

**LUCA FARALLI**  
Vice President, Sales  
Flat Products

13<sup>th</sup> AISU SUMMIT  
OCTOBER 29 -30, 2023  
CAIRO, EGYPT

# DANIELI DUE

## From SGJT to green steel and ready for automotive exposed

**DANIELI / SINCE 1914**  
PASSION TO INNOVATE  
AND PERFORM  
IN THE METALS INDUSTRY



**DANIELI TEAM**  
MORE THAN  
A CENTURY  
OF PARTNERSHIP  
EXPERIENCE



## HIGH PRODUCTIVITY

Fast cast thick slabs, in excess of 4.0 Mtpy HRC with one single strand or in excess of 5.0 Mtpy with two strand caster machines

## MARKET DEMAND & FLEXIBILITY

From commodity grades with ultra-thin gauges, to added-value products, including AHSS and thick API line pipe

## ENVIRONMENTAL & COST-EFFECTIVE

Best OpEx and energy efficient design for true green steel production

## HIGH QUALITY PRODUCTS

Best-in-class products, with high quality and tight tolerances even for demanding applications

PROVEN PLANT CONCEPT AND PROCESS  
KNOW-HOW

## QSP-DUE PLANT LAYOUT FLEXIBLE + DESIGN ADVANTAGES

**DANIELI**

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FULL ENDLESS,  
COIL-TO-COIL,  
SEMI-ENDLESS

+

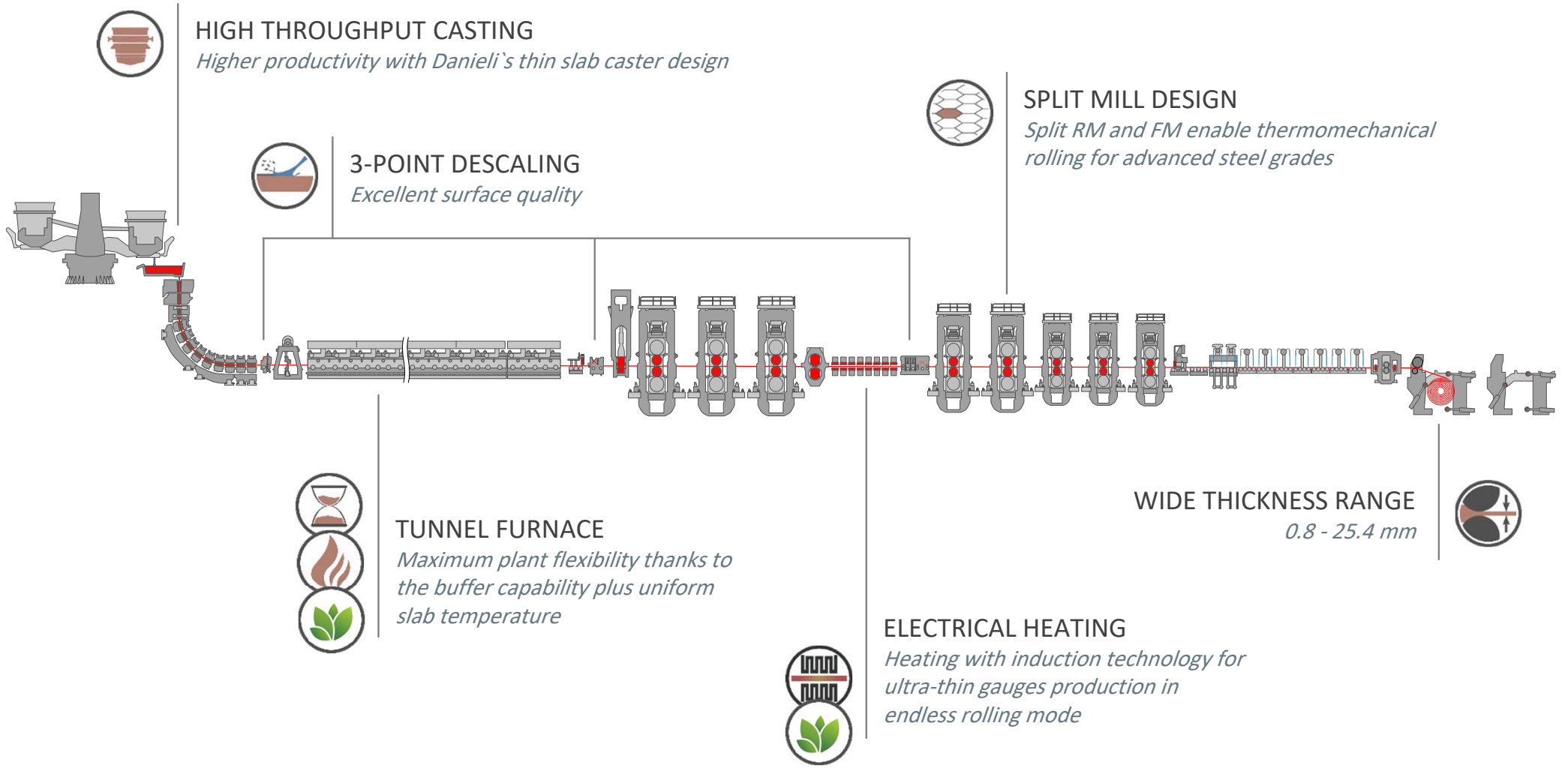
THERMO-  
MECHANICAL  
PROCESS

+

DYNAMIC WIDTH &  
THICKNESS CHANGE

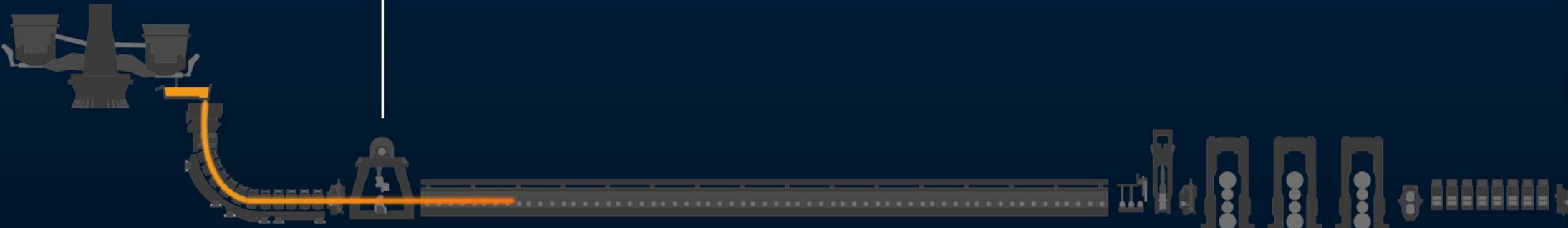
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HIGH FLEXIBILITY  
LOW OPEX  
ZERO EMISSIONS



# COIL-TO-COIL MODE

PENDULUM SHEAR

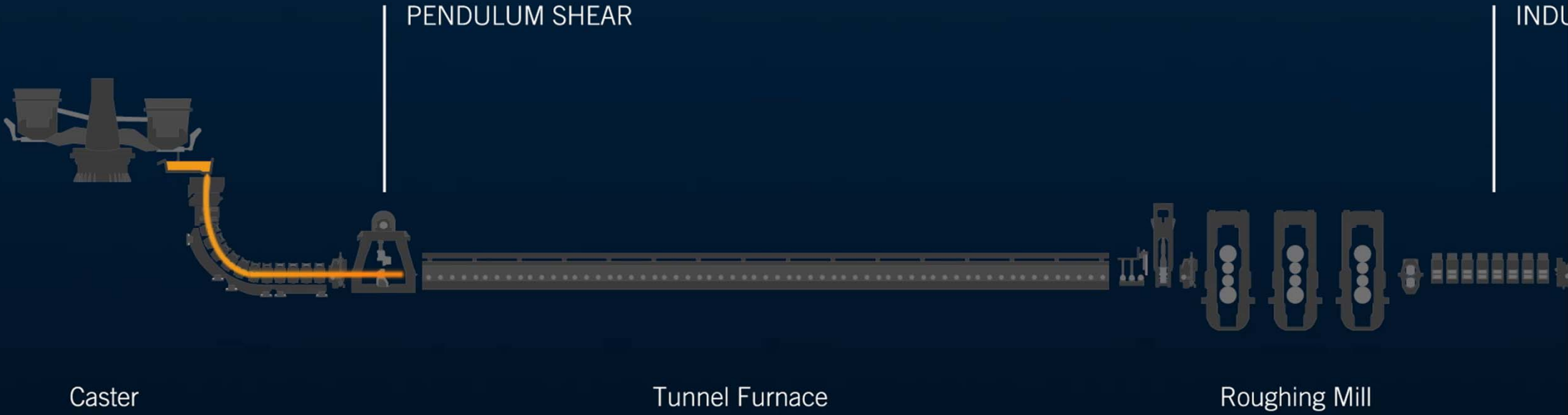


Caster

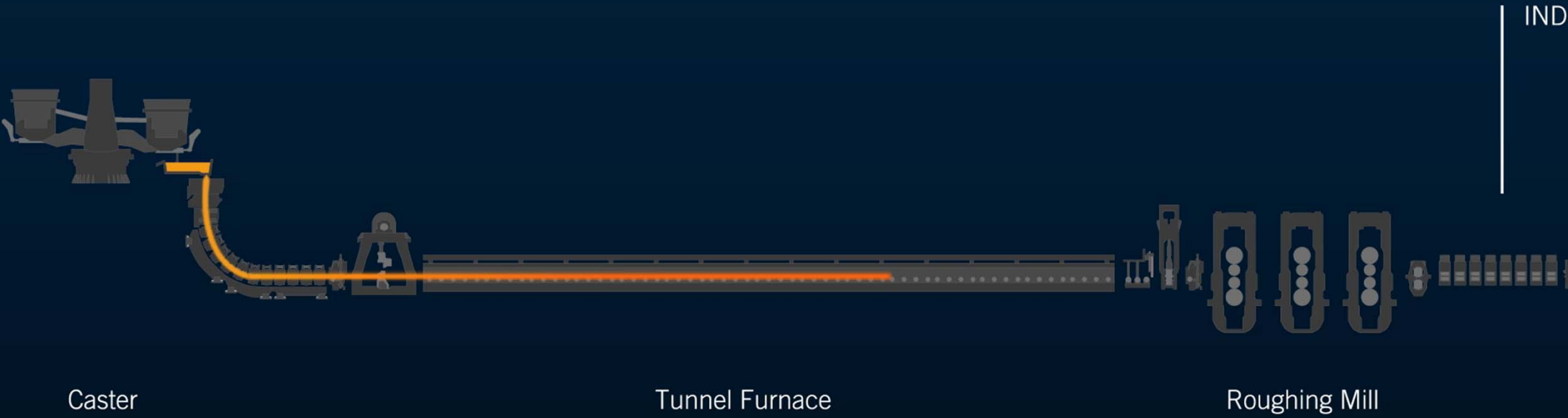
Tunnel Furnace

Roughing Mill

# SEMI-ENDLESS MODE

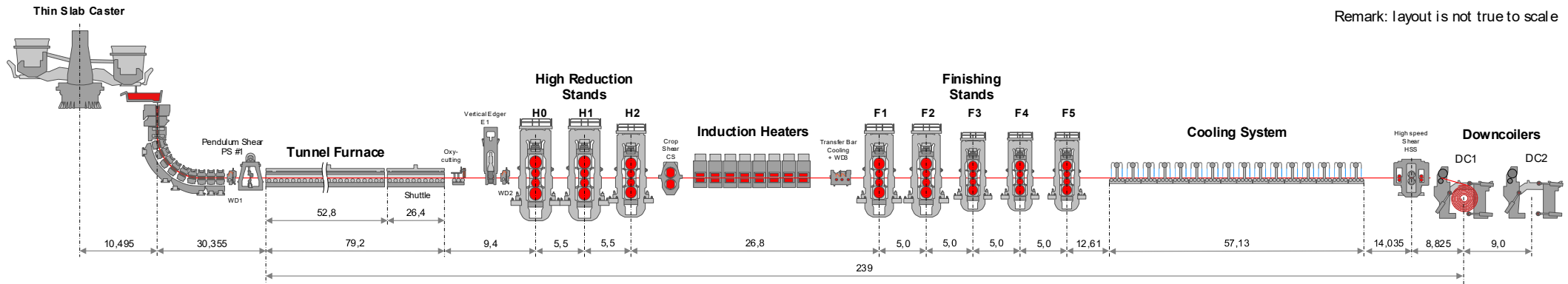


# ENDLESS MODE



SGJT QSP –DUE  
TECHNOLOGICAL LAYOUT

Remark: layout is not true to scale



LOCATION

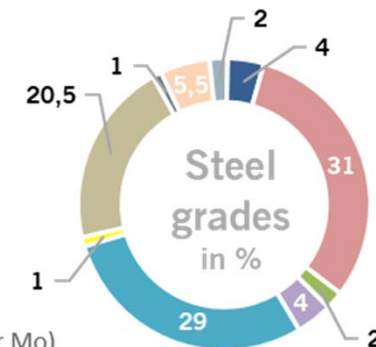


COIL DATA

|  |            |                |
|--|------------|----------------|
|  | Thickness  | 0.8 – 12.7 mm  |
|  | Width      | 900 – 1,600 mm |
|  | Production | 2,100,000 tpy  |

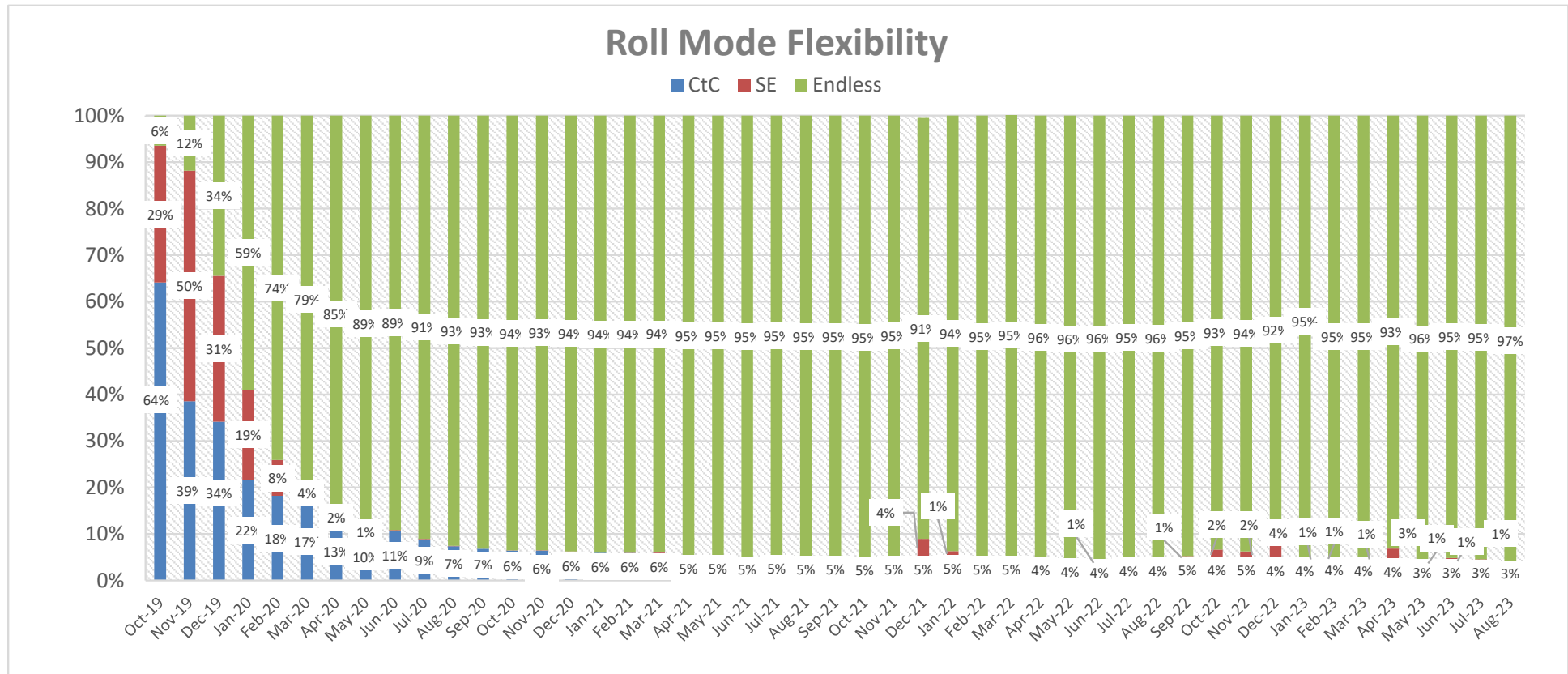
PRODUCT MIX

- Low carbon
- Peritetic
- Medium carbon
- High Carbon
- LC MA
- PE MA
- MC MA
- Weather Resistance
- TRIP/DP
- Alloy Steels (High Cu, Cr, Ni or Mo)



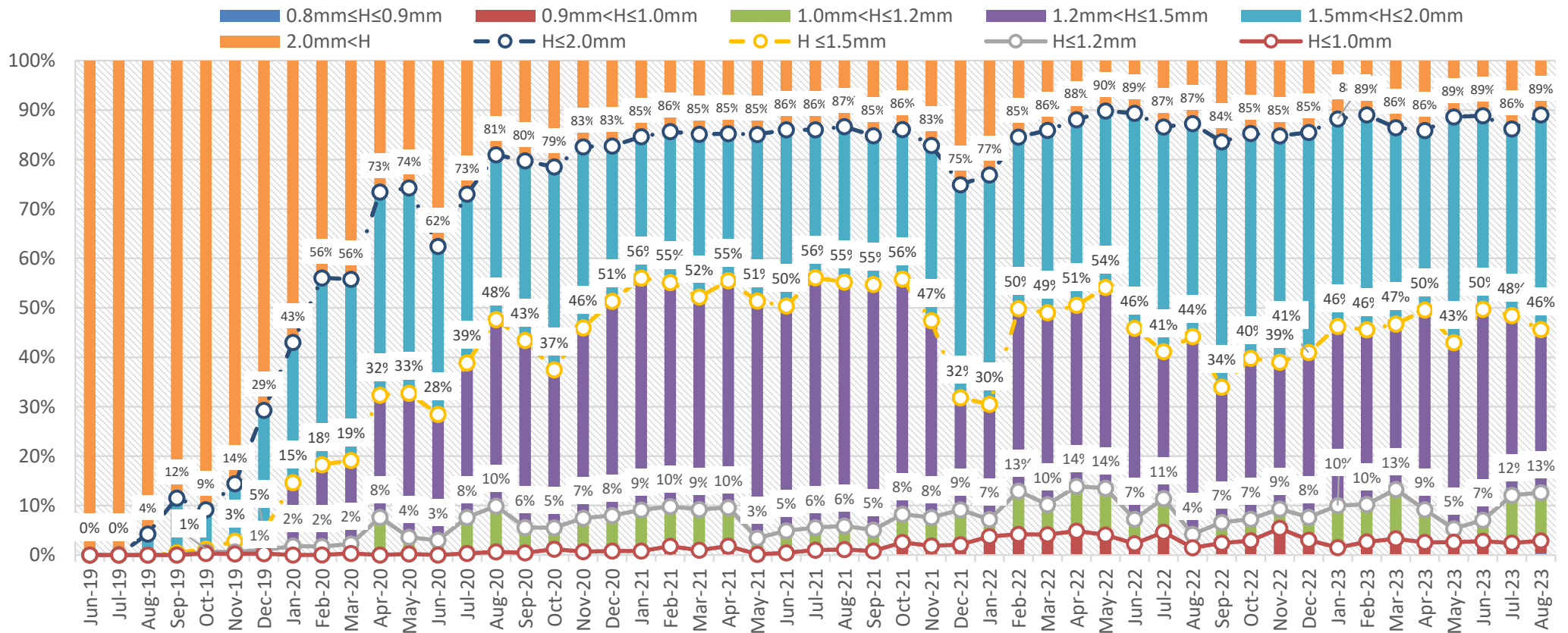


## Rolling mode distribution



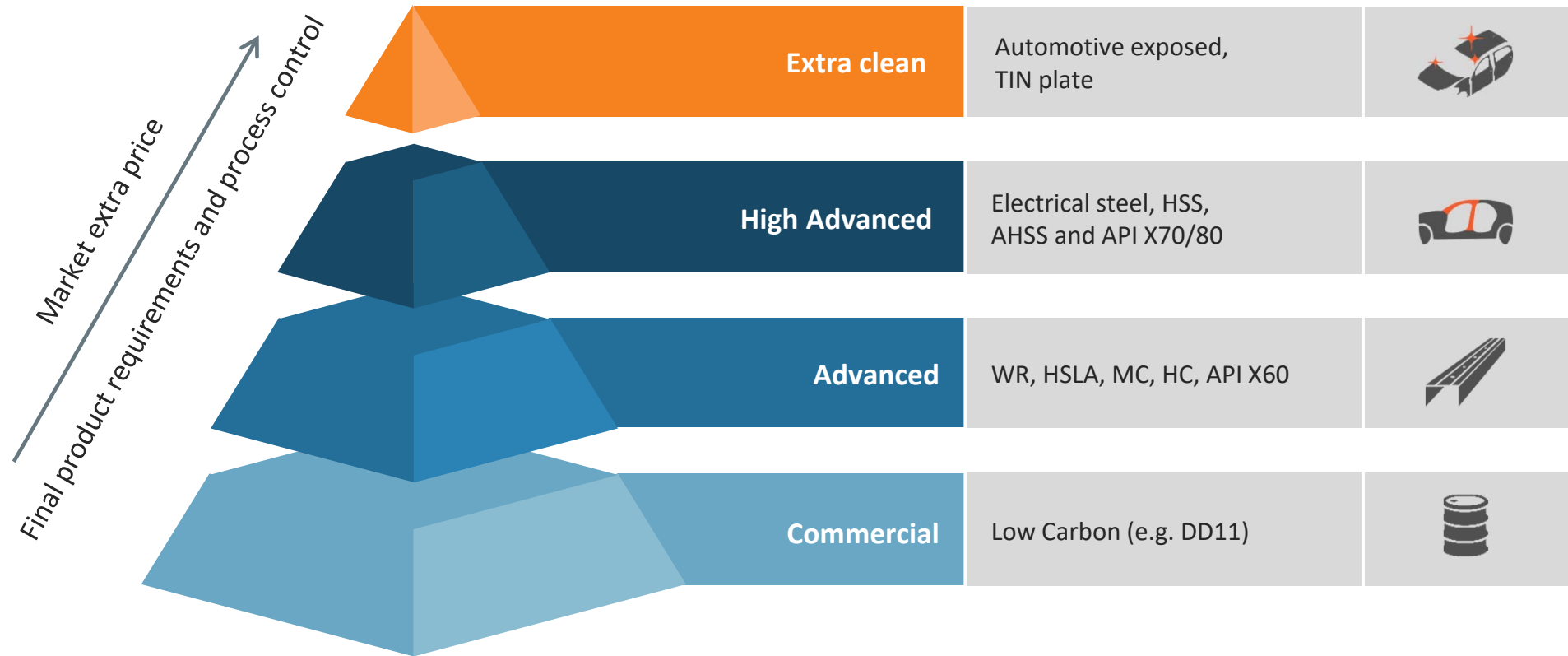
**coil-to-coil, semi-endless, endless: rolling mode flexibility as consolidated production practice**

### Strip thickness distribution



**HRC strip thickness distribution: avg. ~85% ≤ 2.0 mm**

## HIGHER REVENUES WITH THE PRODUCTION OF ADVANCED STEEL GRADES



**MAIN TECHNOLOGICAL FEATURES**

**SLAB CASTER MOULD AREA**

**DANIELI**

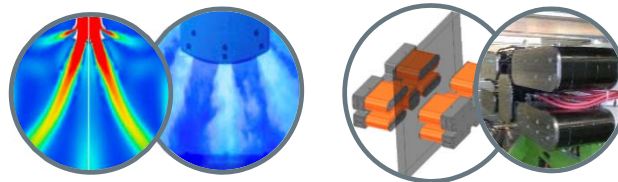
© Danieli & C. S.p.A.



**DYSEN TECHNOLOGY**

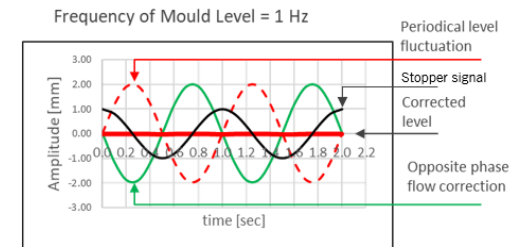
Global mould flow control

Available stirring function for Automotive exposed grades



**ADVANCED LEVEL CONTROL**

to stabilize mould level for:  
high speed, high throughputs  
stability in endless production mode



**ONLINE WIDTH CHANGE**

No production of undesired products

Production flexibility to accomplish and fulfill actual order book needs



**FLAT MOULD**

Product mix without steel grade limitation

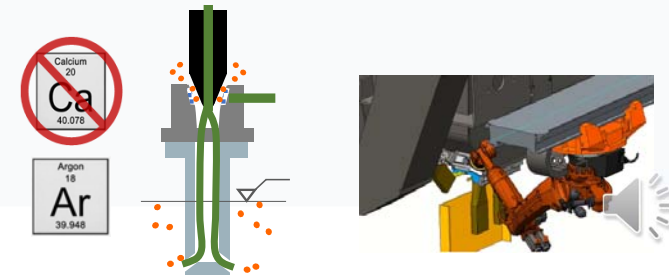
Production of Crack sensitive & Peritectic grades

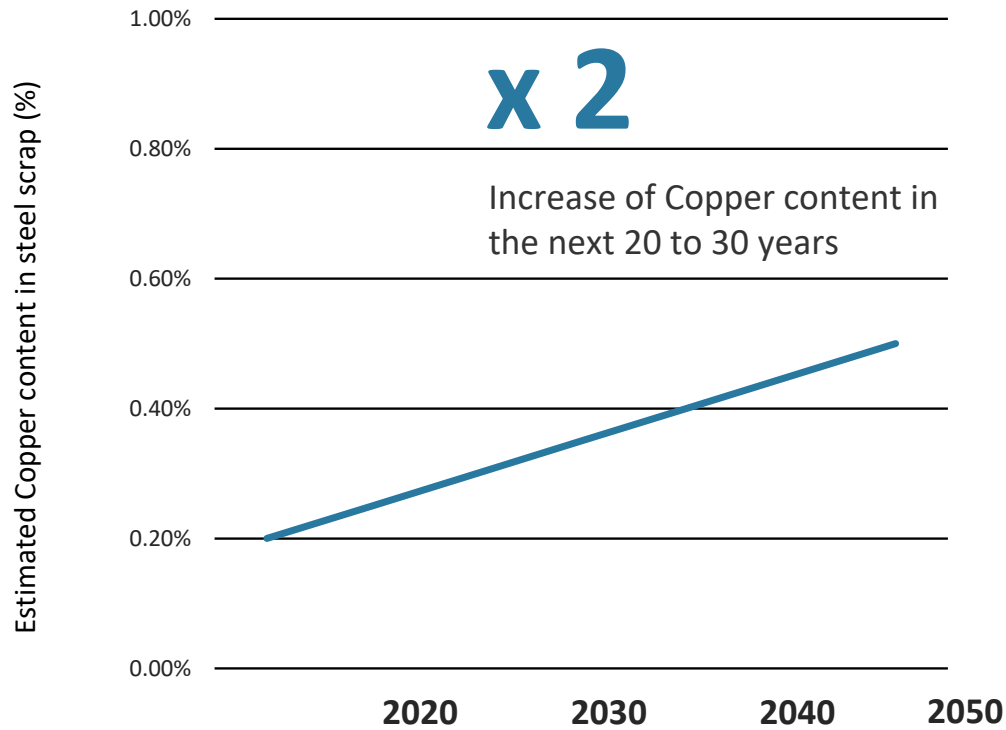


**Ca-FREE + SEN EXCHANGE**

Practice required for Tin plate and Automotive grades

Argon injection in SEN to avoid clogging

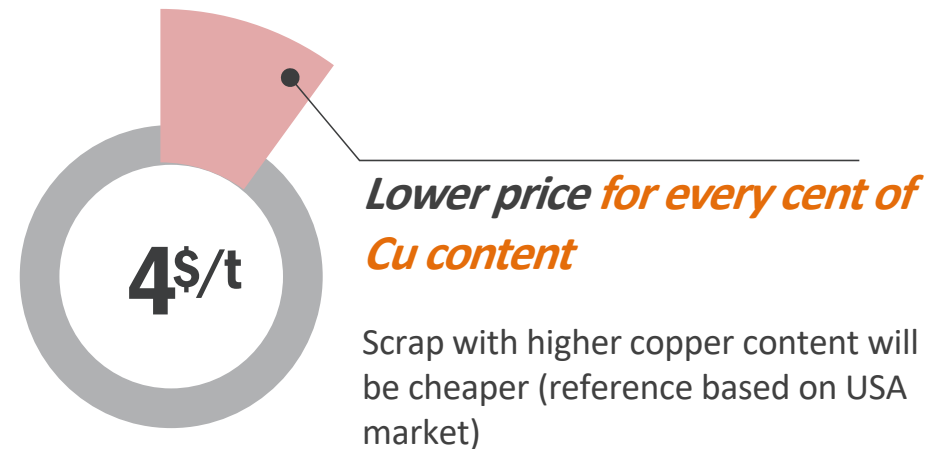




After several recycling cycles  
Copper plate content in scrap  
will increase over in next years



Cu up to 0.40 %



## PROVEN EXPERIENCE

QSP is designed to work with any steel making process upstream.  
Proven experience OMK and MMK DONGBU SGJT

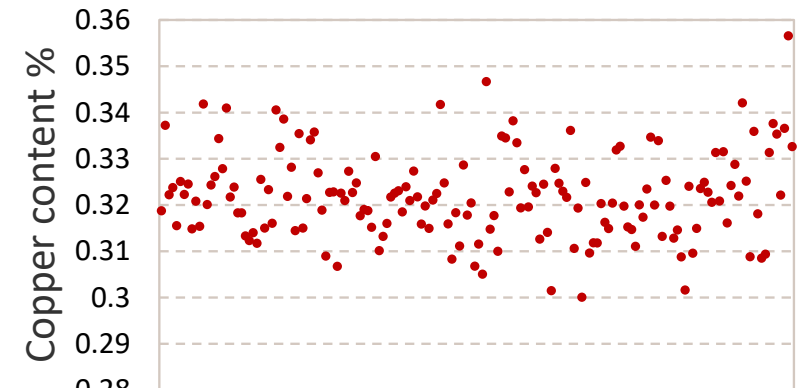
QSP can accept a large share of scrap as a charge material

QSP from Caster to HSM is designed to counteract the issue hot shortness due to tramp elements such as Copper and Tin

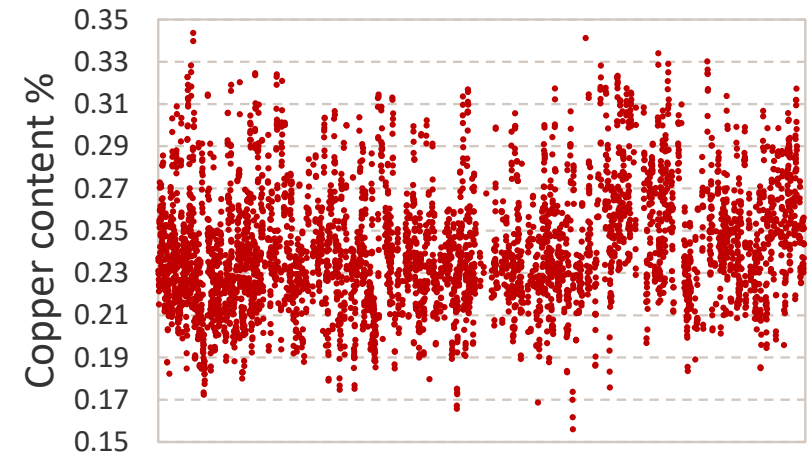
QSP final strip quality is not impaired by the use of scrap

Production of API grade via EAF since 2008  
average **copper 0.20 ÷ 0.35 %** Coil to Coil

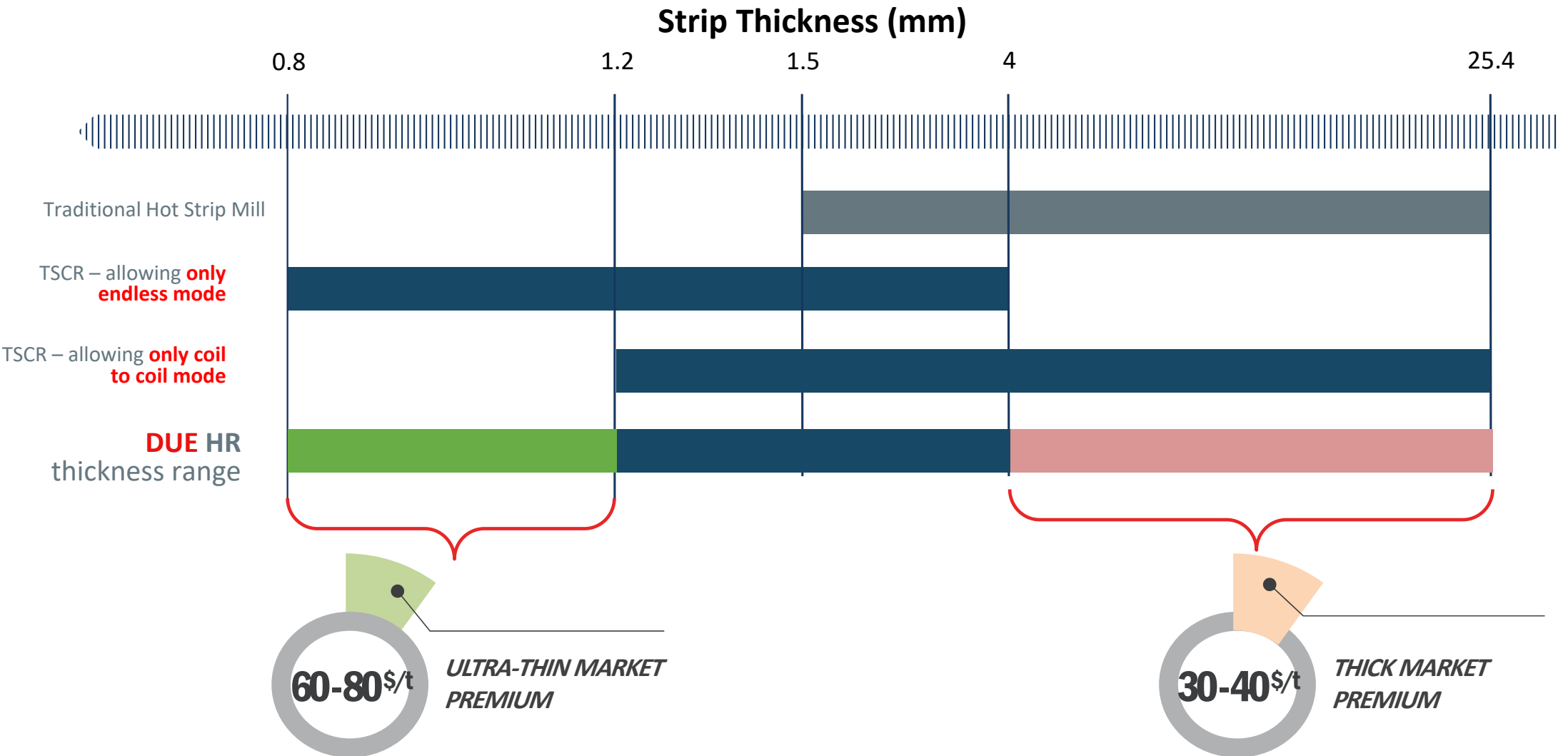
## COPPER CONTENT

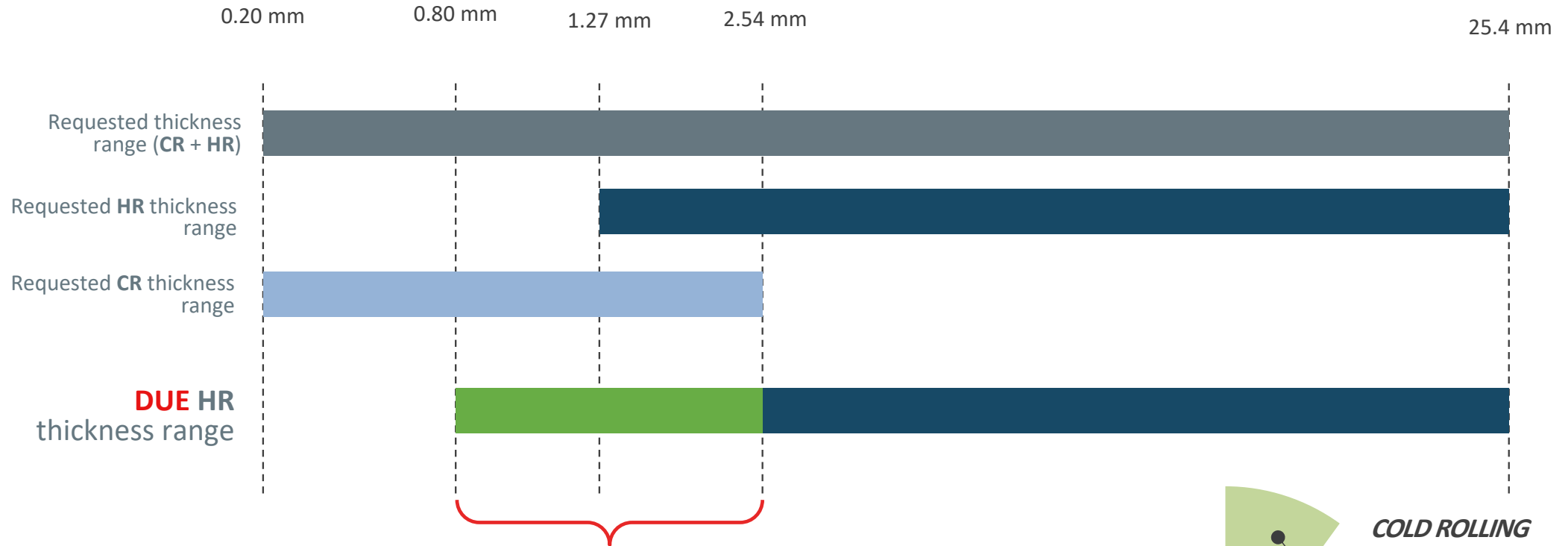


1 month of production – Plant A

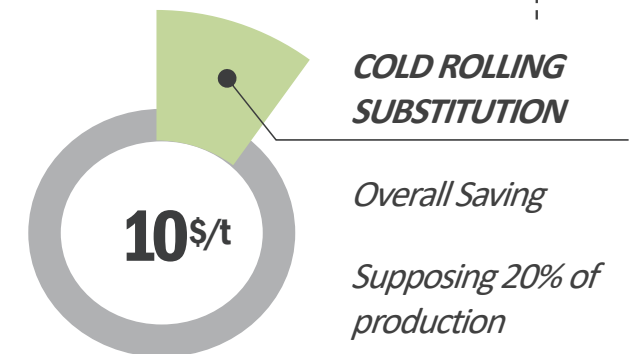


6 months of production – Plant B

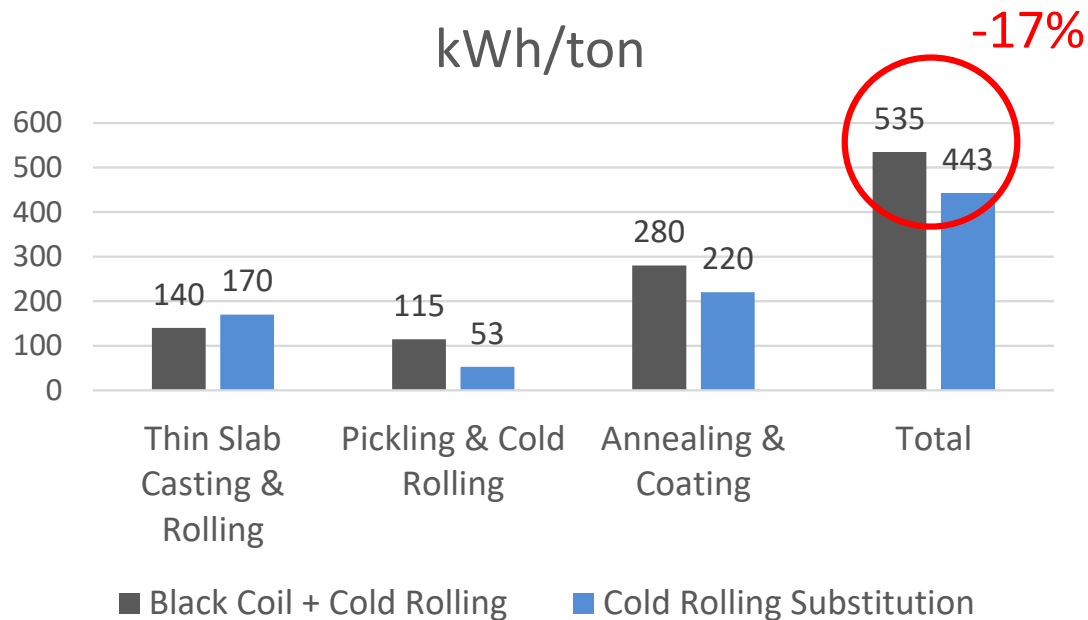
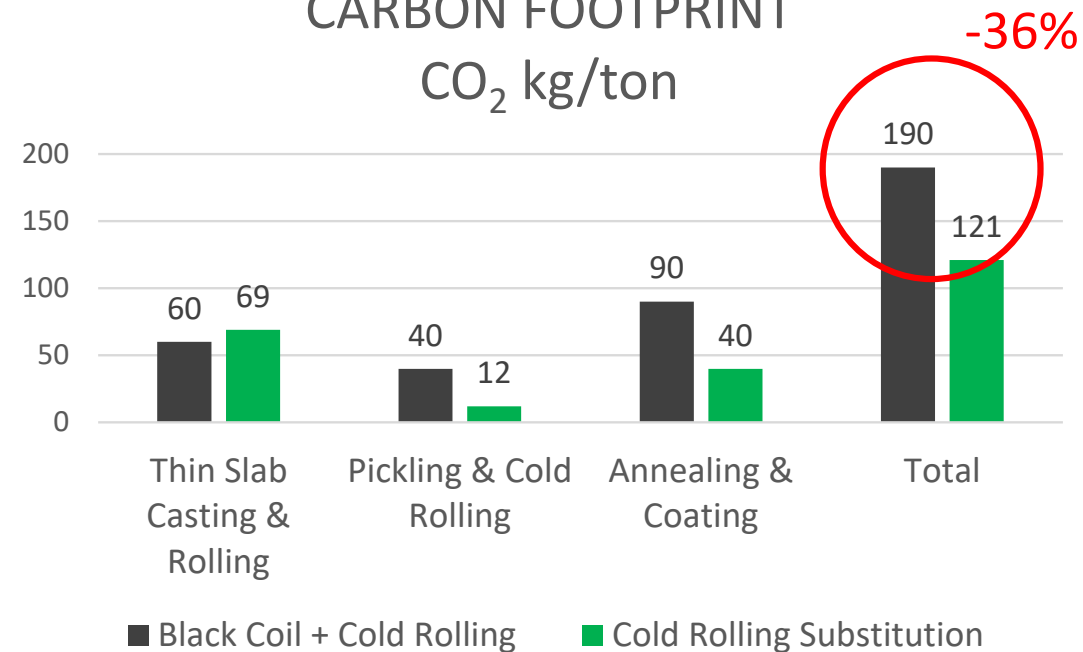




- > QSP-DUE completely covers the HR thickness range, also **substituting parts of the CR products** needs (down to 0.8 mm).
- > Thanks to **endless production**, this can be achieved with increased surface quality and tight geometrical tolerances.

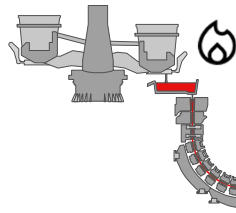




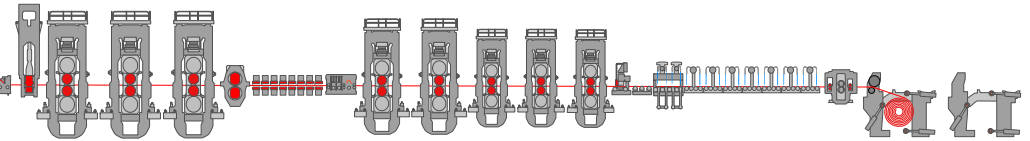
ENERGY CONSUMPTION  
kWh/tonCARBON FOOTPRINT  
CO<sub>2</sub> kg/ton

**Cold Rolling Substitution resulting in Low OpEx and reduced carbon footprint**

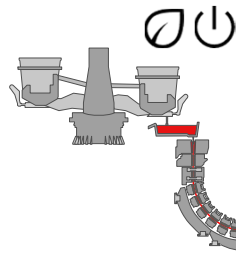
Tund. preheating  
**1,8 kgCO<sub>2</sub>/ton**  
direct emission



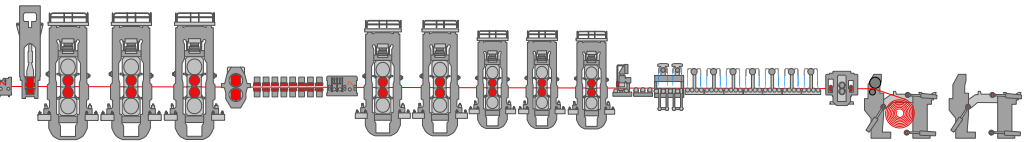
Gas-Fired Tunnel Furnace  
**5 kgCO<sub>2</sub>/ton** direct emission



Tund. preheating  
**0 kgCO<sub>2</sub>/ton**  
direct emission



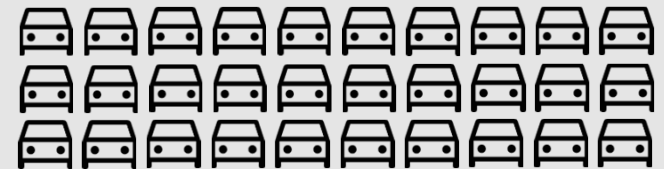
Electrical Tunnel Furnace  
**0 kgCO<sub>2</sub>/ton** direct emission



Production  
3,000,000 tons/y

CO<sub>2</sub>

CO<sub>2</sub> Energy saving  
20,400 tons/y



Equivalent to 4,300 passenger vehicles

**1\_  
PROVEN  
INDUSTRIAL  
TECHNOLOGY**

**4 QSP-DUE WW**

out of 15 QSP  
REFERENCES

**+30 YEARS EXPERIENCE**

VERTICAL CURVED CASTER  
TECHNOLOGY

**2\_  
PROVEN  
OPERATIONAL  
SAVINGS**

**LOWEST OPEX**

COMPARED TO OTHER  
THIN SLAB CASTING &  
ROLLING TECHNOLOGIES

**FLEXIBLE INPUT**

CAN PROCESS Cu  
CONTENT UP TO 0.40%

**3\_  
PLANT  
FLEXIBILITY**

**ENDLESS,  
SEMI-ENDLESS & C-T-C**

TO OPTIMIZE  
QUALITY/PROCESS AND  
COST-EFFECTIVENESS

**ZERO LIMITATION**

IN TERMS OF STEEL  
GRADES

**4\_  
ENVIROMENTAL  
FRIENDLY**

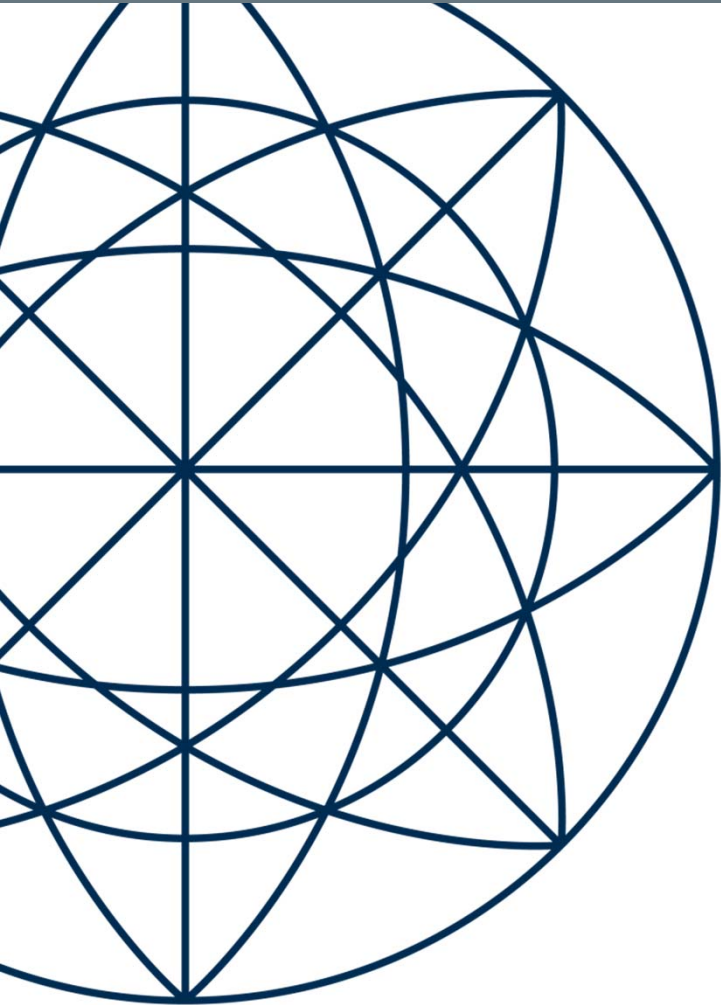
**-31% ENERGY**

COMPARED TO OTHER  
TECHNOLOGIES

**-68% CO2 SC. 1+2  
EMISSIONS**

COMPARED TO OTHER  
TECHNOLGIES





## DANIELI DUE<sup>®</sup> IS THE UNIQUE PRODUCTION LINE THAT COMBINES:

- > Ability to cover the widest possible product mix and thickness out of the reach of traditional HSM
- > Ability to handle different charge mix in the Steel Making Plant (Cu content up to **0,40%**)
- > **Quality** of the final product **exceeding** market expectations
- > **Ability to substitute CR coils** for many application with an advantage of **approx. 50 \$/t**
- > Ability to produce ultra light gauges that cannot be produced by conventional HSM with market premium of **up to 80 \$/t**
- > Lowest energy consumption and CO<sub>2</sub> emissions in the industry (**-75% Energy and -59% CO<sub>2</sub>**)
- > Completely automated process from meltshop to final HRC with “**no man on the floor**” approach

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