PRECISION METALFORMING ASSOCIATION
NETWORK. LEARN. LEAD.

6363 Oak Tree Blvd.
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Die Protection Clinic
In-Plant Training Agenda (Sample)

One-Day Training Program or
Three-Day Webinar Series

Session 1 (100 minutes)

Die Protection Theory and Control Logic

I. Die Protection Theory
   A. What is Die Protection?
   B. How does it work?
   C. Goals and ROI
   D. Component Parts
   E. Comparison to Tonnage Monitoring
   F. Terminology

II. Control Logic
   A. Event Types
   B. Ready Signals
   C. Sensor Failsafe
   D. Time based vs Angle Based systems
   E. The Resolver and its Function
   F. The “Green Constant” Sensor Type
   G. The “Green Quick Check” Sensor Type
   H. The “Green Special” Sensor Type
   I. The Bypass Window - How and where to use it
   J. Critical Angle
   K. Selecting the Stop Type
   L. Productivity Enhancing Features
   M. Nuisance Stops and How to Avoid them

PMA in-plant training programs are fully customizable. Subjects in this agenda can be removed, replaced or additional topics added from other PMA in-plant training programs.

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Session 2 (120 minutes)

Sensors and Applications

I. Application Guidelines
II. Sensors Types
    A. Electromechanical Sensors
        1. Spring Probes
        2. Static Sensors
        3. Drawbacks
        4. Electrical considerations
    B. Electronic Sensors
        1. Characteristics
        2. Proximity Sensors
            a. Definition
            b. Advantages
            c. Theory of operation
            d. Packages, Types, &Terminology
            e. Application examples
        3. Photosensors
            a. Characteristics
            b. Operating modes
            c. Application examples
        4. Fiberoptic sensors
            a. Characteristics
            b. Operating modes
            c. Application examples

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One-Day Training Program or
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Session 3 (90 minutes)

Part Ejection Sensors, Sensor selection, testing, wiring, and implementation

I. Part Ejection Sensors
   - A. Mini light curtains
   - B. Diffuse reflective sensors
   - C. Proximity Coil Sensors

II. Bench testing
   - A. Objective
   - B. Why bench test?
   - C. Setting up a "Sensor Lab"

III. Sensor Selection Criteria
   - D. Sensor output type
     1. NPN
     2. PNP
     3. Push-pull
     4. Two wire DC
   - E. Environmental Ratings
     1. NEMA
     5. IEC IP ratings
   - F. Shock and vibration Ratings

IV. Die Wiring
   - A. Guidelines
   - B. Protecting sensor wiring
   - C. Die mounted junction boxes

V. Implementation Tips
   - A. Getting started – Existing Die
   - B. Getting started – New Die
   - C. Getting started – Misfeed sensing
   - D. Common mistakes

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