

# DOUBLE LINEAR IMPACTOR



**ARIES INGENIERÍA Y SISTEMAS, S.A.**

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# INTRODUCTION

- ✓ ARIES 20-year experience on passive safety systems allows us provide **customized and comprehensive solutions** to our customers
- ✓ ARIES Double Linear Impact Test System is the solution for airbag & curtain airbags & steering mechanism impact testing.
- ✓ The system includes:
  - Propulsion System
  - Positioning and guidance
  - Airbag Support Structure
  - Control System

# ARIES DESIGN FEATURES

✓ Designed as:

- Universal linear impactor: free flight / guided test  
(headforms & body block & special impact forms)
- Airbag Impact testing



- ✓ Hydraulics-based
- ✓ Cost-efficient solution
- ✓ Low maintenance required
- ✓ Easy-to-use control system with user-friendly software

# SYSTEM FEATURES

- ✓ Wide impact mass range: 2,5 – 70 kg.
- ✓ Impact speed up to 16 m/s (25 kg)
- ✓ Impact **synchronised** with airbag deployment
- ✓ Two launchers **real time synchronization**
- ✓ **Free Flight** or **Guided** Impact
- ✓ High **Repeatability** ( $\pm 0,1$  m/s).
- ✓ High Speed **Accuracy** ( $\pm 0.15$  m/s)
- ✓ X, Y & Z axis and impact angle regulations of impactor position

# PROPULSION SYSTEM: Performance

- ✓ Maximum Impact Velocities for body block tests
  - 16m/s up to 25 kg
  - 12m/s up to 35 kg
  - 9 m/s up to 70 kg
- ✓ Guided / Free flight
- ✓ Guidance without propulsion
  - 500 mm (4,5 to 6,8 kg)
  - 1000 mm (6,8 to 35 kg)
  - 500 mm (35 to 70 kg)



# POSITIONING SYSTEM: Characteristics

- ✓ Support Bedplate Regulation
  - Motorised Z-axis
  - Motorised X-axis
  - Motorised or Manual Y-axis
  - Independent manual setting of Accelerator Angle ( $ZX^0$ )

# CONTROL SYSTEM

- ✓ Launch sequence controlled by computer.
- ✓ Safety procedures to control the system.

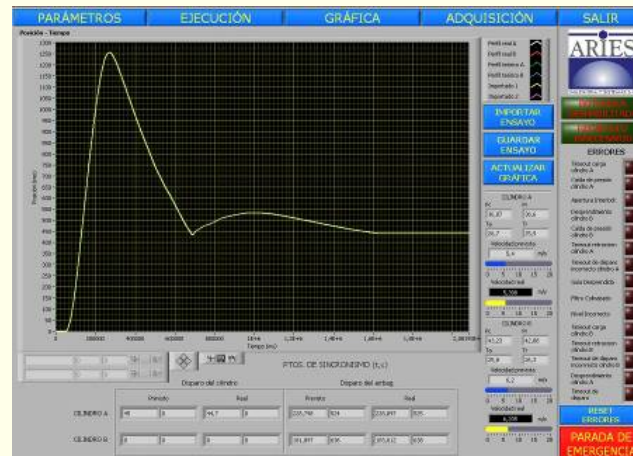


The screenshot displays the ARIES control system interface with the following sections:

- PARÁMETROS:**
  - LUMINARIAS:** FOCO 1 (Estado: APAGAR), FOCO 2 (Estado: DESHABILITADO), FOCO 3 (Estado: DESHABILITADO), FOCO 4 (Estado: DESHABILITADO).
  - PRESIONES Y TEMPERATURAS:**
    - CILINDRO A (ACTIVO): Presión de consigna 36,809 bar, Presión real 34,567 bar, Temperatura aconsejable 26,8 °C, Temperatura real 26,9 °C.
    - CILINDRO B (ACTIVO): Presión de consigna 43,393 bar, Presión real 37,875 bar, Temperatura aconsejable 26,5 °C, Temperatura real 25,8 °C.
  - DATOS DE ENSAYO:** ID Ensayo: ensayo\_09052006\_141253, Fecha: 06/05/2006 14:12:59, Observaciones: [Campo de texto], [BOTÓN: GUARDAR]
- EJECUCIÓN:**
  - ENSAYO:** CARGAR Y DESPACHAR (EN PROCESO), DESCARGAR, REPOSICIONAR, HABILITAR BOTONERA, PARADA DE EMERGENCIA (Botón rojo).
  - CONTROL DE DISPARO:** ESPERANDO DISPARO (Botón verde), Datos A (Espera, Código de error A, No hay errores, Posición A (mm) CERO 0), Datos B (Espera, Código de error B, No hay errores, Posición B (mm) CERO 0).
  - RACK SXCI:** ADQUISICIÓN HABILITADA (Botón verde).
  - SECUENCIA DE PURGA:** PURGAR (Botón azul), Bomba (V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16, V17, V18, V19, V20, V21, V22, V23, V24, V25, V26, V27, V28, V29, V30, V31, V32, V33, V34, V35, V36, V37, V38, V39, V40, V41, V42, V43, V44, V45, V46, V47, V48, V49, V50, V51, V52, V53, V54, V55, V56, V57, V58, V59, V60, V61, V62, V63, V64, V65, V66, V67, V68, V69, V70, V71, V72, V73, V74, V75, V76, V77, V78, V79, V80, V81, V82, V83, V84, V85, V86, V87, V88, V89, V90, V91, V92, V93, V94, V95, V96, V97, V98, V99, V100), Bomba (V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16, V17, V18, V19, V20, V21, V22, V23, V24, V25, V26, V27, V28, V29, V30, V31, V32, V33, V34, V35, V36, V37, V38, V39, V40, V41, V42, V43, V44, V45, V46, V47, V48, V49, V50, V51, V52, V53, V54, V55, V56, V57, V58, V59, V60, V61, V62, V63, V64, V65, V66, V67, V68, V69, V70, V71, V72, V73, V74, V75, V76, V77, V78, V79, V80, V81, V82, V83, V84, V85, V86, V87, V88, V89, V90, V91, V92, V93, V94, V95, V96, V97, V98, V99, V100).
  - ACCIONAMIENTOS:** Bomba (V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16, V17, V18, V19, V20, V21, V22, V23, V24, V25, V26, V27, V28, V29, V30, V31, V32, V33, V34, V35, V36, V37, V38, V39, V40, V41, V42, V43, V44, V45, V46, V47, V48, V49, V50, V51, V52, V53, V54, V55, V56, V57, V58, V59, V60, V61, V62, V63, V64, V65, V66, V67, V68, V69, V70, V71, V72, V73, V74, V75, V76, V77, V78, V79, V80, V81, V82, V83, V84, V85, V86, V87, V88, V89, V90, V91, V92, V93, V94, V95, V96, V97, V98, V99, V100).
  - TEMPERATURAS:** Temperatura de consigna del depósito 30 °C, Temperatura real del depósito 26,8 °C.
  - SEGURIDADES:** Seta de Interlock emergencia (Botón verde), Sistema armado (Botón verde), Palo eléctrico (Botón verde).
- ADQUISICIÓN:** [Botón verde]
- SALIR:** [Botón azul]
- ERRORES:** [Lista de errores con indicadores de estado]
- RESET ERRORES:** [Botón azul]
- PARADA DE EMERGENCIA:** [Botón rojo]

# CONTROL SYSTEM

- ✓ Necessary accumulator pressure calculation from existing calibration data.
- ✓ Synchronisation with airbag and second launcher firing by linear encoder:
  - Calculates instant position of the impact form in real time
  - Airbag firing moment is precisely determined for every launch
  - Allows monitoring complete trajectory of impact form



# AUXILIARY EQUIPMENT



## ✓ HMI LIGHTING

- 4 kW ballast with 8 kW boost capability
- Specially designed asymmetric luminary
- Flicker free ballast
- Low infra-red emission
- Turn-key solutions with positioning system

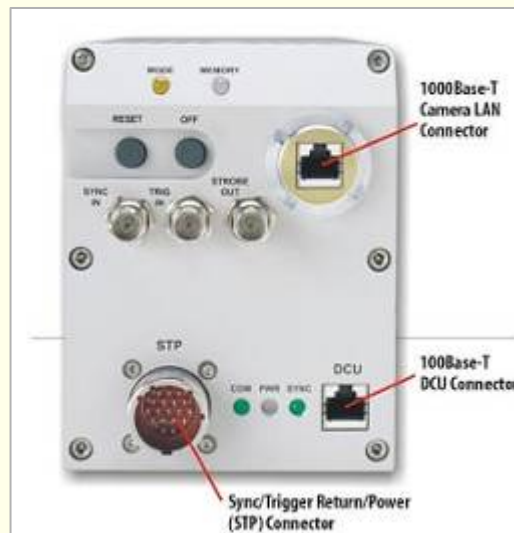


## ✓ SPEED METER DEVICE

- Beam: Class II LASER, visible
- Maximum distance between emitter and receiver: Up to 15 m
- Distance between beams: 200 mm or 70 mm(optional)
- Clock resolution:  $0,3 \mu\text{s} \pm 0,01 \%$
- Speed range: 2 km/h to 120 km/h
- Calculated speed precision: 0,2 %

# HIGH-SPEED CAMERA

- ✓ 1.7 megapixel CMOS sensor exclusive to Redlake: 1504 x 1128 pixels
- ✓ 1000 fps at full resolution, up to 100,000 fps at reduced resolutions
- ✓ Very fast 5 $\mu$ s electronic shutter eliminates motion blur
- ✓ Rugged design: withstands up to 100G in any axis
- ✓ Fast, accurate, reliable camera networking
- ✓ 1000 Base-T Ethernet® for fast downloads
- ✓ 2 GB memory



# LINEAR IMPACTOR

**For further information, please contact:**

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