



idRHa+ INLINE RAIL HARDENING TECHNOLOGY

ADVANCED PROCESS TO HARDEN PREMIUM RAILS

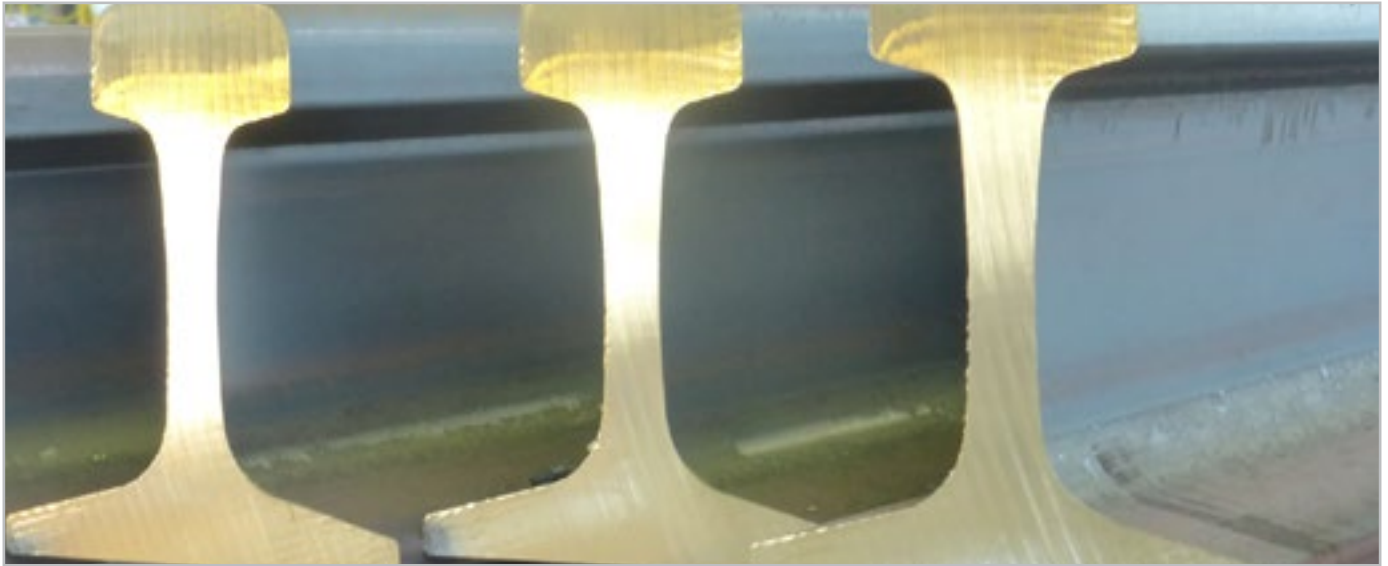
idRHa+ is the inline dual-phase technology for hardening rails. With idRHa+ precise and selective cooling protocols are applied to rails. Cooling curves and metallurgic transformations are controlled in real-time to obtain the desired hardness and microstructure. idRHa+ is the answer to the requirements of premium rail production. Rails for both high-load and high-speed applications may benefit from the increased resistance to rolling-contact-fatigue as well as resistance to wear.

FIELD OF APPLICATION

Rolling mills for long products

MAIN BENEFITS

- control of hardening across the rail section to grant the desired perlitic/bainitic structure
- hardness values in accordance to main standards
- flexible use of cooling modules and media
- tailored validation tests to guarantee quick ramp-up of industrial operation
- software tool to fine-tune existing rail grades and simulate new grades



MAIN FEATURES

idRHa+ is capable to process a large mix or rail shapes and sizes, in compliance to all the up-to-date international standards. The operation takes place inline and at the same rate of the rolling mill. idRHa+ is composed by equalizing high-power induction heaters followed by independent cooling modules with air-blades or atomized-mist. The technology is based on an integrated suite of thermal, mechanical and metallurgy models, validated in pilot units. This also allows the simulation and industrial development of new rail grades.

TECHNICAL DATA

| | |
|------------------------------|--------------------------------|
| Processing rate | synchronous with rolling train |
| Increased hardness | 30% |
| Increased resistance to wear | 300% |
| Energy saving | 30% |

SELECTIVE FLEXIBILITY IN REAL TIME

The rail thermal profile is continuously monitored and controlled in heating and cooling areas. The cooling modules are independently operated according to the required curves. Temperatures and microstructures are selectively determined across the rail section. The inline operation uses the sensible heat from rolling, which brings an important saving of energy.

REFERENCES

- Baogang, China
- ARBZ, Kazakhstan

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