

### Advantages of Precise Temperature measurement in Aluminum Extrusion Lines

Temperature is the most important parameter in Aluminium Extrusion Process controlling Production, Wastage, Cost, Quality and the Life of the Press. Aluminium extrusion being dynamic processes, accurate continuous temperature control is possible only by using non-contact pyrometers. Accurate Sensor Technologies, Israel enjoys a worldwide reputation for its unique pyrometers. AST has a unique line of proprietary pyrometers that use a totally new approach for accurate temperature measurement. These proprietary pyrometers provide highly accurate, non-contact temperature measurement of true target emissivity and intermediate conditions. These products are not sensitive to changes in emissivity or other target parameters and are not affected by the intermediate conditions between the pyrometer and the target. As a result, AST's pyrometers are capable of handling the unstable targets and intermediate conditions commonly found in the aluminum indicating the target temperature to a high degree of accuracy

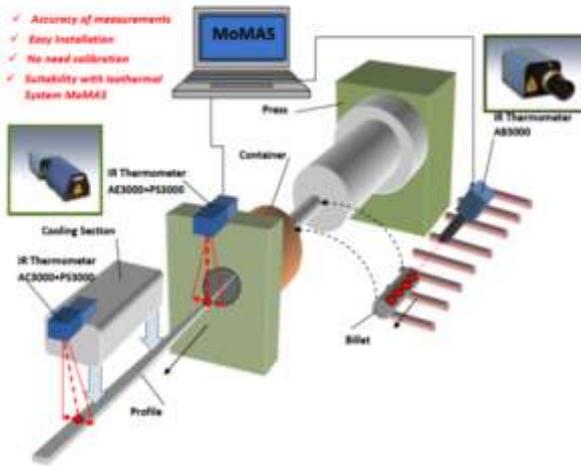


#### Billets

Billets are heated in heating furnace to the required temperatures, usually around 420-500 °C. The heating is intended to reduce the flow stress of the aluminium alloys and to avoid cracks and surface defects due to high temperatures. Accurate temperature control of billets are therefore very important not only for good extrusion but also to avoid burning out the precious energy. Billet measurement prevents to enter the under heated billets to the press therefore keeping constant speed, quality and enhancing the life of the press



#### New generation of IR Pyrometers for Aluminum Extrusion



#### MoMas®

Modular Measurement and Automation system

#### Goals:

- High Productivity
- Extrusion rate
- Excellent quality
- Extrusion Temperature
- Profile Temperature, Profile Cooling rate.
- Keep Constraints in view
- Maximum extrusion force of press\die,
- Maximum Billet Temperature,
- Prescribed ranges of process Parameters

#### Control algorithm employed;

iterative Learning control,  
adaptive feedback over the cycles.

#### Press Exit

The aluminium profiles are typically extruded at extrusion speeds in the range of 5 – 50 m/min depending on the alloy used and the profile complexity. Entry of overheated or under heated billets to the container controls the speed, quality and wastage. As extrusion speed is increased productivity is increased. For example, if aluminum profiles are usually extruded at a low temperature of 520°C and the extrusion temperature is increased to 560°C, the extrusion press speed can be dramatically increased. When profiles are extruded at very high temperatures, for example between 580°C to 600°C, product may be damaged. AST pyrometers can prevent this damage. Some AST customers report increased productivity rates of 5 - 10%.

#### Cooling Stage

On leaving the die, the extrusion is cooled through the use of air or water quenches. This is a critical step to ensure proper homogenous structure, dimensions and strength characteristics of extrusions. Based on the intended use of the aluminium profiles, they are required to have different mechanical properties such as strength and hardness. These properties are achieved in two operations. The first one involves cooling of profiles in the extrusion process through the proper temperature adjustment and control of extrusions leaving the die.

Remember if you wish to join the super extruders, who always have time enough to make profit, begin by concentrating on three things:

First - Temperature | Second - Temperature | Third - Temperature