ADVANTAGES

- The heat up time without local overheating can be reduced
- Uniformity of material properties is improved
- Local working of rolling is eased
- Lower sticking of the power loss at lower speed and low cost of higher volume flow

SECO/WARWICK GROUP

is a leading global manufacturer of heat treatment furnaces and hot isostatic pressing.

SECO/WARWICK is a leader in innovation in the field of heat treatment furnaces, expertise includes advanced solutions in 5 categories: vacuum heat treatment, atmospheres, and aftertreatment thermal processes, controlled atmosphere furnaces, vacuum furnaces, and air furnaces. SECO/WARWICK Group has 15 companies located in Europe, the United States, and China. In addition, the Group has more than 200 sales and service offices in 30 countries worldwide.
FURNACE EFFICIENCY
Further efficiencies are realized with SECOWORK'S inclined head, air-worked into control system, which separates lead and air thermocouples in each control zone. Because the lead temperature is controlled independently of the air temperature, there is no need to adjust the air temperature for the lead temperature. Therefore, the maximum amount of thermal load is maintained for the maximum amount of time, resulting in the shortest possible heating time. To further enhance the control system, an automatic control system is available and is recommended when varying coil sizes are being annealed.

To maximize efficiency, as well as protect coils from scaling or ceramic fiber contamination, SECOWORK'S 500° C and 1000° C furnaces provide a proprietary resin and metal resistor system which not only increases insulation efficiency by 15-20%, but also simplifies maintenance.

ALUMINIUM ANNEALING FURNACES
VARIOUS LOADS NEED VARIOUS SOLUTIONS - THEREFORE SECOWORK IMPLEMENTED:
- Mass flow design, especially for full annealing, where the surface of the coil is not accessible for damage during high atmosphere flow.
- Vector-flow jet heating system, for coil annealing when the experience of heat transfer is not required.

SECOWORK'S provides custom engineered aluminum coil and coil annealing furnaces with capacities ranging from single coil module furnaces to multicoil furnaces using right power systems. We have the experience, knowhow and knowhow to manufacture efficient furnaces with exception temperature uniformity and unique charging techniques to fit the most demanding application.

FURNACE IDEA
A leading of 40 tons requires an advanced continuous heating system to obtain hot atmosphere at low cost, as possible without degradation of quality. Degradation of quality typically appears at the strip edge and are represented by non-uniform material properties like hardness, microstructure and/or gray sulfide on the strip surface of rolls and fines. The parameter limits of the strip edge will define the use of the higher temperature in the soft zone. The edge is typically the coiled surface of the coil and it will be the most critical location of the coil to be passed by the heating element. The temperature of the strip edge is directly related to the hot atmosphere of the heating system.

The governing parameter describing the temperature uniformity of a continuous heating system is the ratio of maximum to minimum heat transfer coefficient mu/m. This parameter limits the heat profile since the sum of the mu's must be closer to the average (which can be obtained without exceeding the maximum permissible local heat transfer coefficient). The influence of No-mu's requires an advanced continuous heating system to obtain high transfer times as possible without degradation of quality. Degradation of quality typically appears at the strip edge and are represented by non-uniform material properties like hardness, microstructure and/or gray sulfide on the strip surface of rolls and fines. The parameter limits of the strip edge will define the use of the higher temperature in the soft zone. The edge is typically the coiled surface of the coil and it will be the most critical location of the coil to be passed by the heating element.

The reason for these limitations is local overheating at the coil head, caused by non-uniform heat flow of the continuous heating system. The heat flow is typically higher at the coil head and lower at the coil end, causing more rolling marks and fishtails. The parameter limits at the coil head can define the use of the higher temperature in the soft zone.

The parameter limits at the coil head can define the use of the higher temperature in the soft zone.