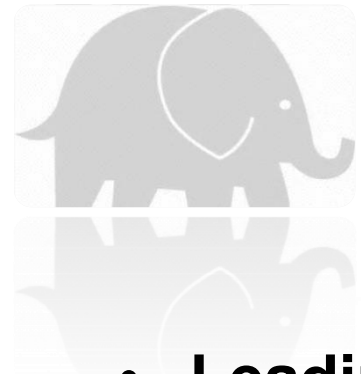




## **Reducing CO<sub>2</sub> emissions of concrete slab constructions with the PrimeComposite® slab system**

Girts Klavins  
girts.klavins@primekss.com



# Primekss Group | Industry Leaders

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- **Leading industrial flooring contractor** in Scandinavia, Baltics and Israel
- **Licensing division headed by Primekss Germany** and covering U.S., Germany, Benelux, Russia, Belorussia, Kazakhstan, South Africa, India
- **Most advanced R&D division** located in Riga and cooperating with industry leading researchers from EU and U.S.
- **Patented process for design, construction, and quality control systems**

# Primekss Group

PrimeComposite - 18 Countries | 5 Continents



14 - Languages  
130 - Employees



18 - Years of experience



Globally patented system



Primekss Labs | R&D  
centre



About 1 milj m2 per year

Online monitoring system  
PrimeQuality.eu



Worldwide Licensing  
opportunities



Real time monitoring



World class Engineers &  
PrimeComposite specialists



Unlimited Jointless area



Reducing CO2 emissions

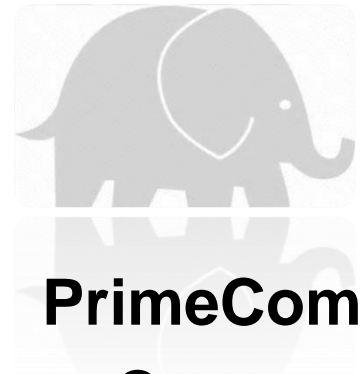
8 - Licensing partners

Thousands of satisfied  
customers



Global support team

PrimeComposite made by Primekss

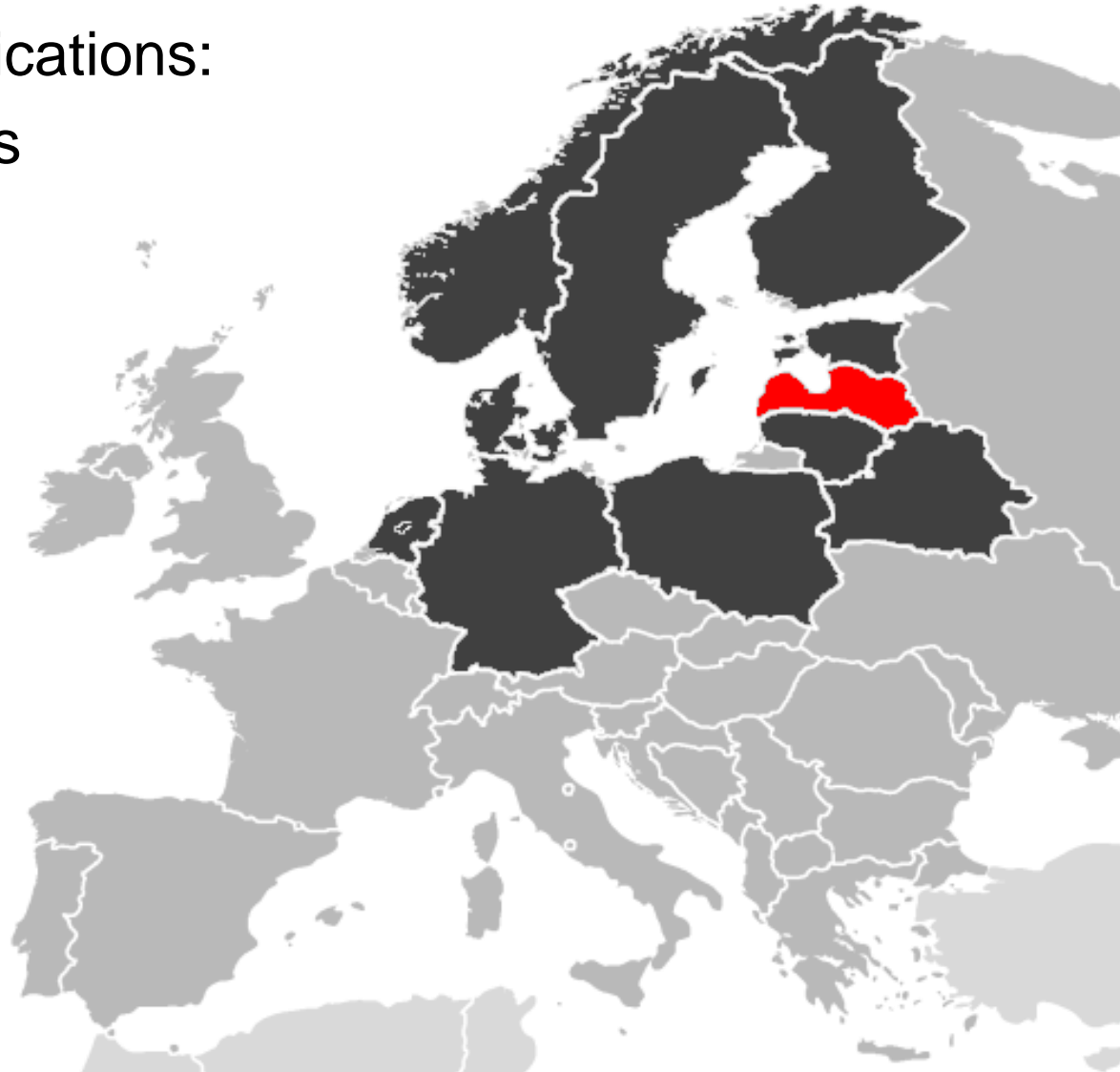


# Industry leading concrete technology - PrimeComposite®

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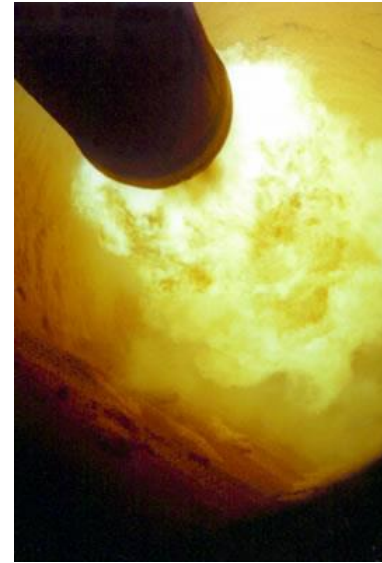
## PrimeComposite® applications:

- Concrete flooring slabs
  - On-grade
  - On-piles
  - Elevated
- Raft Foundations



# Concrete construction – Environmentally demanding process

- Cement production
  - 0.6-1.0 ton CO<sub>2</sub>/ton cement
  - Burning coal, fuel
  - Transportation
- Concrete production responsible for **up to 6%** of global **CO<sub>2</sub> emissions**



# Concrete floor niche - Are we using resources effectively?

- **Traditional concrete floor slabs**

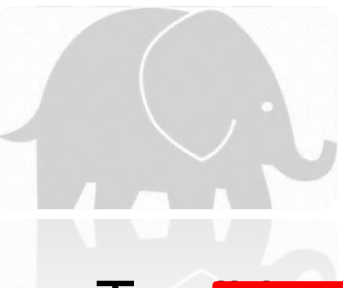
- ACI 302 guidelines produce slabs with excessive joint openings, curling, cracking, etc.
- Thickness up to 20+ cm for light load applications
- 0.005 minimum two-way reinforcement ratio, 15+ kg steel/m<sup>2</sup>
- **55-60 kg CO<sub>2</sub>/m<sup>2</sup> floor (cement+steel only)**



# Concrete floor niche - Are we using resources effectively?

## Is this the smartest use of limited resources?

- Up to 60 kg CO<sub>2</sub> emitted per m<sup>2</sup> for poorly performing concrete floors
- Can slab performance be improved while also reducing CO<sub>2</sub> emissions?



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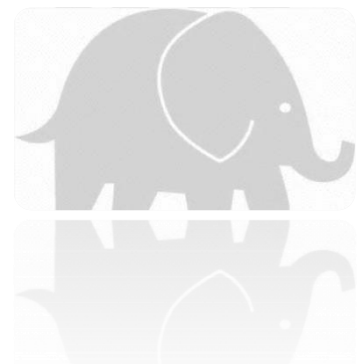
# PrimeComposite® concrete for slabs

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- **PrimeComposite®**
  - Simple concrete (modified with additives)
  - Steel fibers incorporated, nearly rebar-free slabs
  - **PrimeFlow** – Plasticizer with minimal impact on shrinkage
  - **PrimeDC** – Proprietary cementitious shrinkage controlling additive







## Actual CO<sub>2</sub> emission reductions

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Slab type	Avg. thickness	Area cast	Concrete volume
	cm	m <sup>2</sup>	m <sup>3</sup>
PrimeComposite®	11.8	250,984	29,616
Other	17.2	131,220	22,570

- Other include traditional jointless and mesh floors
- Number from January - August 2015



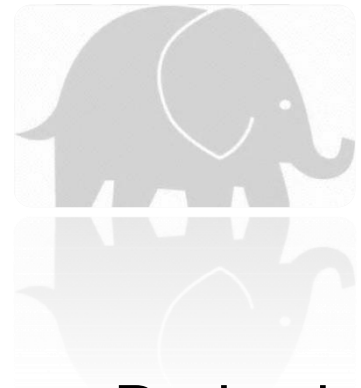
## Example: UNIL for Norgesgruppen, Norges Høyeste Fryselager ( 8 000 m<sup>2</sup>)

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Original design 200 mm, usually 350 kg cement per m<sup>3</sup> of concrete - 1600 m<sup>3</sup> concrete, **560 t** CO<sub>2</sub>

Primekss redesign 180 mm with 300 kg cement per m<sup>3</sup>, 1440 m<sup>3</sup>, **432 t** CO<sub>2</sub>. **Reduction of CO<sub>2</sub> pollution by 23%**





# PrimeComposite®: ecologically friendly

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Reduction of concrete consumption by 40% = 4 **LEED** points





# Customers - WORLDWIDE

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... and many others

# PrimeComposite® Awards



**2013 Most Innovative Products (MIP) Award**  
*(World Of Concrete, Las Vegas, USA)*



**2013 Chicago Innovation Award**  
*(Mayor of Chicago, USA)*



**2014 Best Products of the Year Award**  
*(The Ministry of Architecture and Construction of Belarus, Minsk, Belarus)*



**2013 Best exporting brand from Latvia**  
*(«The Red Jackets» Riga, Latvia)*



**2012 Most Innovative Products (MIP) Award**  
*(World Of Concrete, Las Vegas, USA)*



**2013 Best Products of the Year Award**  
*(The Ministry of Architecture and Construction of Belarus, Minsk, Belarus)*



**2009 Innovative Product of the Year Award**  
*(President of Latvia with Latvian Ministry of Economics, Riga, Latvia)*

# Primekss Group

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Better concrete through research

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**PRIMEKSS**



**Strongest, Leanest, Jointless Concrete Floors**

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Primekss Group

Riga, June 2016

[www.primekss.com](http://www.primekss.com)