

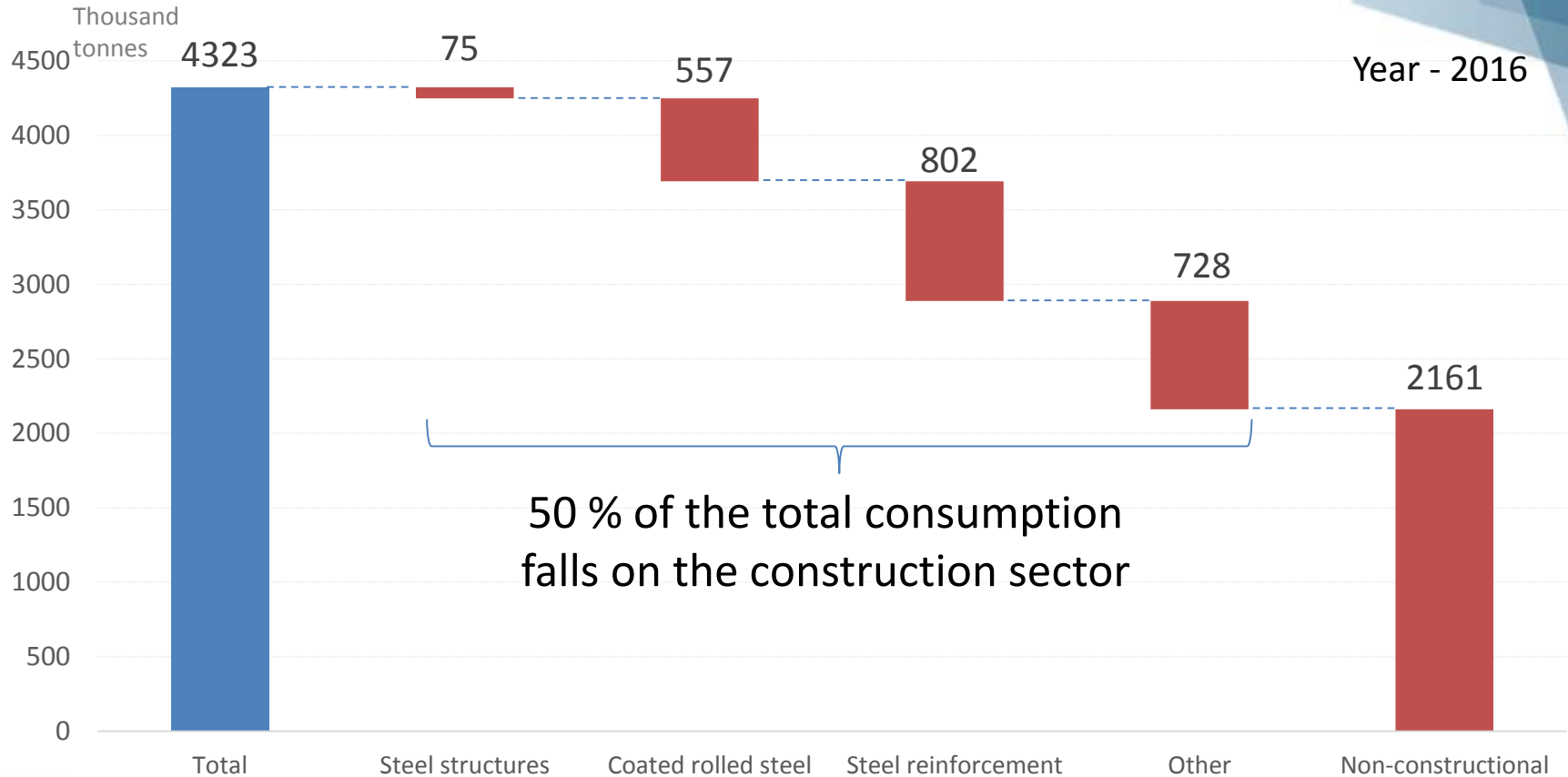


UKRAINIAN STEEL
CONSTRUCTION
CENTER

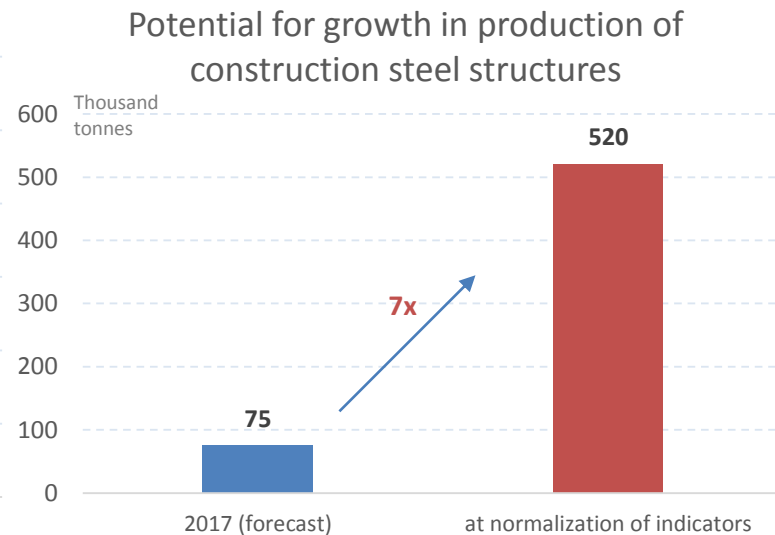
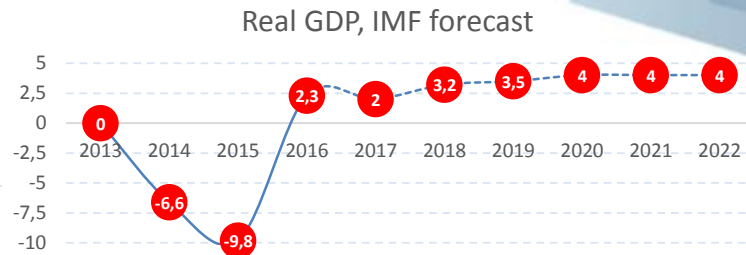
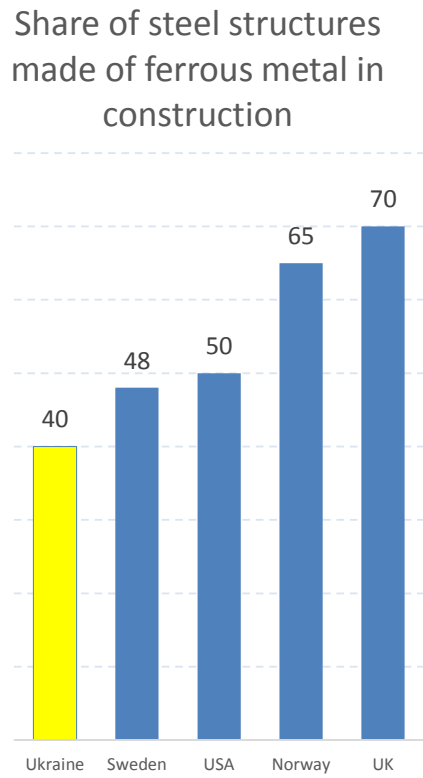
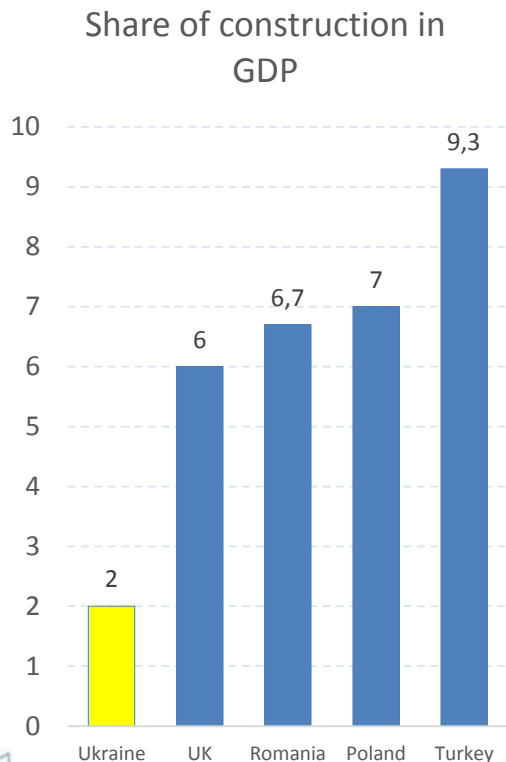
Steel in construction: prospects and needs of the construction industry in Ukraine

VIACHESLAV KOLISNYK,
Executive director of the USCC

The construction industry is the largest consumer of steel



The potential for the development of steel construction in Ukraine



Conditions for the growth of the steel construction market

Positive changes in the economy;

Growth of competence in the field of steel construction;

Acceptable domestic steel price;

Assortment of sheet and shaped products, required for construction.

The role of USCC in the development of the steel construction market

Ukrainian Steel Construction Center (USCC) is an association of participants of the steel construction market. The association unites the leading manufacturers and distributors of rolled steel, production facilities for metalwork, roofing and facade systems, sectorial research and design organizations; assembly and construction companies.

Elimination of barriers for the use of steel in construction

Implementation of EUROCODES, making changes to DBNs (construction norms) and product standards

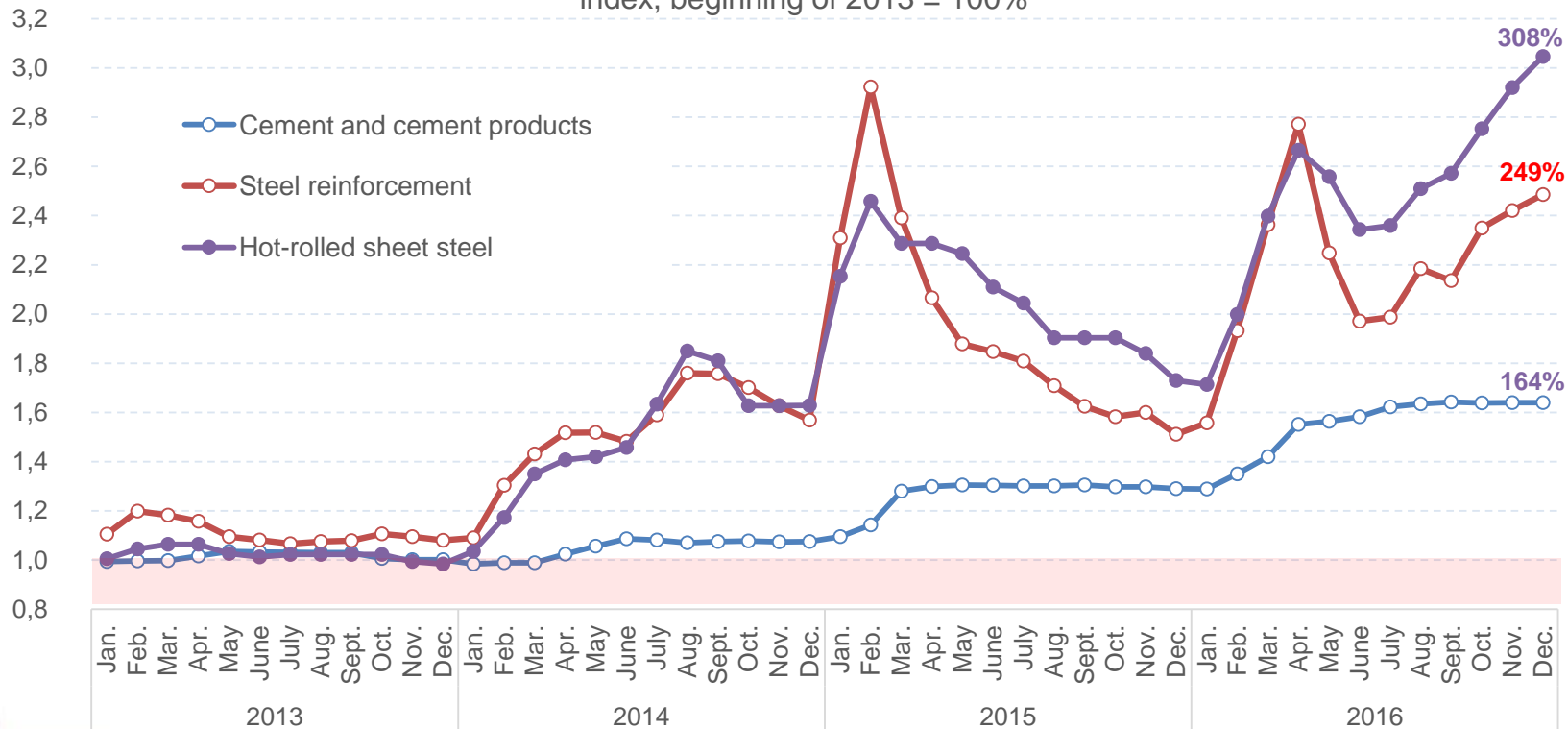
Decrease in the cost of steel structures throughout the value chain: development of solutions / products → design → production → installation → steel structures fire-proofing

Promoting steel and building trust in the target audience

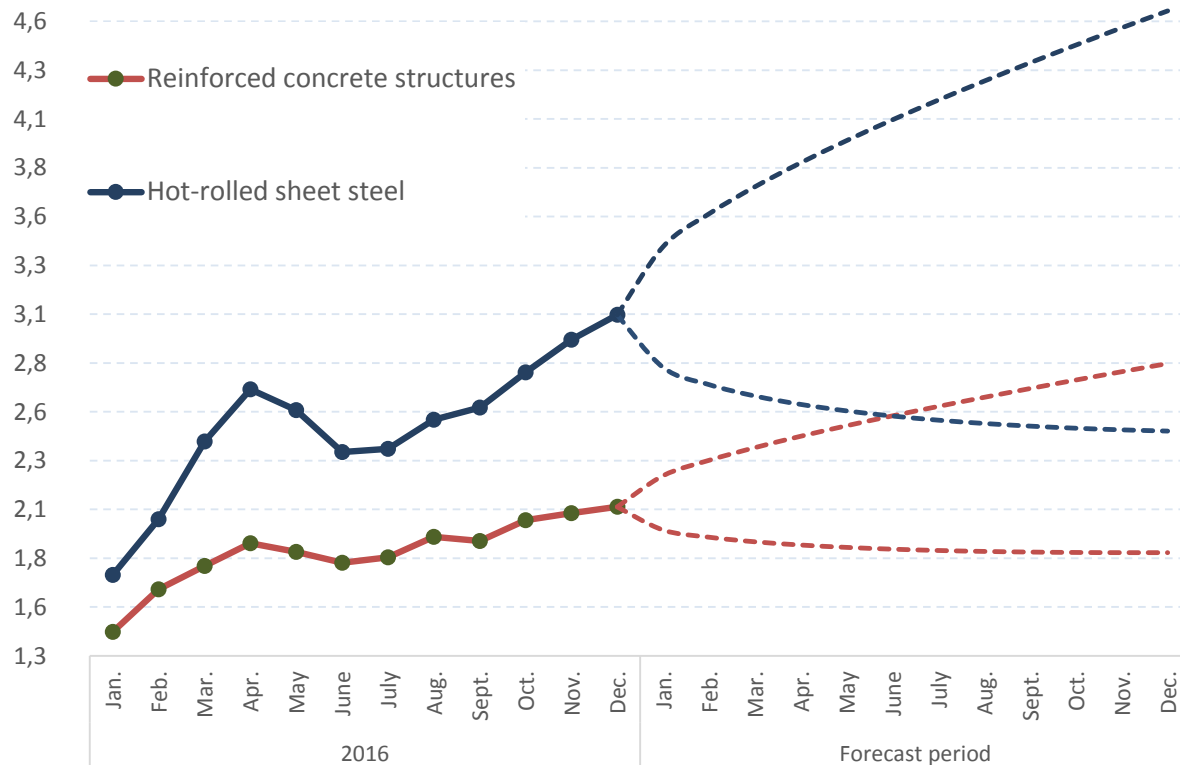
Making publications, educating on technological innovations

Leading rise in metal prices

Dynamics of prices in hryvna for cement and steel, steel reinforcement
in 2013-2016,
index, beginning of 2013 = 100%



Uncertainty range for investor



The range of uncertainty for the investor in predicting the cost of the steel frame is significantly higher than the one for the reinforced concrete - the main competing technology.

A possible solution is the transition to quarterly pricing for steel for the domestic market.

High volumes of imports of rolled products with coating

Rolled steel with polymer coating

Market size 300 thousand tonnes –
share of imports - 92%

Volume of imports, \$ - 255 million

1 st half 2017	Thickness of steel	Thickness of zinc coating	Extra charge for polymer coating, \$ without VAT	Share from total consumption, %
China	< 0,45 - 80%	< 80 - 55%	70	58%
Europe	0,45-0,50 - 85%	225-275 - 45%	More than 150	30%

Rolled steel with zinc coating

Market size 300 thousand tonnes –
share of imports – 47%

Volume of imports, \$ - 95 million

1 st half 2017	Thickness of steel	Thickness of zinc coating	Share from total consumption, %
China	< 0,50 - 90%	< 60 - 44% no name – 19%	22%
Europe	> 1,00 - 50%	≥ 225 - 50%	15%
Ukraine	< 0,50 – 15%	< 140 – 21%	53%

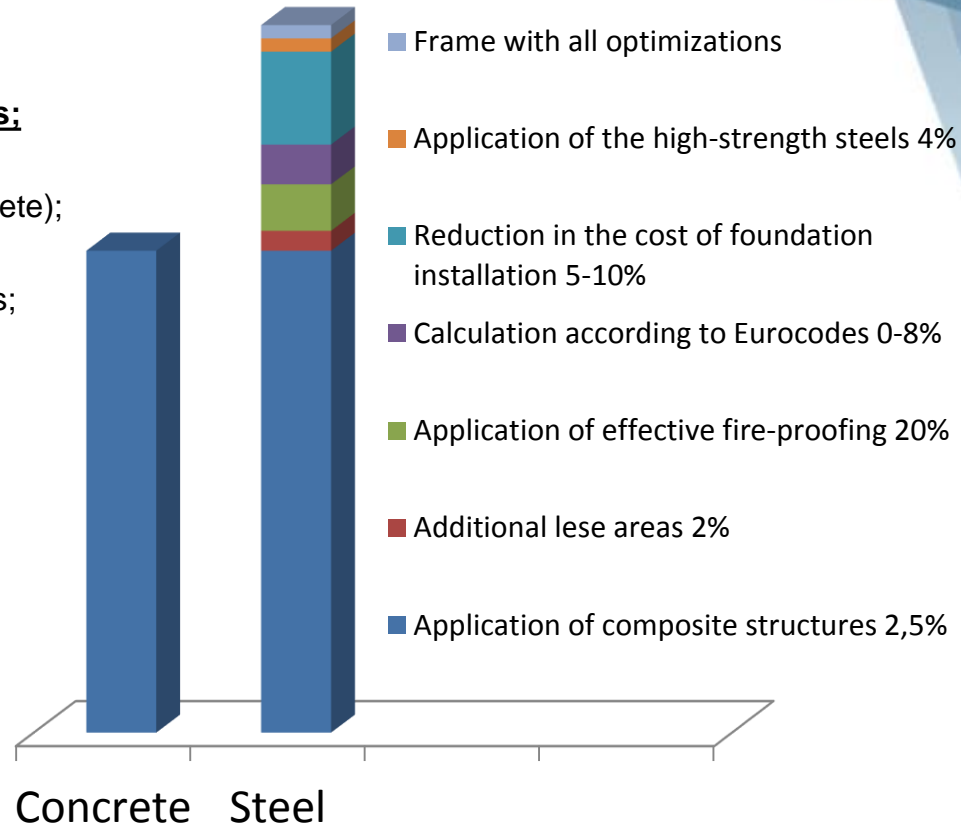
In fact, there is no quality control system in Ukraine

Ways to reduce the cost of steel solutions

- The difference in the cost of foundations;
- Calculation of frames according to Eurocode 3;
- **Application of the high-strength steels;**
- **Increase in the use of profiles / shaped rolled products;**
- Application of the lowered height floorings;
- Application of composite structures (steel-reinforced concrete);
- Application of differential fire-proofing calculation;
- Calculation of fire-proofing with the use of plaster mixtures;
- Considering seismicity

Additional efficiency:

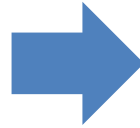
- Shorter construction time - early return on investment, reduced credit load;
- Obtaining additional areas through the use of large-span solutions;



Domestic brands according to DSTU EN 10025-4:2007

S 275 M/ML S 355 M/ML S 420 M/ML S 460 M/ML

- Fine-grained structure of steel
- High strength
- Low carbon equivalent
- Good weldability
- Minimizing preheating
- Significant toughness
- Relatively low cost

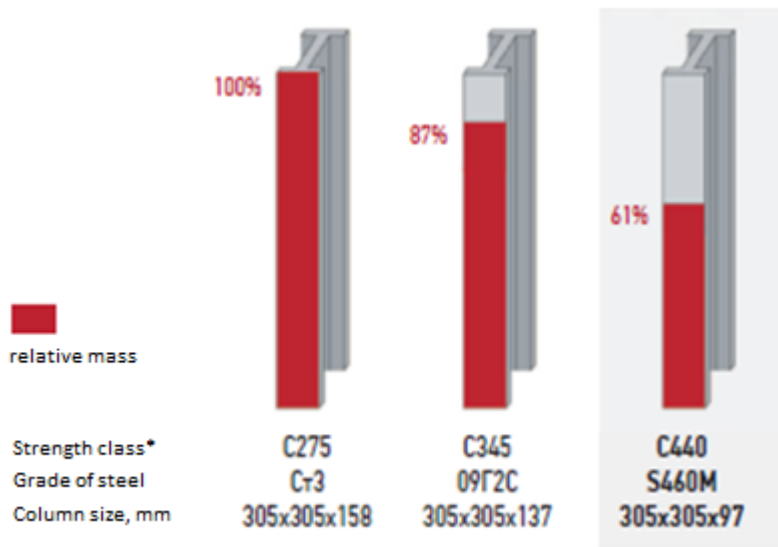


- Minimizing the weight of structures
- Wear resistance
- Physical realizability
- High reliability
- Responsible elements
- Reducing the erection time

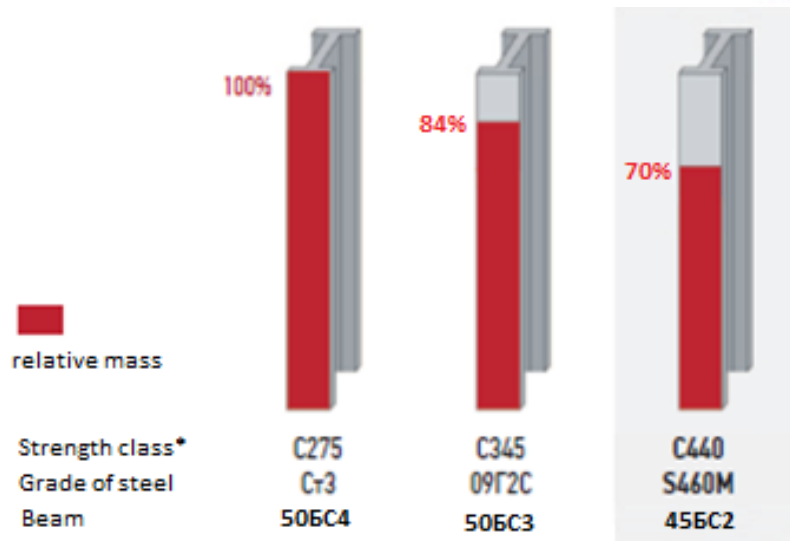
Required range	Grade of steel
Sheet 6,8,10,12,14,16,20,24,30	S275, S355, S420, S460
Style: I-beams, channels of large section	S275, S355 (analogues C275, C345)

Efficiency of high-strength rolled steel

Columns



Beams



The use of high-strength steel in columns of modern high-rise buildings allows to achieve **20-30% savings in the cost of construction.**

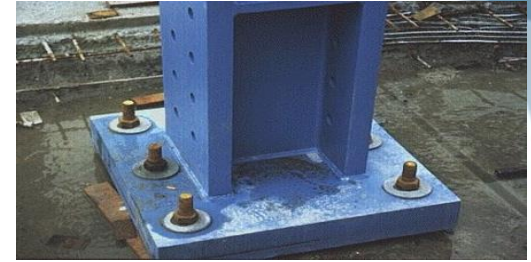
The use of high-strength steel in welded beams of I-section allows to achieve **20-25% savings in the cost of construction.**

Other examples of the use of high strength steels

Highly loaded elements



Effective solid-walled outriggers of the H-tower building 99.2 m high, made of high-strength steel 440-490 MPa. 2011



Supporting base of the column with traverses (plain steel) and the one using high-strength steel (at the right)



Flanged beam assemblies with the use of high-strength steel will become more compact

Modern examples of the use of high-strength steels

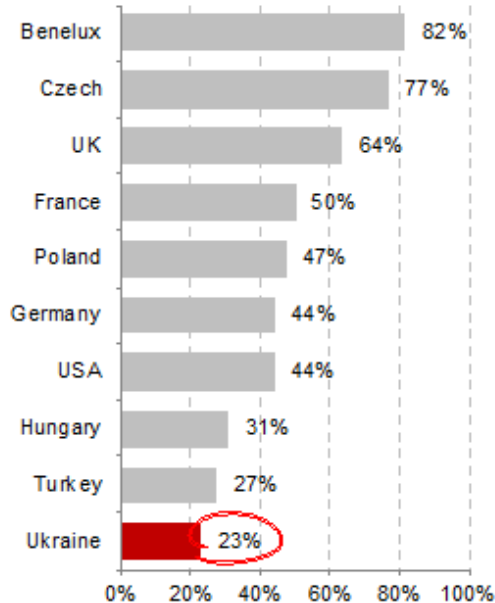
The physical realizability of reconstruction with high-strength steels



Kiev,
29, Khreschiatyk Str.

Rolled profiles of European range

Share of profiles / shaped products in the construction assortment*



Source: CRU Consultancy, Metinvest analysis
*Steel reinforcement + shaped steel products

The most important is the introduction of the following nomenclature of rolled profiles

Broad-brimmed beams HEA and HEB with the wall height up to 300 mm

Channels UPN up to 240 mm

European angles up to 110 mm

Cover up to 60% of the need in the building assortment

Benefits of the introduction of rolled profiles of the European range

Significant increase of the steelwork production capacity



Reducing the requirements for technological equipment of steel construction manufacturers



Improving the quality of steel structures



Reduce of the steel structures costs



An important condition!
The offer of this assortment must be sustainable

Growth in the use of steel in construction

Growth of export of steel structures

Thank You!

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