HOLE AND CRACK DETECTION

CUSTOMER BENEFITS AND GAIN DECISIVE ADVANTAGES

- **SAFETY**
  - Increased safety for people, materials and equipments by avoiding all strip break hazards
- **HIGHER QUALITY**
  - Guaranteed Quality Assurance
  - Reduced Customer non conformity and material loss
- **EFFICIENCY / ACCURACY**
  - Accurate detection on high-speed running strip
  - Efficient inspection of the entire strip surface
  - Ambient light immunity
- **RELIABILITY**
  - Specific design and ruggedness for severe environments
  - Easy installation
- **AVAILABILITY**
  - Less down time at the processing line

APPLICATION

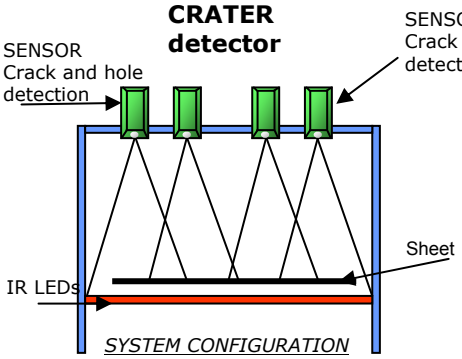
Sheet metals are manufactured using continuous process to stretch the raw material and form a steel sheet metal of some tenth millimetres of thickness. Stretching process of the sheet metal on continuous line can induce a lack of homogeneity of the metal structure and form cracks on border or tears on sheet.

Crack

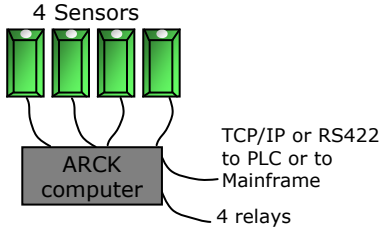
These most critical defects can lead to sheet tearing, stop the production line or at worst cause injury.
In order to detect those defects and prevent accident before cold rolling or coating or annealing, Arck Sensor offers an automatic detector called CRATER composed of sensors of our current SIRRAH range associated to a special processor board.
Our system is composed of 4 sensors fixed on a special mechanical structure, 1 external processor board located into the electrical cubicle and 1 long infrared beacon under the running sheet with a length superior to its width.

A specific industrial computer treats in real time data received from the 4 sensors and assures necessary calculations to detect crack on border and welding.

CRATER detector allows to detect at a run speed of 8m/sec cracks of a 10mm²-surface up to 10 cm², on metal sheets of thickness 0,15 mm up to 5 mm with variable width from 600 mm to 1450 mm.



SYSTEM CONFIGURATION



CONNECTION CONFIGURATION

contacts@arck-sensor.com / www.arck-sensor.com

HOLE AND CRACK DETECTION

WORKING PRINCIPLES

Crack detection : The strip to be controlled in real time is of a maximal width of 1 450 mm.
CRATER is looking down, the infrared LEDs are lighting up : CRATER measures the amount of light received from the IR beacon and averages it ; if a crack is going under the sensors, the amount of light is temporary increased and CRATER detects this variation of light.

Hole detection : CRATER is looking down , the infrared beacon is lighting up : without hole CRATER is blind ; in case of hole CRATER detects a small amount of light.

Covering the whole strip : CRATER is installed at an adjusted distance from the sheet according to the width of sheet allowing a complete detection.

Calculation : the associated industrial computer receives information of the 4 sensors in real time ; it makes analyse of the position, it indicates result : no defect or default detected ; it closes a relay when a crack or a hole is detected ; it measures continuously the strip position.

Control panel

InfraRed beacon

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