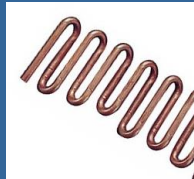




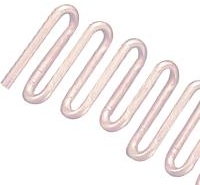
**C**lever **S**olution for tube **M**anipulation

by KC



# Index

1. Company profile
2. Quality management
3. Honor and awards
4. Practical application
5. Product categories
6. Product features
  - function
  - exclusive
  - controller
  - integration
7. Conclusion



# Company profile



Premises : 13770 m<sup>2</sup>



133 employees



60-day production lead time



100% in-house production

## Milestone

1982 : Foundation of CSM in Taiwan

1989 : Release the 1<sup>st</sup> CNC bending machine

1998 : Certified with ISO9002

Approved with CE marks

Establish branch in China

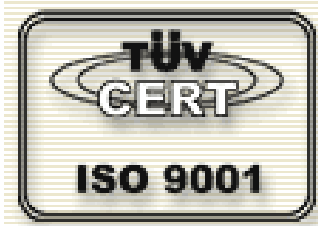
1999 : Acquire the first design patent in Germany 、  
United States 、 Taiwan, and China

2002 : Certified with ISO9001

2005 : Relocated to new plant in Taiwan Southern  
Science Park

Release the first All electric left- & right-hand  
bender

## Corporate certification



- ISO 9002 from year 1998
- ISO 9001 from year 2002

## Product certification



Germany

Luxemburg

Sweden



## International patent



Intellectual property  
of Taiwan



State Intellectual property of PRC



US patent &  
trademark office



Deutschen Patent-  
und Markenamts

**DPMA**

## National awards

### CNC electric bender - 38TMRE

Winner of 2003 Taiwan Excellence Award

### Planetary transmission gear

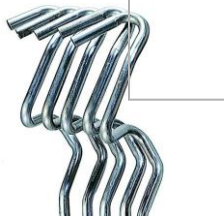
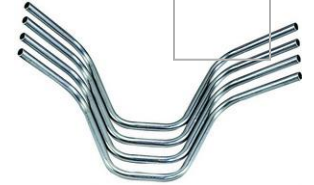
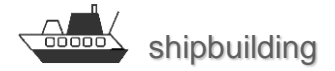
Winner of 2002 National SMEs Innovation Award

### All electric left- & right-hand bender - 30EMR

Winner of 2006 National SMEs Innovation Award



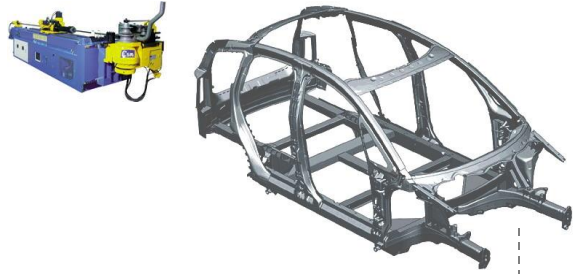
# Practical applications



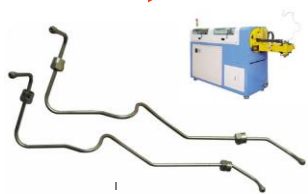
# Practical application in automotive industry

▶ [click to redirect to online video demonstration](#)

▶ frame



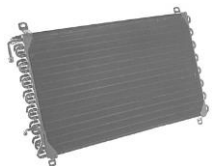
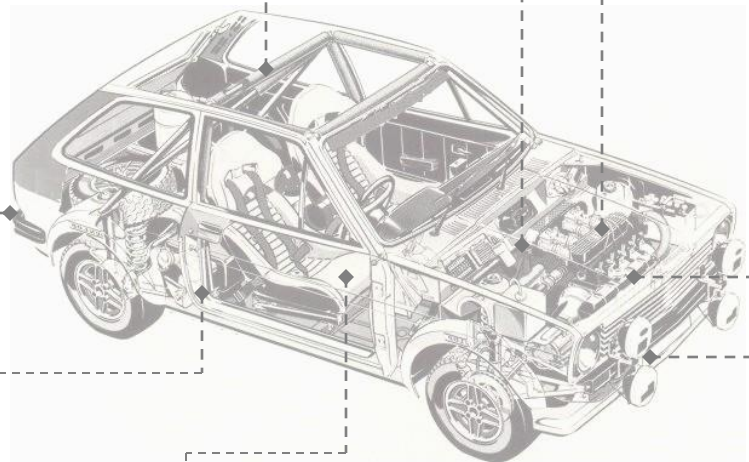
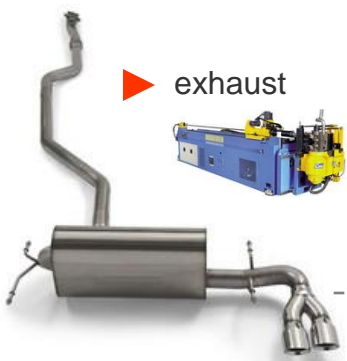
▶ fuel line



▶ engine



▶ exhaust



▶ condenser



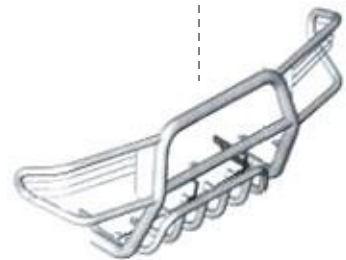
▶ chassis



▶ seat



▶ grill guard



# Product categories



## ○ Left + right bender

- All electric drive
- from 15 mm ~ 75 mm



## ○ NC & CNC bender

- Electric & hydraulic
- from 12 ~ 220 mm



## ○ Vertical bender

- NC & CNC
- from 25 ~ 50 mm



## ○ Cell integration

- Fuel line : auto loader + end-former + bender
- Pipeline : auto loader + bender + cutting machine



## ○ Cutting machine

- NC : CT305
- CNC : CT375



## ○ End-forming machine

- EF30-6 : max 30 mm
- EF50-6 : max 50 mm



## ○ Grooving machine

- REF20 : PLC control

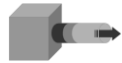


## ○ Dies & tools

- Bend die, pressure die, clamp die, wiper dies, mandrel



# Product features – function



## Carriage – Y axis

- driven by servo motor, assure fast + precise positioning and 100% noise free



## Collet – B axis

- Capable of 360° clockwise & counter-clockwise turning



## Mandrel

- Programmable positioning and retraction.
- Facilitated with automatic lubrication.
- Easy to dismantle and maintenance



## Multi-stack tools

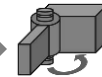
- Available to maximum 5 stacks.



## Clamp dies

## Pressure dies

- Programmable force and speed, provides fast & smooth excise and avoid collision between dies



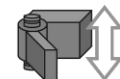
## Bend arm – C axis

- Synchronized by planetary transmission gears, provides powerful bending and accurate positioning. Tolerance is controlled within 0.01% positioning.
- Compact & concealed structure, allow bend arm the maximum operation space, reduce safety hazards to minimum



## Abs origin application

- All servos are facilitated with absolute origin application. No zero-setting was required when encounters accidental interruption. Save time and material cost.

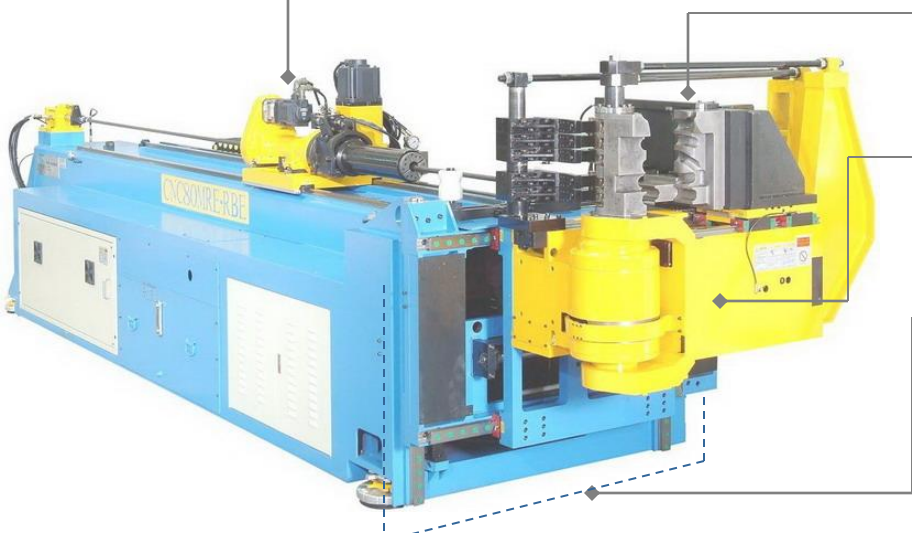
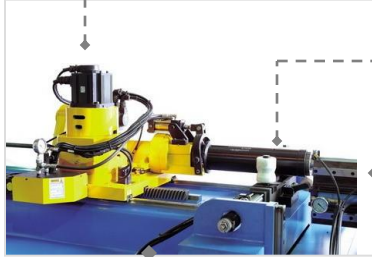


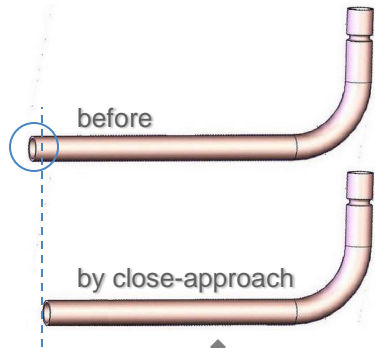
## Shift vertical



## Shift horizontal

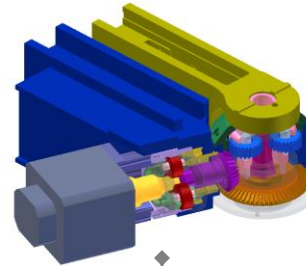
- Work-head shifted by servo motor, provide fast and steady tools shifting.
- Concealed rack & pinion, provides noise-free and zero oil contamination





## Close-approach rod

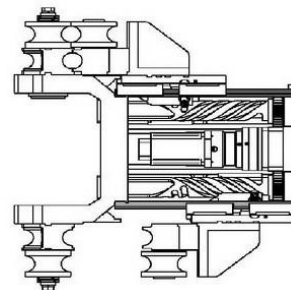
- Allow tube to move closer to bend die as it comes to the last step of bending cycle, which help decrease tube waste.



## Planetary transmission gears

Credit to planetary transmission gears, the size of CSM bender is significantly more compact than other conventional benders, which assure

- Optimum performance,
- Less dimensions
- Less weight
- Higher transmission ratios
- Higher torques
- Power efficient, energy economic
- Lower noise level
- Low pollution, environmental friendly

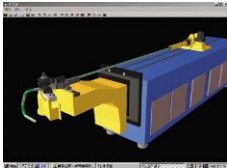


## Rotary work-head

- Capable of 180° clockwise & counter-clockwise rotation, serves both **left-hand and right-hand bending**. Accelerate working speed and efficiency.

# Product features – controller

## Master III controller



- available with 3D simulation



- Facilitated with visual preview
- Programmable speed for Y-B-C axes
- Convertible between inch and metric setting
- Convertible between X-Y-Z and Y-B-C axial setting
- Convertible between manual and automatic bending process.



## Touch screen

- Easy and fast programming.

- Immense memory storage

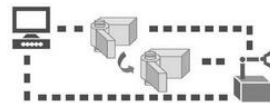


## USB connection

- USB port handy for and data transport.

## IPC + PLC

- Provides high performance and resists to dust, vibration and extensive temperature range.



- Allow intranet connection to other benders or host computer.

# Product features – integration

- Automatic loader

- Tube carriage

- Power jaw clamper

- Sawing machine

- Bender



## Petrochemical industry

- Full automation integrated with loading, bending and saw cutting. Optimum for pipelines or petrochemical industries. Serves pipe with diameter  $\leq 120$  mm. Enhance productivity and flexibility.

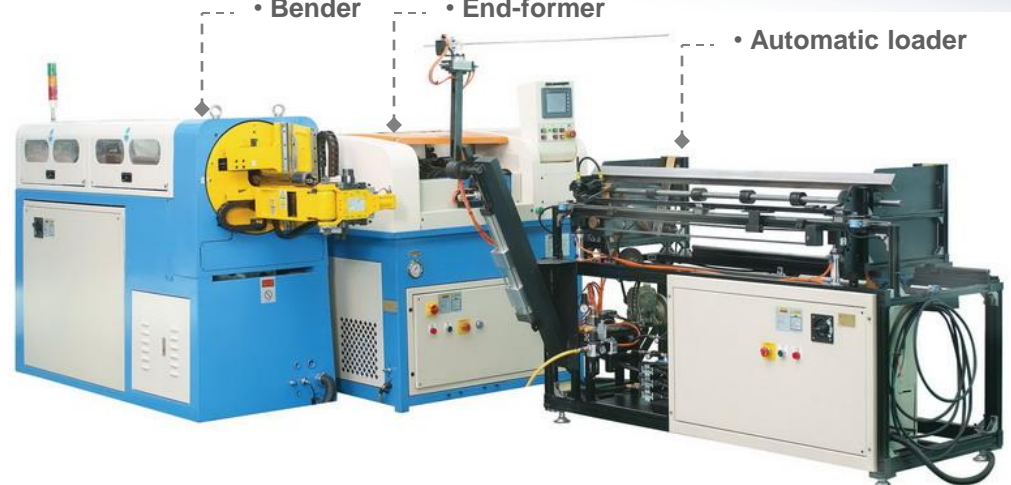
## Fuel line / HVAC industries

- Assorted with loading, robot transfer, end-forming and bending. Optimum for fuel lines or HVAC industries. Serves tube with diameter  $\leq 15$  mm.

- Bender

- End-former

- Automatic loader



# Why CSM ?

### Product

- Extensive range in bending machines (from O.D. 12 ~ 220 mm)
- Innovative & exclusive design
- High efficiency
- Energy economic
- Cost saving
- User friendly
- Environmental friendly

### Service

- Short production lead time & fast delivery
- in-house / to-door training courses on request
- in-house / to door maintenance service on request

### Price

- Equivalent quality to European & American benders but with much more favorable pricing