Strength. Performance. Passion.

Kostenreduktion im Fundamentbau durch Industrialisierung – ein Konzept von LafargeHolcim

Arne Stecher, Leiter Business Development

Agenda

- 1. Kurzvorstellung LafargeHolcim
- 2. Übersicht Trends / Hebel
- 3. Ausgangslage traditioneller Fundamentbau
- 4. Vorstellung LafargeHolcim Fertigteilfundament
- 5. Zusammenfassung und Ausblick

The new group at a glance

90
countries

2,500
operations

32.6
billion CHF net sales

115,000
employees

Listed on the Swiss stock exchange SIX and Euronext

LafargeHolcim

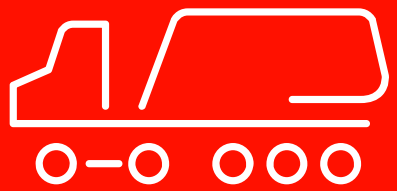
Our business is based on four strategic pillars

Cement

Extract value from market positions in mature markets

Realize growth by addressing customer and end-user needs / pain points

Differentiate through customer excellence, innovation and sustainability

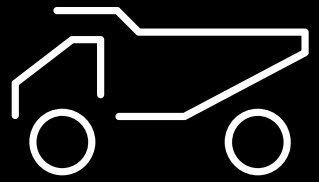


Aggregates

In mature markets, create value through establishing critical mass in selected attractive markets

In growth markets, create value through establishing critical mass in very large urban centers

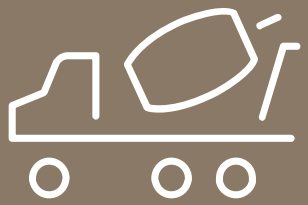
On a local needs/ opportunity basis, support differentiation and sustainability to enhance overall value to customers



Ready-mix concrete

Offer a differentiating value proposition to address customer needs through value-added products, services and solutions

Support/hedge existing or future cement and aggregates businesses under a clear vertical integration framework



Other construction materials

Offer a differentiating value proposition to address customer needs through value-added products, services and solutions

Need to support existing or future cement and aggregates businesses

All segments must create value on a standalone basis and deliver returns above the cost of capital

LafargeHolcim

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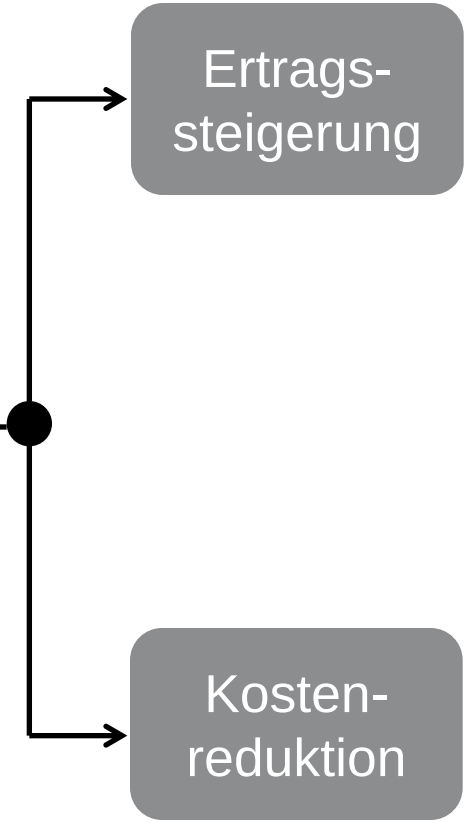
Pionierzeit ist vorbei – Transformation der Supply Chain

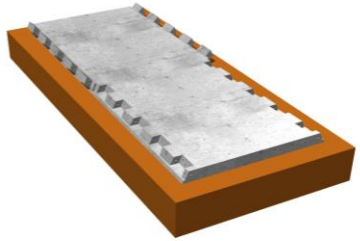
"Driving down the cost of energy"



- Erhöhung Nabenhöhe / Rotordurchm.
- Optimierte Verfügbarkeit
- Smarte Betriebsführung
- Intelligente Vermarktung
- …

- Konsolidierung
- Industrialisierung / Serienproduktion
- Neuausrichtung der SC-Ketten
- Standardisierung statt Individualfertigung
- Einzelgewerke -> Turn-key Projekten
- …

Trend: Standardisierte Betonfertigteile am Bsp. Ventur GmbH



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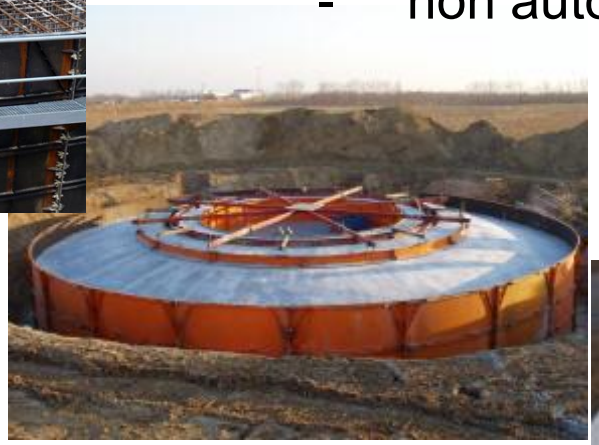
Initial situation and problem definition

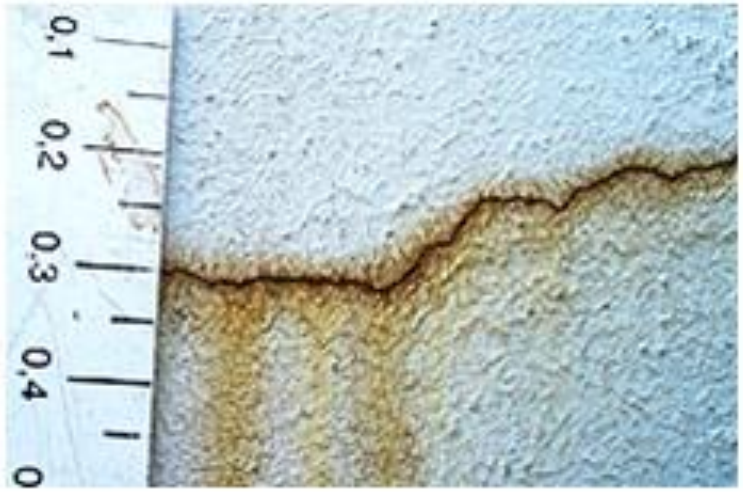
- Construction Methods / time sequence:



- complex
- interface problems
- quality Risks
- highly manually
- “non automotive”

Initial situation and problem definition

- Foundation problems



Cracks and traces of rust on existing foundations
Wind turbines indicate long-term threat to stability

LafargeHolcim Motivation: Sustainability

Our solution:

- Completely removable
- Recyclable

Ratio volume of concrete in the traditional manner with respect to "static necessity" (History) vs. "Resulting geometry" (present size classes) is more unfavorable = waste of resources!

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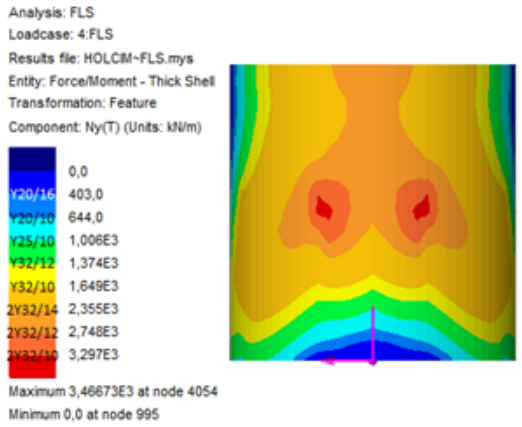
Engineering challenges

- Core problem: The force introduction of today's sizes!

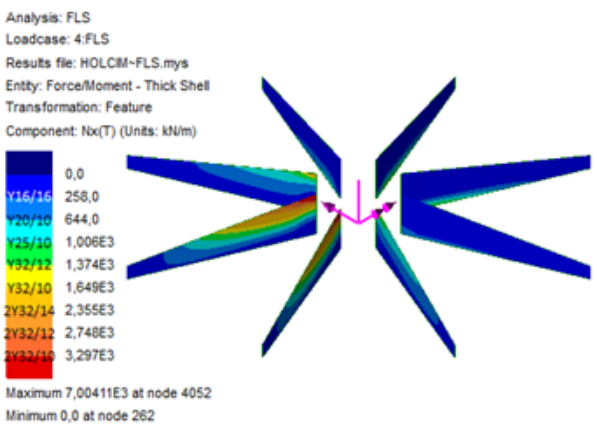
DESIGN OF STRUCTURE

- BASED ON WOOD-ARMER FORCES EXTRACTED FROM FE-MODEL
- FLS GENERALY GOVERNS THE DESIGN
- 3 EXAMPLES OF SELECTION OF REINFORCEMENT

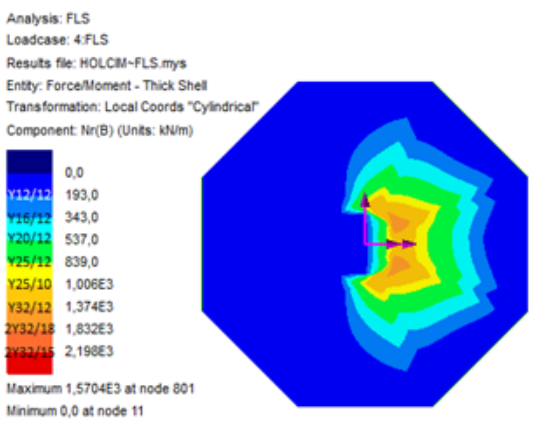
2Y32/100



2.5Y32/100

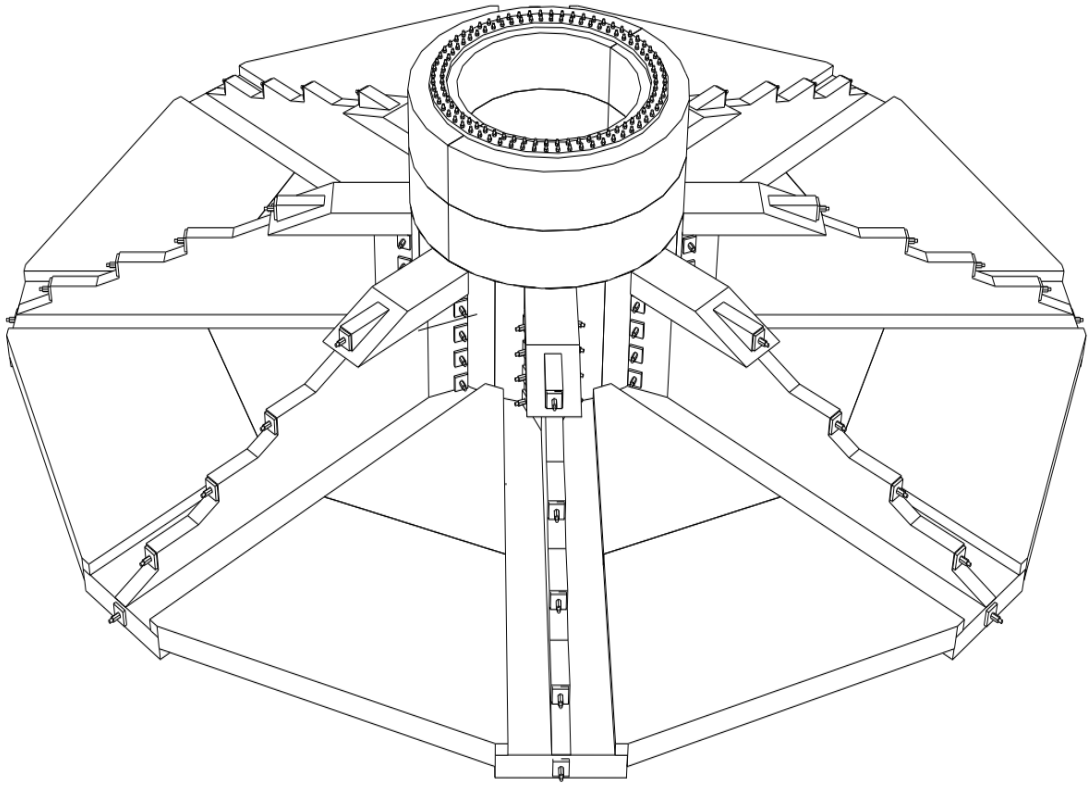


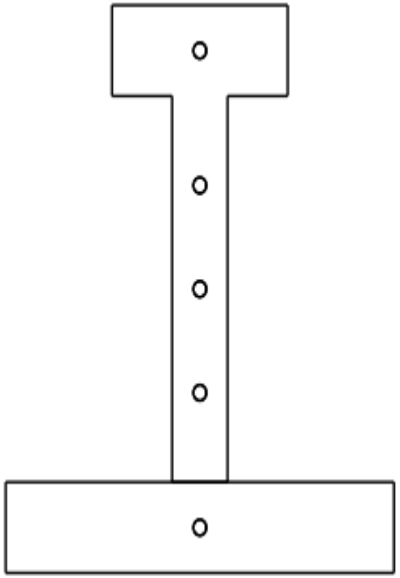
2Y32/180



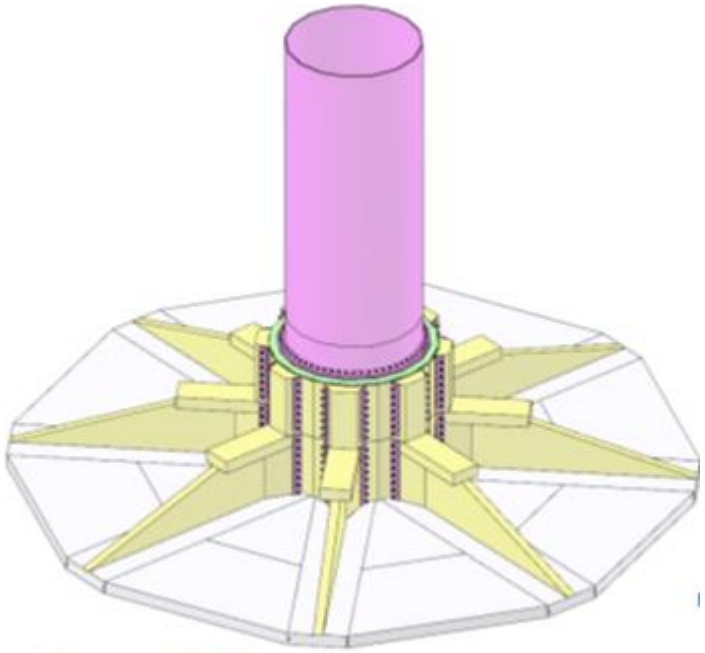
FOUNDATION SHAPE

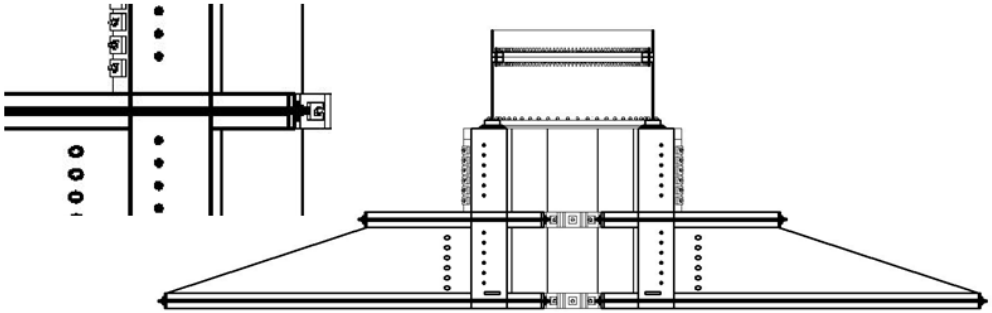
- **"8-LEGGED" STRUCTURE WITH WEDGES**
- **I-SHAPED CLOSE TO CENTER**
- **RINGS ON TOP OF ELEMENTS**

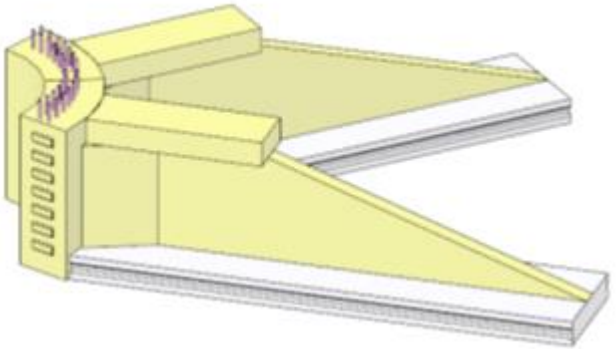




Prototyp Engineering 90% finalized / Certification ongoing







Vorteile Fertigteil-Fundament

- Kosten / TCO

- Qualität

- Zeit

- Nachhaltigkeit

- Projekt-Ermöglichung

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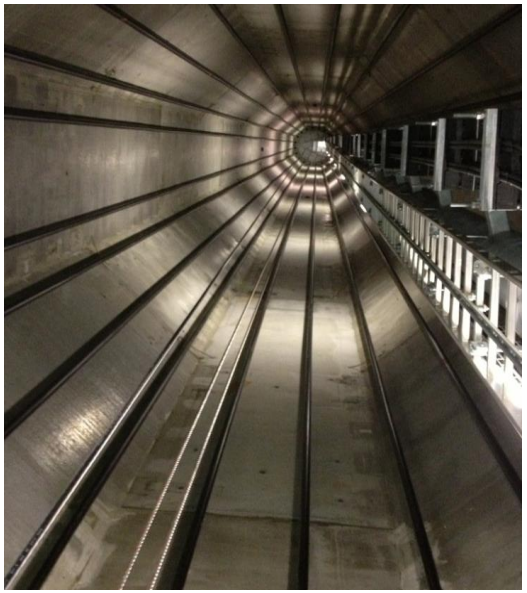
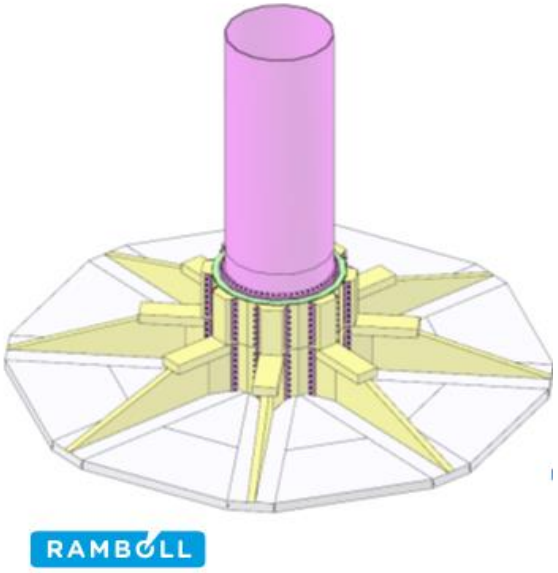
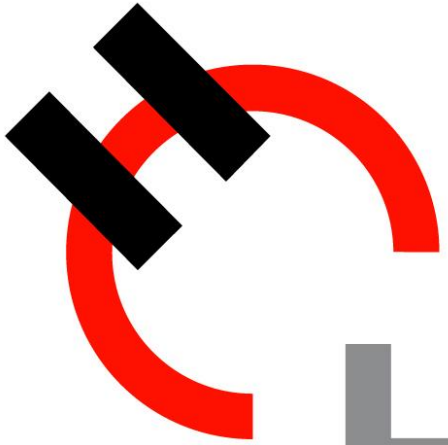
Zusammenfassung und Ausblick

- Zusammenfassung:
  - “Am Ende ist es Beton” – seriell hergestellte / standardisierte Beton-Fertigteile ermöglichen eine weitere Kostenreduktion

- Ausblick:
  - Betonturm = Energieumwandlung
  - Fundament = Speicherung







Holcim

A member of
LafargeHolcim