

STRONGER STEELS. LIGHTER BODIES. HIGHER PROFITS.



LIFT PROFITS WITH RUUKKI RAEX® AND OPTIM® SPECIAL STEELS

RUUKKI

Energy-efficient steel solutions for better **LIVING. WORKING. MOVING.**

SPECIAL STEELS LIFT YOUR BUSINESS

When searching for new competitive advantages in mechanical engineering and equipment manufacturing, the best place to look is material technology. Ruukki's wear resistant Raex® and high-strength Optim® special steels are having a revolutionary impact on design and product innovation, resulting in a new generation of lighter and tougher products.

Light tipper bodies – a new growth category

For tipper body manufacturers, changing from standard steel to special steels will bring new competitive advantages across operations. Better production efficiency, demonstrably higher quality of the end products, longer lifetime, lighter weight with higher payloads and better fuel efficiency. In short, higher profits with superior sustainability.

Special experience

With this brochure, we want to give you some examples and tips about the use and impact of special steels. Our team has an extensive experience in light tipper body manufacturing and we are eager to share our findings and help you with ideas and information.

Ruukki special steels

Special steels optimal for light tipper body manufacturing cover the Ruukki Optim® and Ruukki Raex® ranges.

Optim® high-strength steel

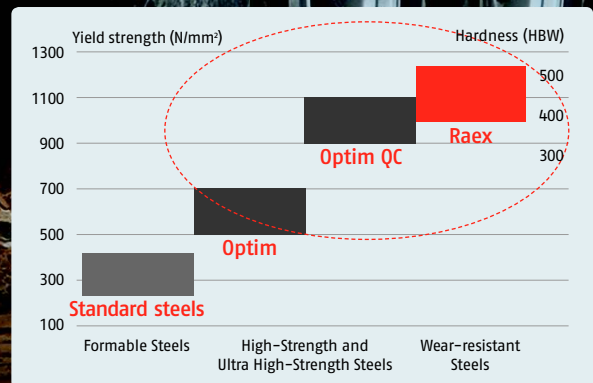
Optim® is a wide range of special steels designed for customer applications utilizing the high structural strength of the steel in order to increase product payload and/or performance. High strength is achieved by thermomechanical rolling or direct quenching, not by alloying. Optim® is available in a wide dimensional range of thin strip products and thick heavy plates with thicknesses starting from 2,5 mm. Yield strengths vary from 500 to 1100 MPa. Processing of Optim® steels is easy thanks to good formability, especially bendability, and weldability.

Raex® wear-resistant steel

Raex® has been developed to offer a longer lifespan for applications facing constant impacts and wear. It is a wear resistant high-strength special steel range that offers excellent durability under heavy abrasive conditions, with hardnesses from 300 to 500 HBW. The combined high hardness and lower thickness of Raex® enable innovative designs for maximum performance with lighter weight.

Raex® offers a wide dimensional range of strip products and heavy plates with thicknesses from 2 mm upwards.





ULTRA STRONG BENEFITS WITH HIGH STRENGTH STEELS



In addition to Optim® and Raex®, Ruukki's special steels range includes structural, wear resistant, protection, ship building and offshore, as well as weather resistant products.

Weight savings

Who wouldn't want to be thinner, lighter and stronger? By changing to higher strength steels it is possible to shave millimeters off the material thickness – sometimes even halving it – which will transform lower tipper body weight into higher payload and better fuel economy.

Longer lifetime

Abrasive wearing tests show a major improvement in product lifetime with the right

choice of special steels. This is a compelling sales argument with real benefits to the end-user.

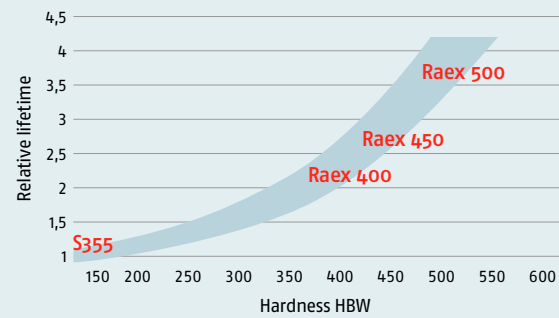
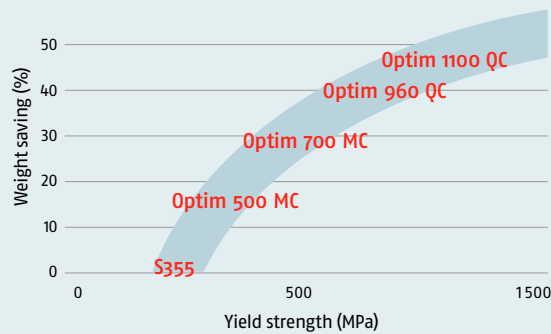
Welding benefits

Thinner sheets also provide savings in welding costs. For example, reducing thickness brings a reduction in weld seam, resulting in lower consumption of filler material, as well as higher productivity.

Better appearance

Our special steels have excellent surface quality and formability. They are easy to paint and have strong paint adhesion providing long paint lifetime – and customer benefit. Weather resistant Optim® 550W with self-sealing surface is an innovative new addition to the range.

High strength affecting weight saving and longer lifetime

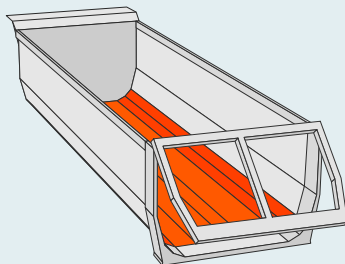


Design examples and tips

Floor

Strength against heavy loads and hardness against wear.

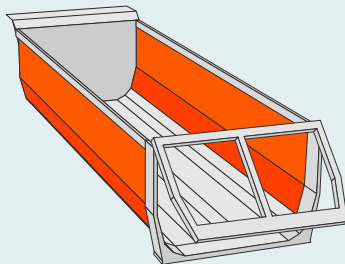
Raex 400
Raex 450



Panels

Excellent surface quality and formability.

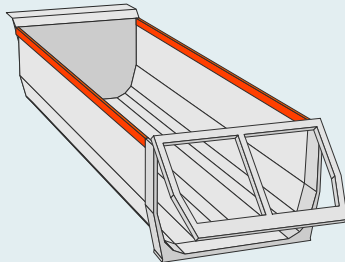
Raex 400
Raex 450
Optim 900 QC



Top beams

Roll formed open profiles
Special hollow sections
Bent components

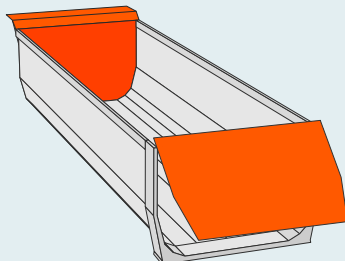
Raex 400
Raex 450
Optim 700 MC



Front and rear

Remarkable savings in material loss by Ruukki's ready-to-weld components.

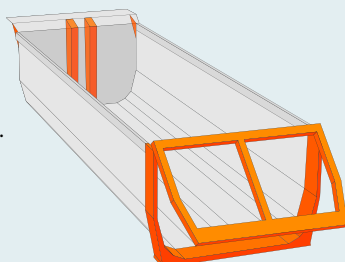
Raex 400
Raex 450



Other parts

Fewer welds by utilizing the excellent formability of Optim 700 MC Plus.

Optim 700 MC



Not only do "Ruukki light tippers" last longer, they also look better longer.

Design opportunities

Use the right steel for the right purpose. Innovate structurally using roll formed open profiles, special hollow sections and bent components made of high and ultra high-strength Optim® steels.

Innovative use of high-strength sections and tubular products supported by laser welding are just a few examples of why no compromises are necessary. We can find the optimal solution for your application.

Quality means efficient production

Ruukki special steels have been designed to offer excellent workshop properties. They also have a proven track record of consistent good quality, which means there will be no negative surprises in your manufacturing process.

ENERGY-EFFICIENT STEEL SOLUTIONS

1

Ruukki special steels provide customers with a proactive way to adapt to constantly rising energy prices, climate change and increasingly stringent environmental regulations.

2

Lowering fuel consumption to counter rising fuel costs is good for the business and the environment. The transportation sector is responsible for 20–25% of the world's energy consumption.

3

Ruukki's sustainability claims are real. In 2011, we were the best-in-class in two Dow Jones Sustainability indexes. We have successfully worked on emission reduction processes and developed special steels with significant results for decades.



6

We have a proven track record of being a committed partner in building a better living environment – together with our customers with innovative and energy-efficient steel solutions.

5

With our special steels solutions you can optimize your environmental footprint by creating savings in fuel and weight and through higher payloads.

4

You have access to Ruukki's strong material know-how and application expertise that will help improve the quality and energy efficiency of your business and products.

IMPROVED SUSTAINABILITY

When working with Ruukki you are making a beneficial decision, as the special steels solutions help you optimize your sustainable brand image. The benefits begin with improved manufacturing efficiency and material

savings and culminate in higher end-product performance – higher payload, longer lifetime, less maintenance, better fuel efficiency and lower CO₂ emissions.



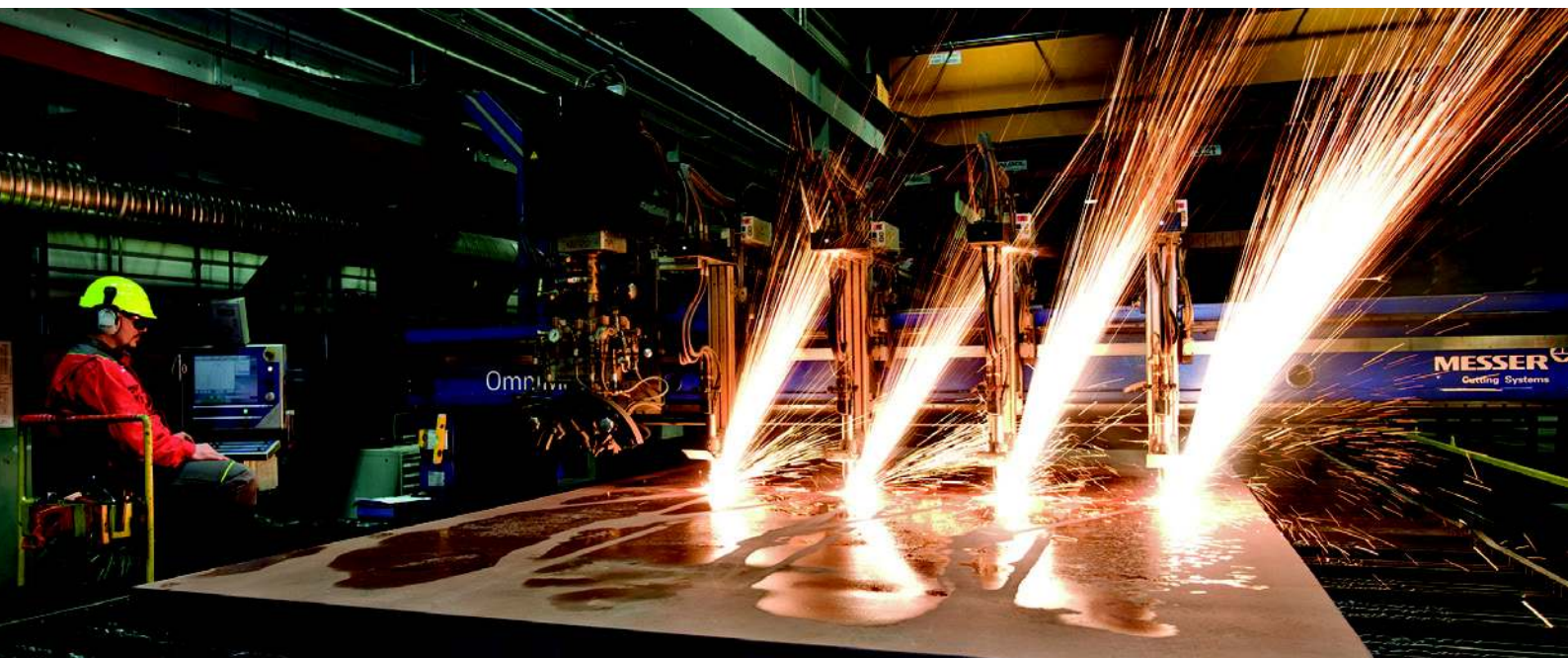
Calculate your savings

Go to our Energy Efficiency Calculator on Ruukki's website <http://www.ruukki.com/energy-efficiency-calculator/>

Then simply choose your vehicle type and key in the numbers to immediately receive a report comparing your present design and a new design based on Ruukki special steels. Fuel consumption, carbon footprint, energy consumption and savings in fuels and money – with the same payload and increased payload. The numbers will give a clear message.



WIDE RANGE AND VERSATILITY



Laser welding

We can provide state-of-the-art laser welding services. The key benefits of laser welding are speed, great flatness and excellent weld quality. It is possible to weld together various steel grades and thicknesses with up to 2 mm difference. Laser welding is particularly suitable for Ruukki Raex® and Optim® providing uniform high quality while the welded steels maintain their excellent properties.

Extra wide sheets

Ruukki's extra thin, wide and long sheets created by laser welding processes offer great advantages, as they significantly reduce prefabrication needs and open new possibilities in product design. This type of welding is the only way to get such thin, wide and long sheets

as ours: Minimum thickness of 2 mm and up to 4 500 mm in width and 18 000 mm in length.

Ready-to-weld components

Our ready-to-weld components will help minimize your material losses and enhance your production efficiency as well as give you flexible added capacity. We can offer highly automated, streamlined product lines for core components. All with total delivery from a single, competent source that supports you throughout the manufacturing process.

Our manufacturing network operates around the world. It guarantees a reliable supply of high quality components on a global scale. It also enables smooth, cost-efficient and low risk product/manufacturing transfers and ramp-ups when your business grows.

LOAD PURE BUSINESS.

25% LOWER WEIGHT OF THE TIPPER BODY.

Standard Steel Tipper Body

Weight	4 tn
Maximum load	20 tn

Ruukki Special Steel Tipper Body

Weight	3 tn
Maximum load	21 tn

- Fuel consumption savings 1,5%
- Carbon footprint savings during production stage 20%



TIPPER BODY WEIGHT

4000kg

TIPPER BODY WEIGHT

3000kg

SERVICES AND CO-OPERATION



Prefabrication services

Shape cut, bevelled and bent high-strength, wear-resistant parts and sub-assemblies ready-to-weld – or full component assemblies. With Ruukki's prefabrication Service Centres you can streamline and speed up your production while lowering capital costs.

Reliable delivery service

We guarantee quick, on-time deliveries, and our extensive steel service centre and processing unit network are flexible, even when delivering small batches. Our delivery accuracy enables you to plan ahead and shorten your time-to-market.

Flexible co-operation

Our steels and our services are flexible. And co-operation with us is easy and open. We provide expert technical service and design support, and are happy to tell you more about light tipper body opportunities, product features and Ruukki's services.

Light tipper bodies – forwards and upwards!

Changing into special steels will give your products and your business a competitive advantage. Lifting your profits and upgrading your sustainability. It's time for stronger and harder steels.



Ruukki provides its customers
with energy-efficient steel
solutions for better living,
working and moving.



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