Automatic Data Collection in Wheel Shops

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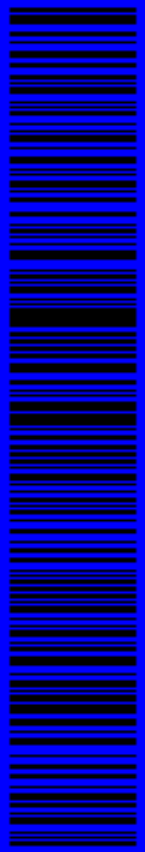
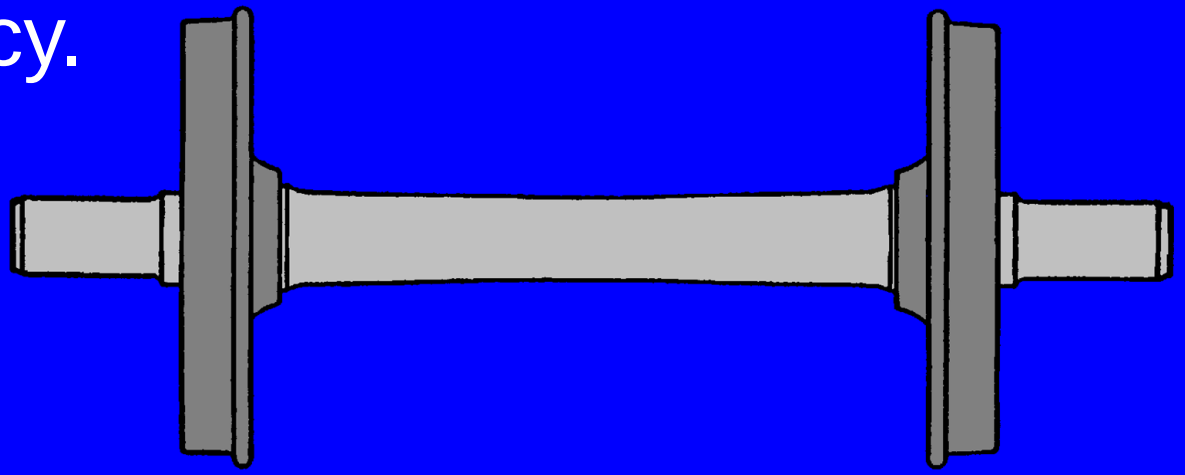
Introduction



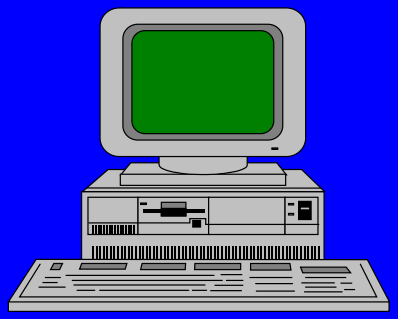
- What is Automatic Data Collection?
- Why do Automatic Data Collection?
- Ground rules for automatic data collection
- What data can we collect?
- Benefits of collecting data
- Collection methods and devices
- Establishing standards for data collection
- The future of ADC in Wheel Shops

What is Automatic Data Collection?

ADC is a term used to describe a family of technologies which aim to identify physical objects and information with 100% accuracy.



Why Do Automatic Data Collection?



- ✓A typical key-entry operator experiences approximately one undetected error in every ***300*** characters entered.

- ✓A barcode introduces only one undetected error in every ***3,000,000*** characters scanned

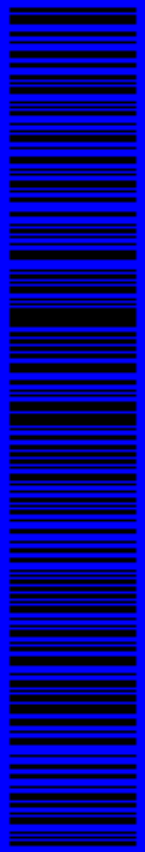
Why Automatic Data Collection in Wheel Shops?

- A wheel serial number is made up of 5 characters.
- One error for every 300 characters translates to one serial number recording error for every 60 wheels.
- There is potentially one error in serial number entry for every 30 wheel sets produced.

Ground Rules of Automatic Data Collection?

- Entry is quick and easy
- Information is accurate
- Information is converted to a portable electronic format
- Information is entered only once

What data is There to Collect in a Wheel Shop?

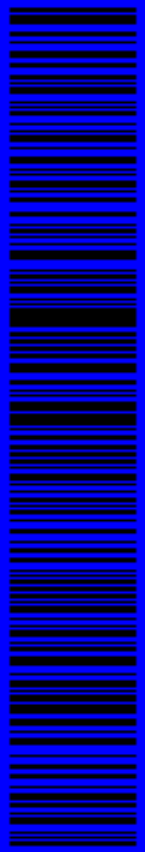


- Wheels
  - Serial number, size, tape size, manufacturer
  - Mounting charts, misfit information
- Axles
  - Serial number, heat number, size, date, manufacturer
  - Defect information—tap defects, finish
- Bearings
  - Serial number, laterals, run-out, manufacturer
  - Mounting data, defect information

What data is There to Collect in a Wheel Shop? (cont'd)

- Gears / Discs
  - Serial number, mounting data
  - Defect information
- Calibration information
  - Due dates
  - Calibration lead times
  - Trends for ISO 9000 certification

Benefits of ADC

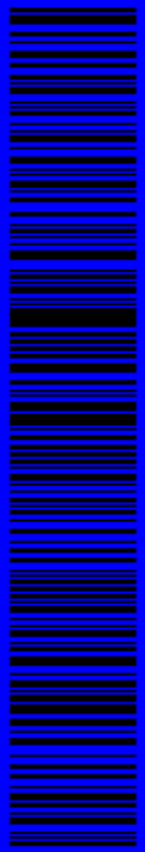


- Inventory
  - Real-time inventory
  - Reorder levels
  - Track customer consignments
- Track work in progress
  - Time studies
  - Find bottle necks in your process
  - Defect tracking

Benefits of ADC (cont'd)

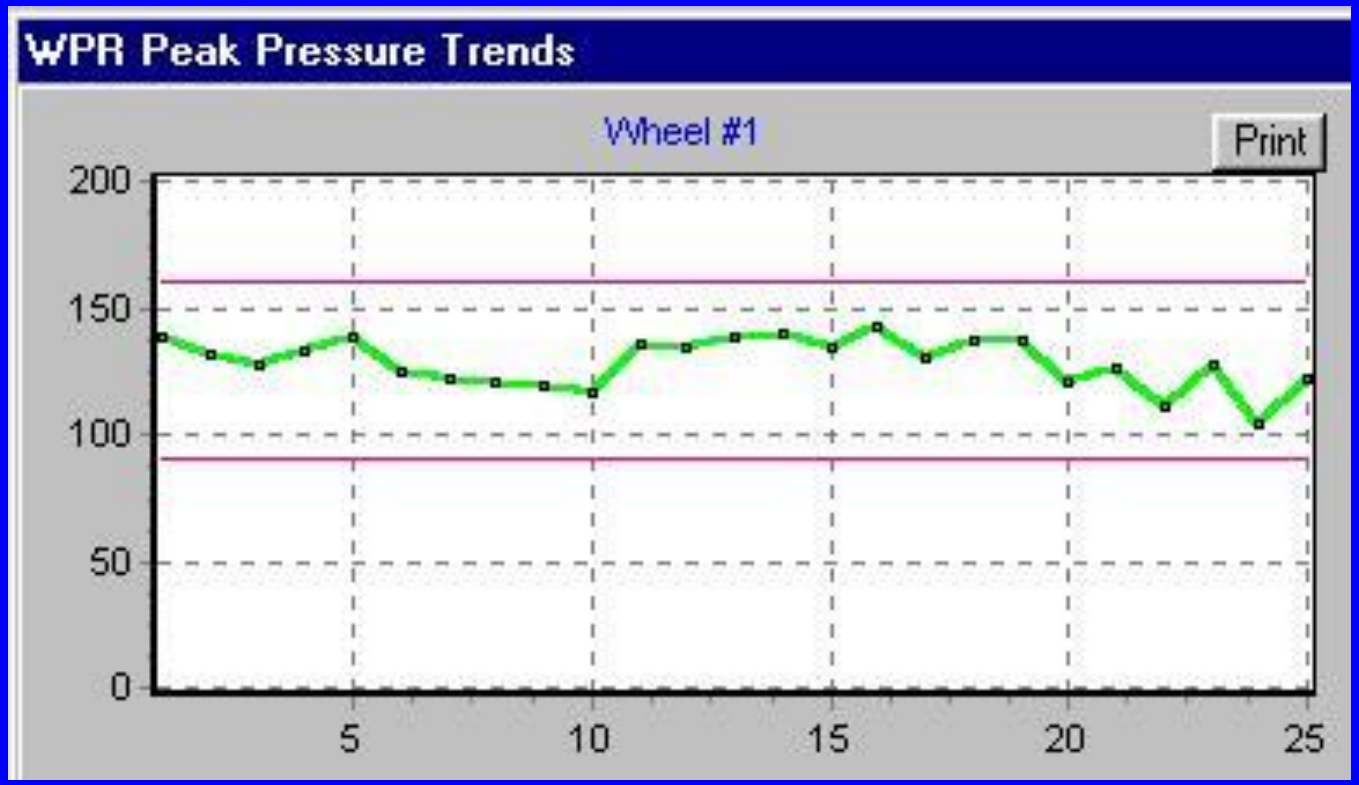
- Increased productivity / lower costs
  - Barcodes are 15 times faster than manual entry and 10,000 times more accurate.
  - Less rework
  - Shorter hours to meet production (less overtime)

Benefits of ADC (cont'd)



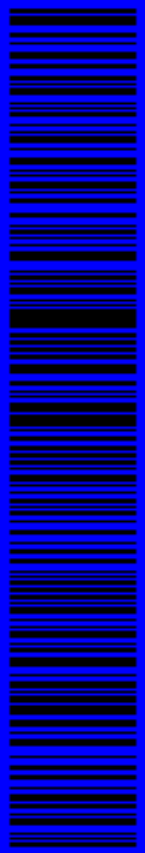
- Improved customer satisfaction
  - Share data with customer to reduce data entry for customer
  - Quick response to needs
- Improved quality
  - Defect analysis
- Improve the process
  - Enforcement of operating procedures
  - Statistical process control
  - Fewer misfits / defects

Process Improvement Tool Example



Devices Used for Automatic Data Collection

Barcodes




AC 12345 12/99 (3 of 9)
AC 12345 12/99 (EAN 128)

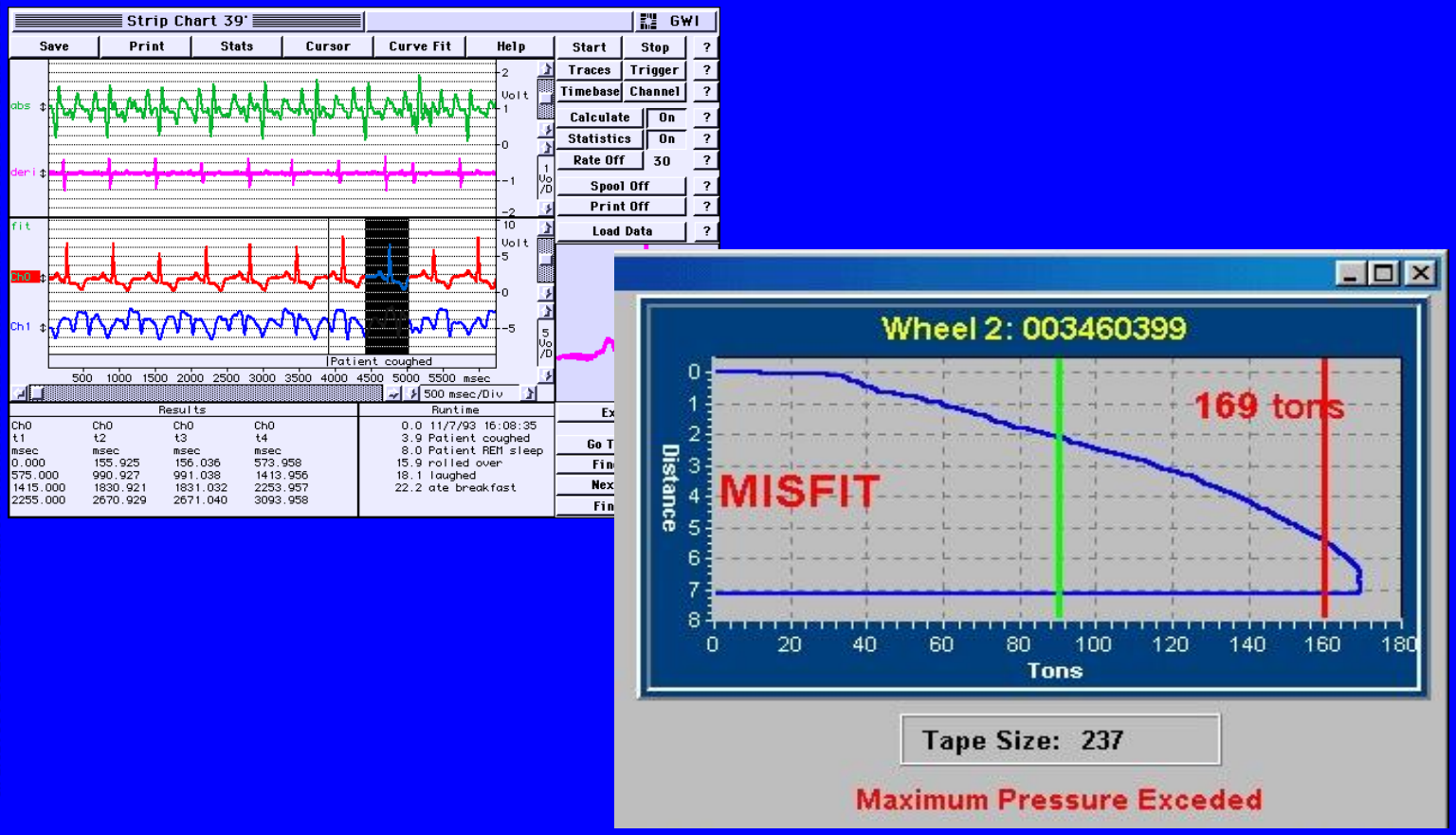

BzR8306 D019
9601152327 v3.1.4d
45710-0000 USA GND


PDF417


Data Matrix

Barcode Scanners

Electronic Data Recorders



Other Types of ADC

- Handwriting recognition
  - Recognize manual data entry
  - Real time data retrieval
- Voice recognition
  - Data entry
  - Data retrieval
  - Hands free inspections
  - Very good with numbers

Establishing Standards for Data Collection

- Barcode data format
  - Standardize content
  - Standardize order
- Barcode label placement
  - Standardize label locations
  - Standardize quantity
- Electronic interchange format (EDI)
  - Transfer of data to other shops
  - Transfer of data to customers

The Future of ADC in Wheel Shops

- Internet / intranet access to shop information in real-time
- Paperless Wheel Shops
- Voice recognition
  - Part of Windows™ by 2003
- Machine vision
  - Automatic inspection stations
  - Serial number recognition
- Just in time delivery

Questions and Comments

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