

# Complete PQF<sup>®</sup> ROLLING PROCESS

PQF<sup>®</sup> plants are successfully employed today for the production of seamless tubes with diameters from 1/2" to 18" and wall thicknesses from 2 mm to over 30 mm. The tubes are used predominantly in the oilfield and energy sectors. Depending on the manufacturer's product mix, annual outputs of more than 600,000 tonnes can be achieved.

The advantages for the tube mill operator:

- Significant improvement in the tube quality
- Improvement in the rolling characteristics for high-alloy steels
- Efficient and stable production of thin-walled precision tubese
- Improved yield
- Reduction in the tool costs
- Energy savings thanks to reduced reheating

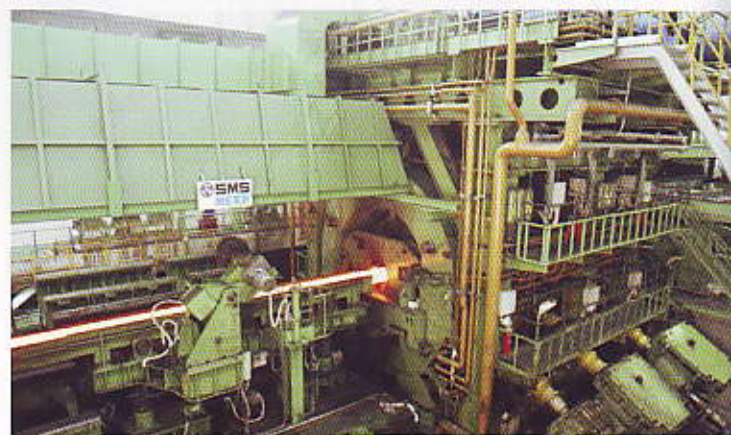
A PQF<sup>®</sup> mill consists of five to six stands into which the 3-roll cassettes are integrated. The proven construction of the PQF<sup>®</sup> mill with ACO (Axial Change Over) tunnel design provides for in-line changing of the roll stands. As a result of the 3-roll arrangement, the rolling stock is surrounded more uniformly. The rolling force is therefore distributed more evenly around the roll circumference than with the conventional 2-roll arrangement (MPM technology). This results in lower tolerance deviations in the roll gap and lower material strains during rolling, and less disturbing factors during the rolling process. Each individual roll has a hydraulic adjustment system that allows precise setting or adaption of the roll gap to be carried out within fractions of a second. Apart from the improvement in the tolerances, this also allows peak loads on the rolls and mandrel bars to be compensated.

Adjustment is carried out under computer control via the CARTA<sup>®</sup> PQF<sup>®</sup> automation system.

For the mill operator this offers the advantage that the tube production is more stable and easier to control. The lower material strain means that the product mix can be extended to include even thinner walls and higher alloy steel grades.

The technical advantages of the PQF<sup>®</sup> can be summarised as follows

- Reduction in the critical forces and material strains in the roll gap
- Lower mandrel bar wear
- More uniform temperature distribution in the shell after the rolling process
- Reduced "finning" at the shell ends and hence lower crop end losses
- Closer wall thickness tolerances



18" PQF<sup>®</sup> – run-out side