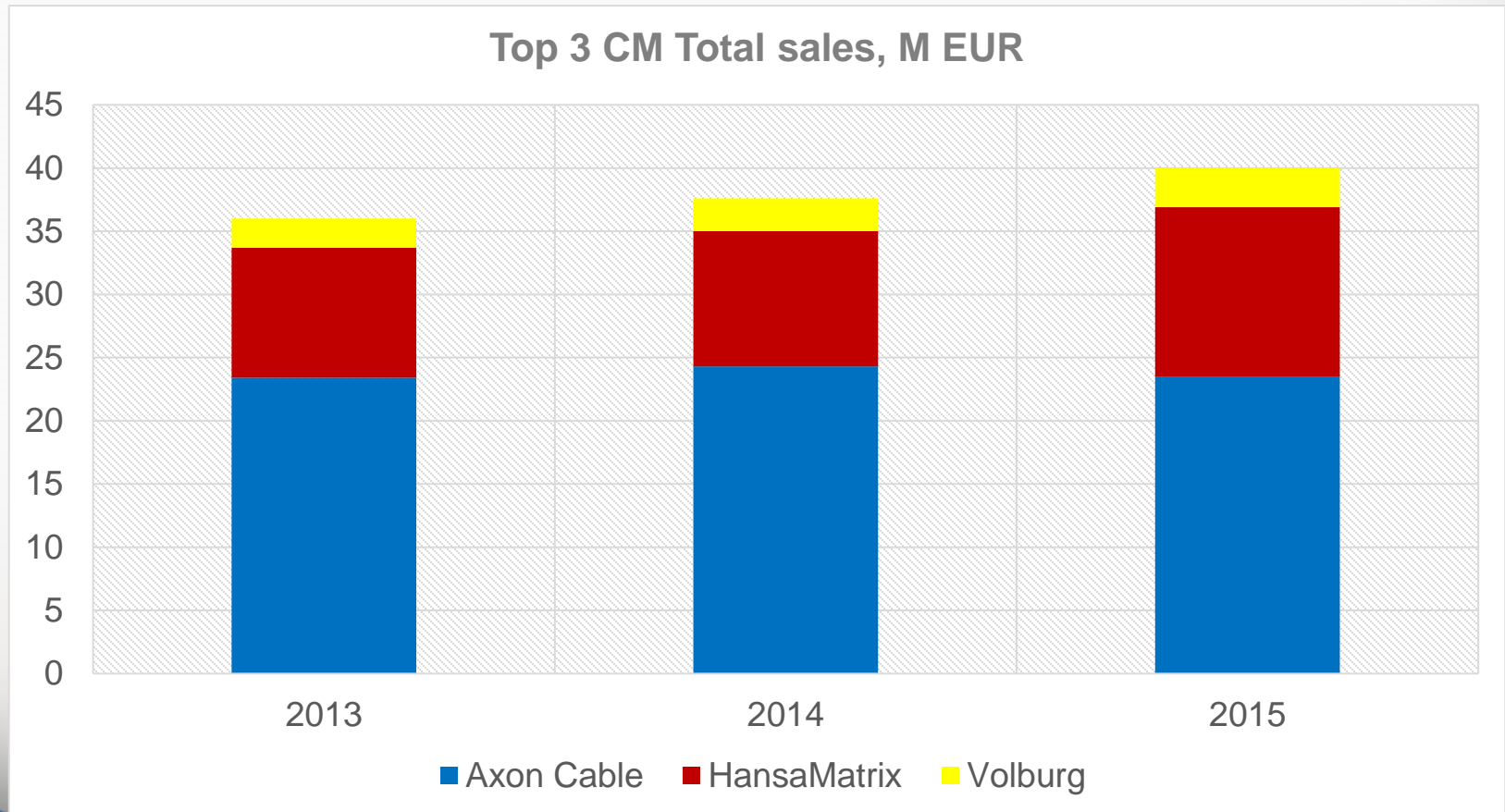
## OEM companies charts



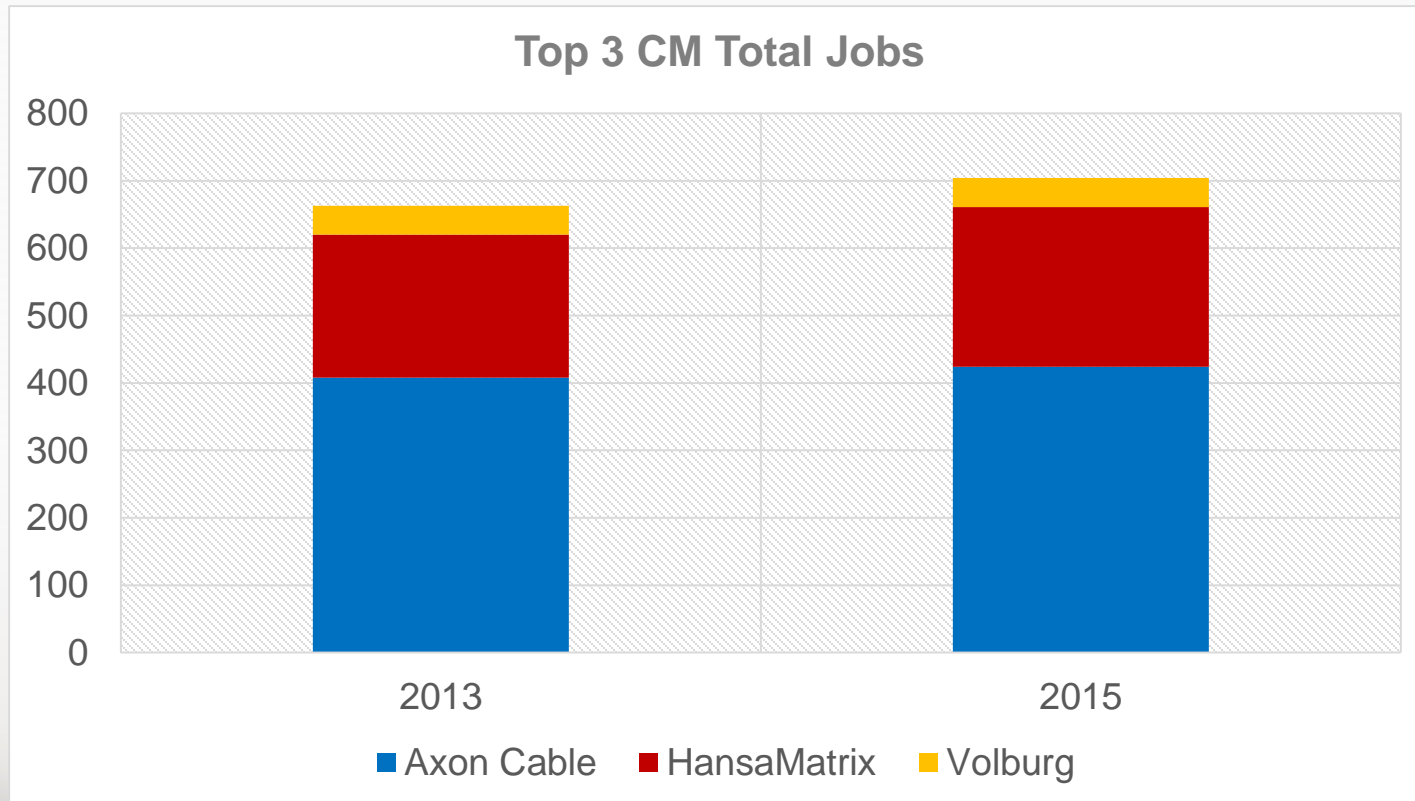
## Contract manufacturing (supply chain) companies

- **Axon Cable** – Cable assembly and wire harness manufacturer, Daugavpils. (2015 = 23.5 MEUR/424)
- **HansaMatrix (Hanzas Elektronika)** – contract manufacturer of electronic systems, plants in Ogre and Ventspils. (2015 = 13.4 MEUR/237)
- **Volburg** – contract manufacturer of electronic systems (2015 = 3.1 MEUR/43)
- **Other** contract manufacturers – EFN NORD, STE-VIKAN, u.c.
- **Total (top 3) 2015 = 40.0 MEUR/704**

## Contract manufacturing (supply chain) companies



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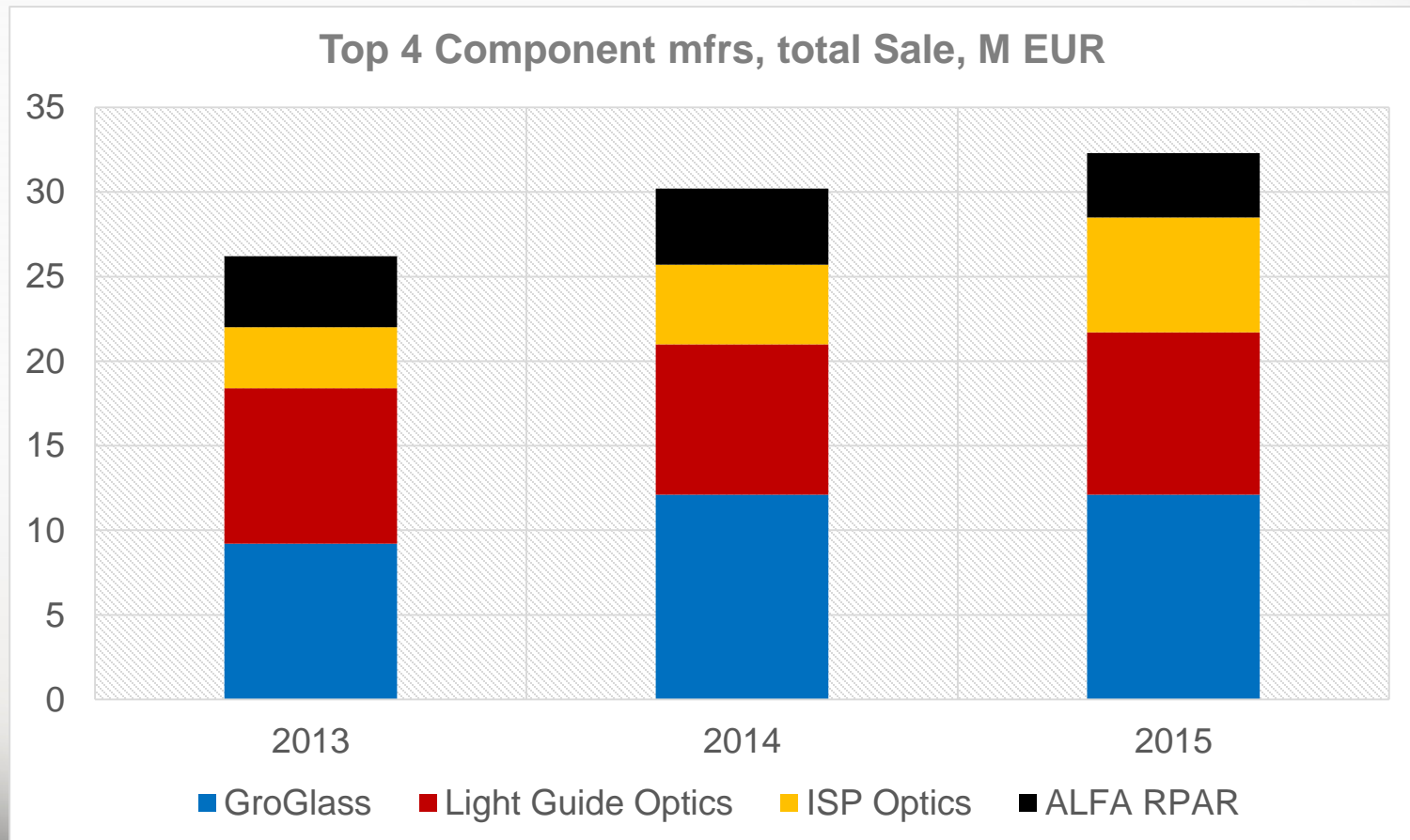


## Component and special material manufacturers

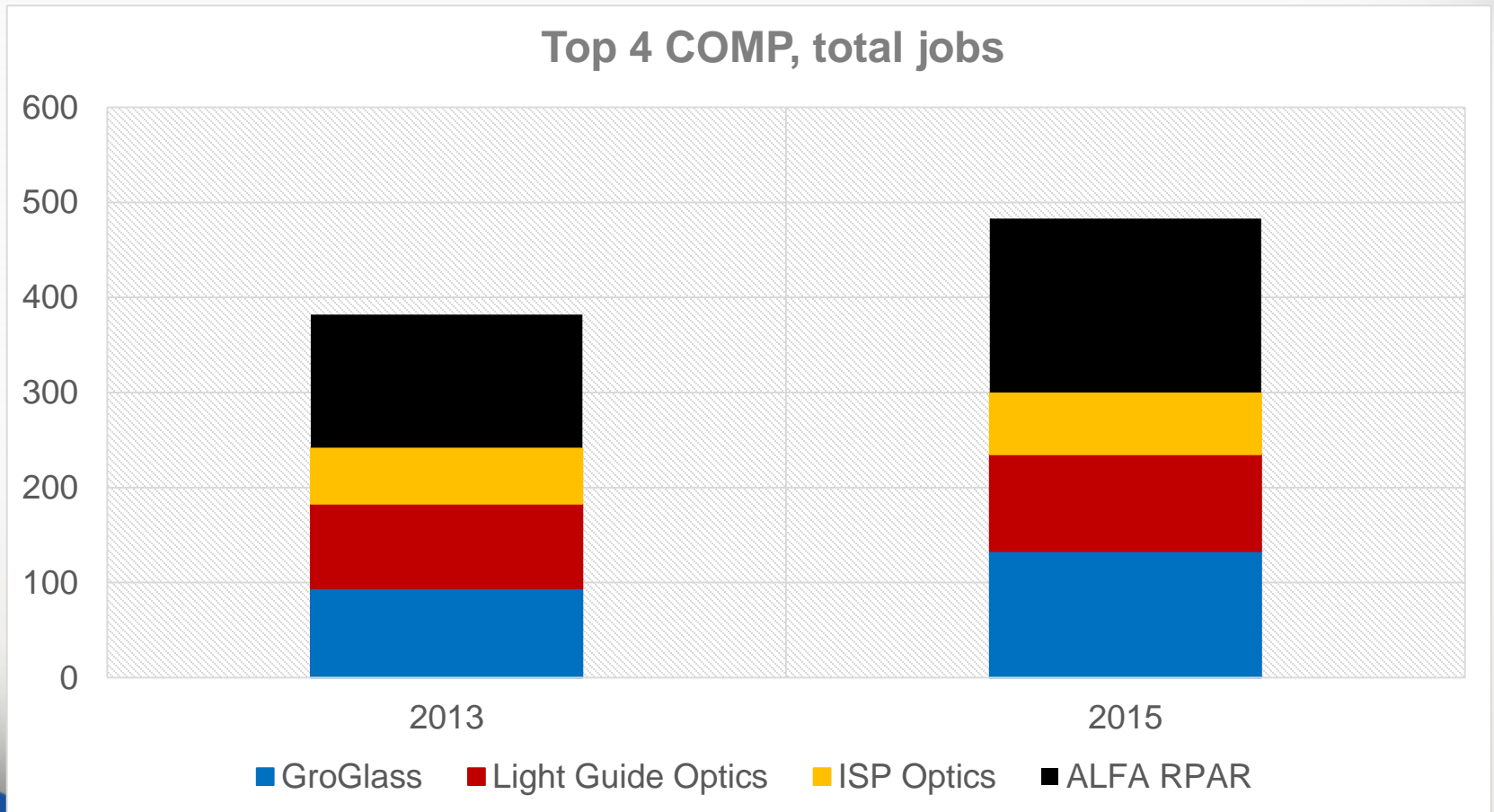
- **GroGlass** – manufacturer of specialized technical glass. (2015 = 12.1 MEUR/133)
- **Light Guide Optics** – manufacturer of specialized fiber optic products, Līvāni. (2015 = 9.6 MEUR/102)
- **ISP Optics** – germanium IR lense manufacturer (2015 = 6.8 MEUR/65)
- **ALFA RPAR** – semiconductor devices manufacturer. (2015 = 3.8 MEUR/183)
- **Other** - EUROLCDs, etc.
- **Total (top 4) 2015 = 32.3 MEUR/483**



## Component and special material manufacturers



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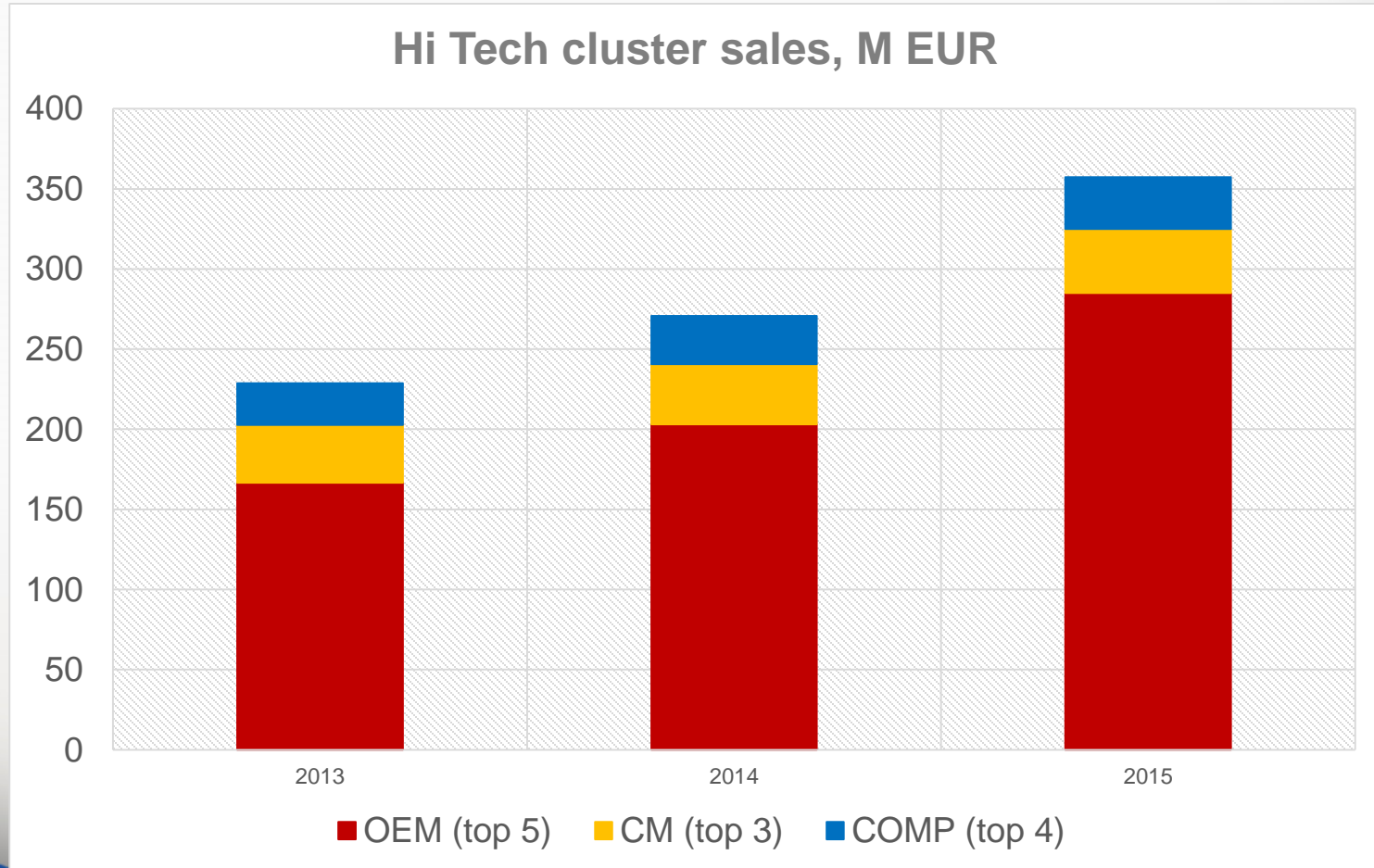


# LETERA. Recent «start-ups»

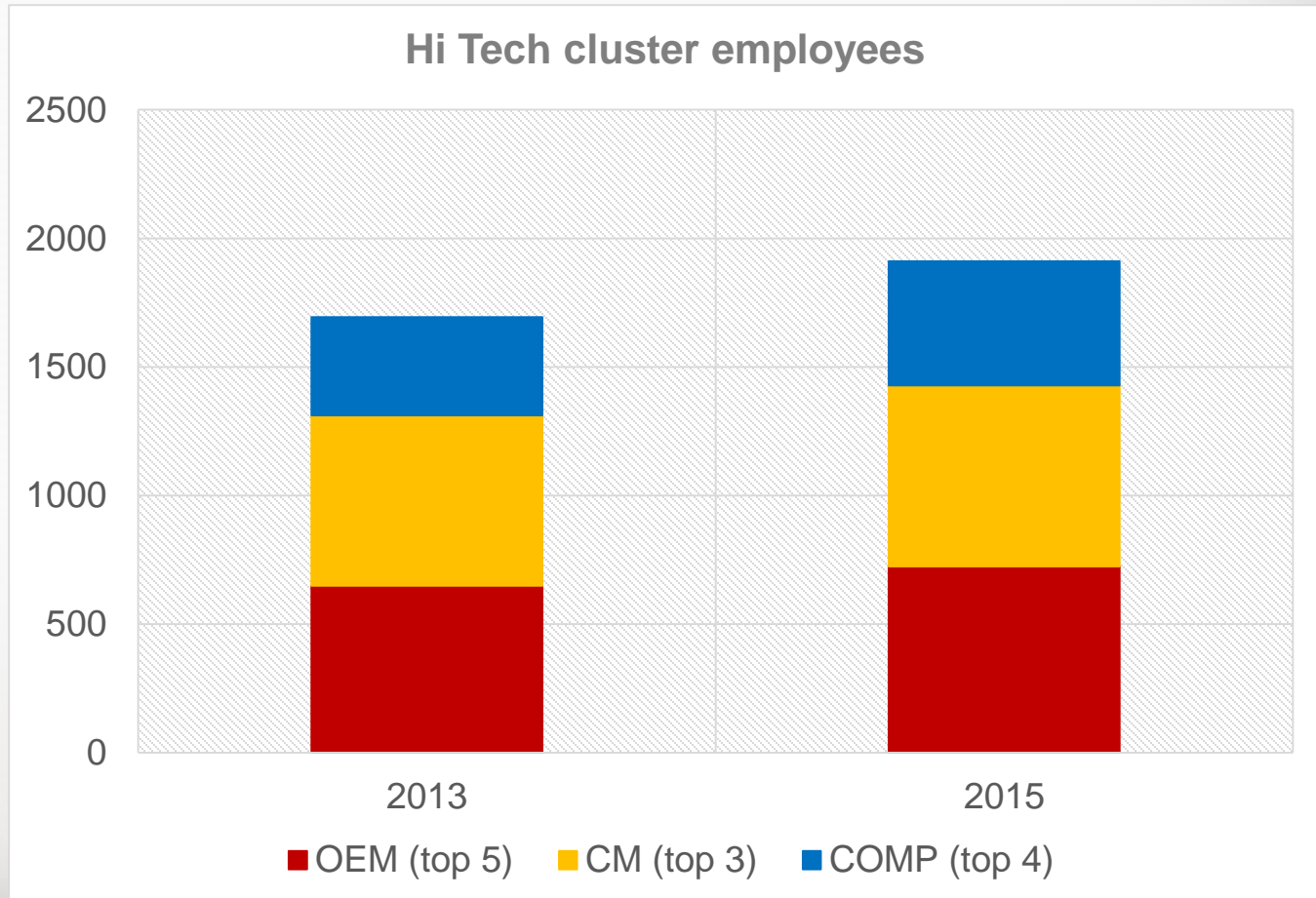
- **Vendon,** - vending machine remote management sistem producers – hardware and software services (**2015 = 0.7 MEUR/9**)
- **Drive e0,** - sports and high performance electrical car driving systems (OSCAR)
- **UAV Factory** – unmanned systems and platforms (**2015 = 1.2 MEUR/34**)
- **AirDog,** - excellent marketing campaign and smart product strategy for Air Dog product (**2015 = 0.2 MEUR/20**)
- **LightSpace Technologies** – unique in the world patented 3D volumetric imaging display technology, display system development

- **RTU** – wireless communications and electronics engineering, material science, chemistry, RF and electronics.
- **LU CFI** – material science and applied research.
- **EDI** – R&D in the signal processing algorithm and application development for various applications.
- **VeA** – Radioastronomy, RF and general electronic engineering.
- **LEITC** – accredited certification and regulatory approval measurement laboratory (joint project of 5 companies + LETERA + RTU)

## Cluster total



## Cluster total



# LETERA. Challenges – previous 10 years and going forward

- **OEM product market** – global – EU, US, other developed countries (2015 = approx 285 MEUR, can grow with a speed of 10...20% year, drivers – creation of innovative products and operation of strong SME's, limiting - manufacturer (including contract manufacturer) technological competences and capacity)
- **Contract manufacturing market** – regional – Nordic countries, UK, Germany, EU (2015 = 40 MEUR, can grow with the speed of 10...20% year, drivers – manufacturing competences, capacity availability, investment capital availability, limiting by – growth of labor cost. EU market approx. 24...30 Billion EUR.)
- **Component and material manufacturer market** – global – EU, US, other markets including Far East (2015 = approx. 32 MEUR, can grow with speed 10...20% year, drivers – development of innovative products and operation of strong SME's )

## Future challenges - opportunities

- Several future market opportunities:
  - **EU multi-billion «smart metering» market** – networked energy consumption meters.
  - Expected substantial **capacity increase of Internet and telecom data networks.**
  - Ongoing deepening of **electronic system penetration in industrial and transport systems.**
  - **«Coming back» of manufacturing** from Far East to Europe.
- Business opportunities:
  - Further development of OEM business in already existing competencies.
  - Further development of component and contract manufacturing, including high quality plastics and precision metal parts.
  - Better support of new OEM **«start-ups».**



## Development limiting factors

- Identified problems:
  - Shortage of good quality industrial and laboratory space availability (**science or high-tech parks**)
  - **Several holes** in domestic **engineering education programs** (for example – integrated circuit design, microwave and antenna theory)
  - **Degradation of physics and chemistry education and knowledge** level at secondary school level

# LETERA. Summary

- Latvian high-tech cluster of EEOT has sufficient competence to compete globally and has developed regional supply chain network to support it.
- It has high growth potential, especially in OEM products.
- Further development of EEOT cluster can progress considerably better if government policies without compromises include instruments in substantial improvements in secondary education and engineering discipline educational programs