

# MODULE C – OPENING THE “BLACK BOX”

## Intensive Training in Press Hardening

**Module C** is meant to improve the awareness of those concerned with daily PHS operations on the shop floor level in regards to the specific features of hot stamping production.

Running a PHS production line like a “black box” bears obvious risks. Therefore a basic understanding of the effect of adjustable process parameters and resulting process conditions on the efficiency of the process itself and the quality of final product is absolutely indispensable also and above all for operators being responsible for running a

hot stamping line, carrying out lab quality testing, or maintenance of machinery, tools, and dies.

*The right skills, methods, and equipment protect you from being overrun by complexity!*

During the training particular attention is drawn to:

- > heating, cooling & mechanical properties
- > coating consistency, roller pollution & surface properties
- > tool wear, coolant flow & hot spots
- > die spotting, thermal imaging & non-destructive testing.

**Intensive Training Module C** is meant to improve the awareness of those concerned with daily PHS operations on the shop floor level of specific features of hot stamping production.

### Target Audience

This training is aimed at operators responsible for running a PHS production line, carrying out lab quality testing, or maintenance of machinery, tools, and dies.

### Program

**Contents.** The training program provides a basic understanding of the interdependency between adjustable process parameters and the resulting properties of the final product when hot stamping PHS with standard metallic coating systems.

## MODULE C



Unit C1: Process & Product Quality

Unit C2: Procedures & Emergency Plans

Line-up of learning units of Intensive Training in Press Hardening Module C

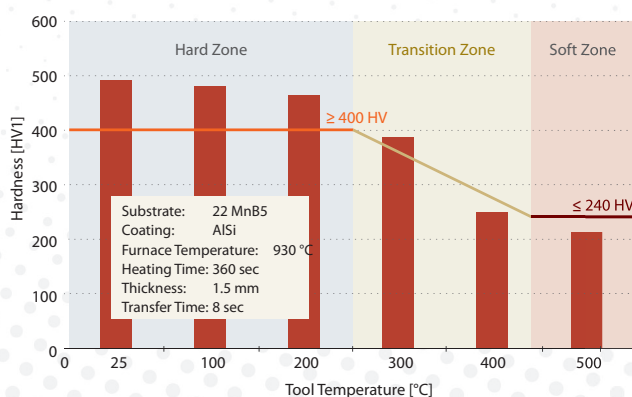
*Your focus is on your business, let us  
take care of your knowledge!*

**Aims & Targets.** A basic understanding of various effects of adjustments of process parameters on relevant material processing properties (e.g., tool life, roller pollution, etc.) and final product properties (e.g., surface properties, coating consistency,

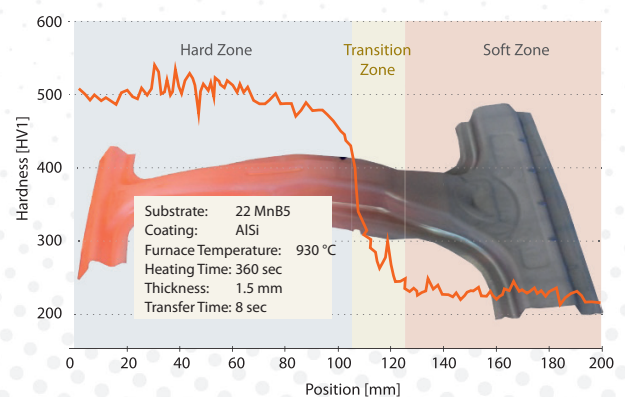
mechanical properties, etc.) will be gained. The participants will be trained to recognize and evaluate relevant product quality indicators during the process, and, accordingly, will learn to make proper decisions during PHS line operation.

#### **Schedule**

The training requires 6 hours of workshop training. It takes place on site at the customer's plant.



**Resulting part hardness depending  
on the die temperature.**



**Hardness profile after press hardening in a tool running  
on locally and temporally variable thermal conditions.**