

## 2005 KSTP Spring Congress

2005. 05. 12-13

At GTIC in Korea

# Latest Cold Forging - Precision Forging -

NICHIDAI Corp. JP  
Corporate Adviser  
Hyoji Yoshimura



## Automotive Parts



### by NICHIDAI Precision Forging Technology

Precision Forged Products  
for Car & Others



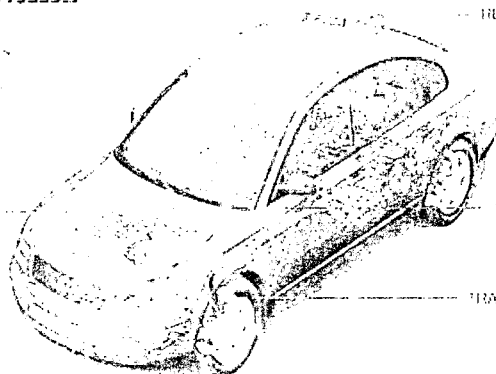
ENGINE Parts



ALTERNATOR  
Parts



AIR-  
CONDITIONER  
Parts



REAR SUSPENSION  
Parts



WHEEL Parts



TRANSAXLE Parts



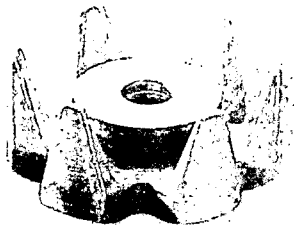
TRANSMISSION Parts



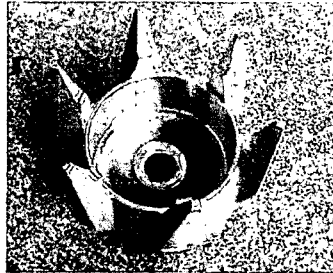
FRONT SUSPENSION Parts



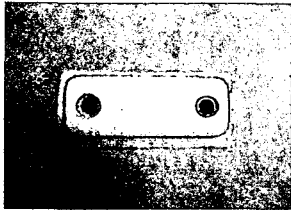
# Alternator Parts



Pole-Alternator



Rotor core



Alternator shoe



Start Housing



Start Pinion 3

# Air-conditioner Parts



Scroll



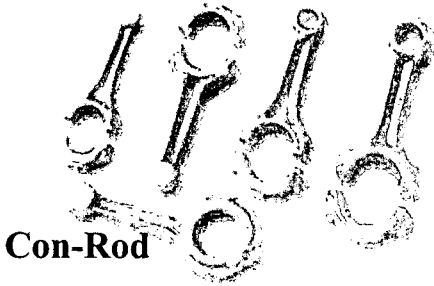
Piston



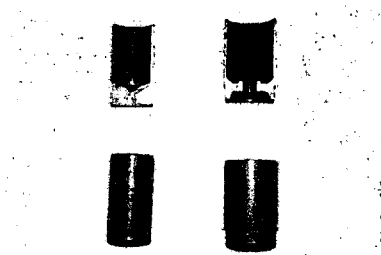
Rotor

4

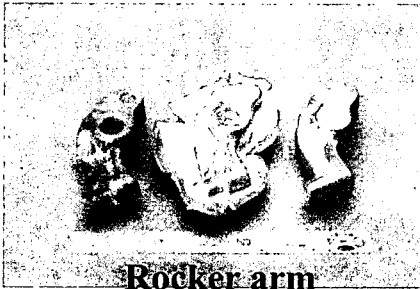
# Engine parts



Con-Rod



Piston



Rocker arm

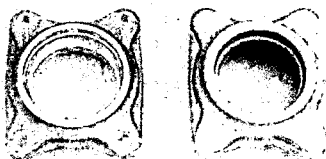


Valve

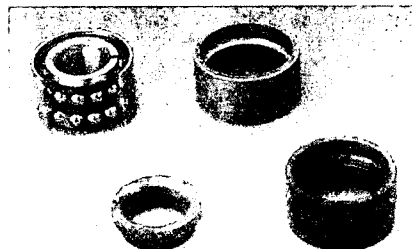
# Rear suspension parts



Hub Flange



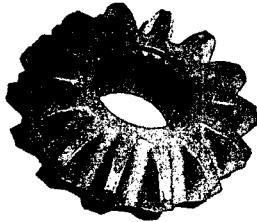
Hub



Hub Units

6

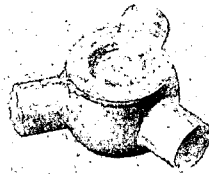
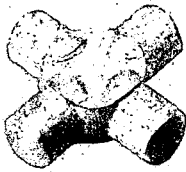
# Trans axels Parts



**Pinion**



**Impeller Hub**

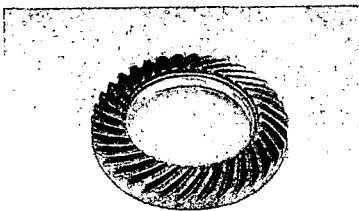


**Spider**



**York shaft**

# Transmission parts

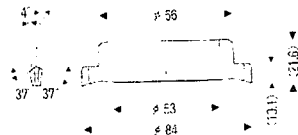


**Impeller Hub**

**Helical Gear**



**Corn Clutch**



**AT Gear**



**Outer Race**

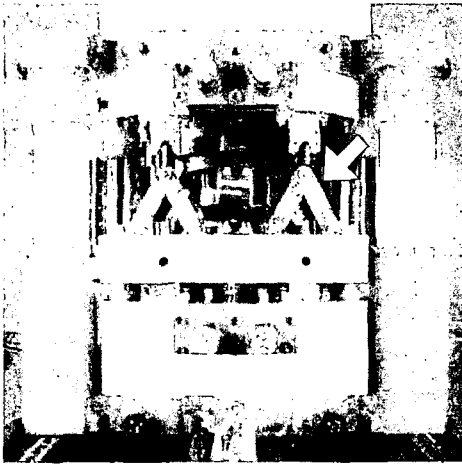


**Gear Diff.**



# NICHIDAI Enclosed Die Set

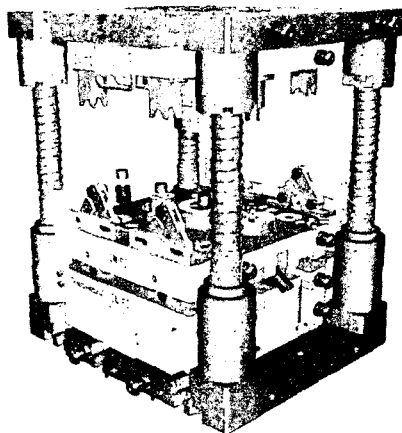
With pantograph system



9

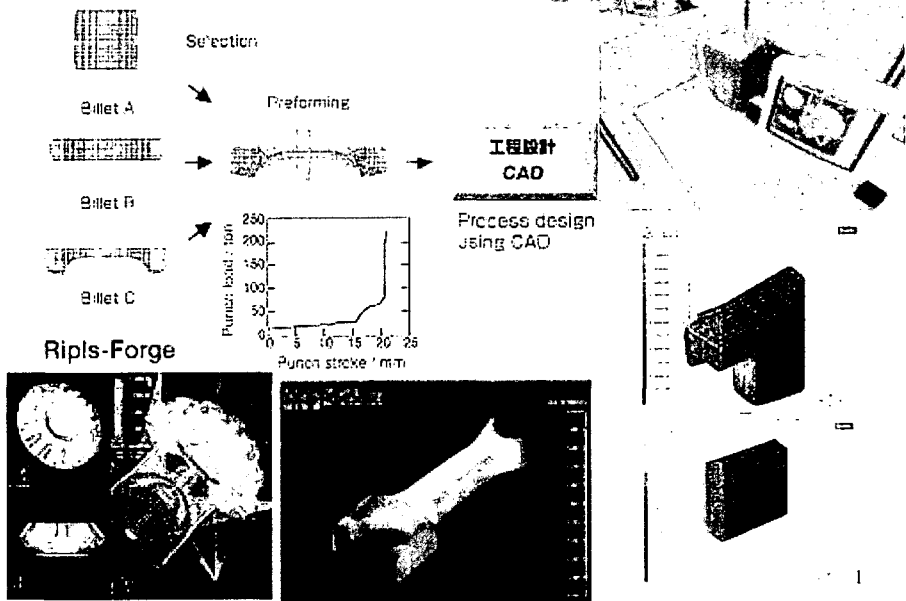
# NICHIDAI Enclosed Die Set

With pantograph system



10

# 2,3D Analyzing Technology



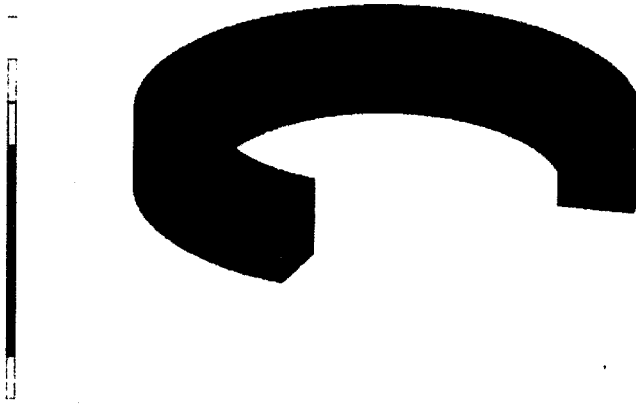
# NICHIDAI CAE technology Bevel Gear 3D Analysis



# Clutch 3D analysis

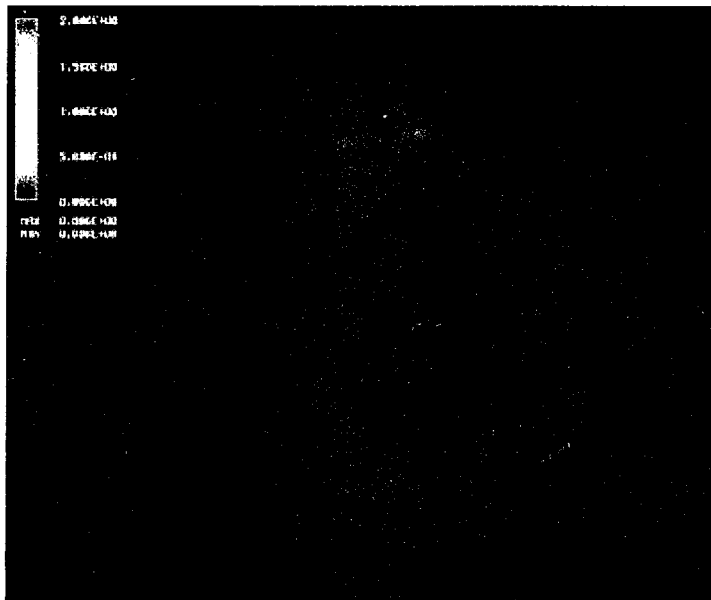


COMARC



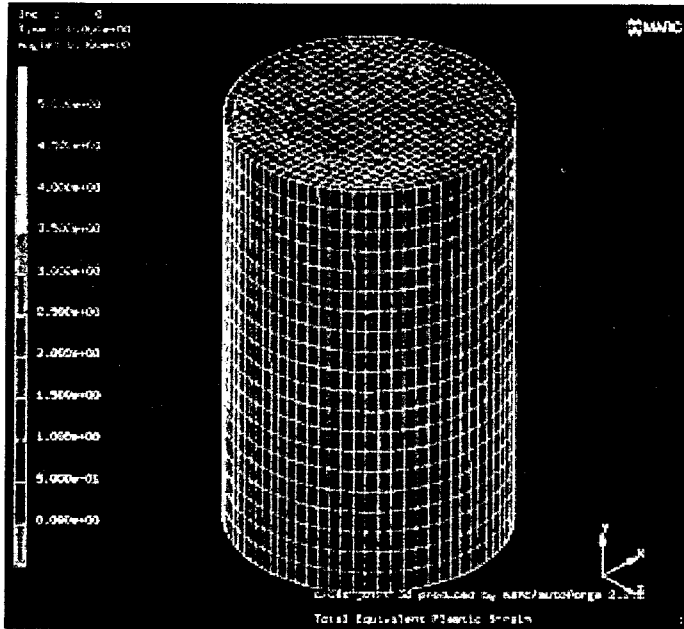
13

# Case inner 3D analysis



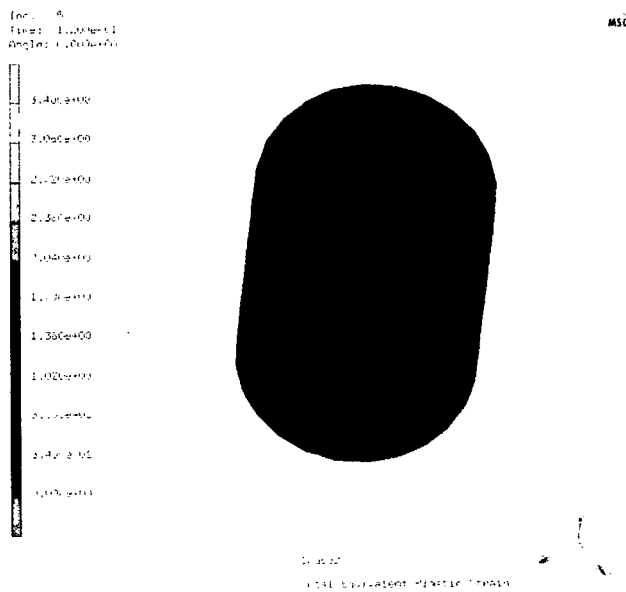
14

# Spider 3D analysis



15

# Tripod 3D analysis



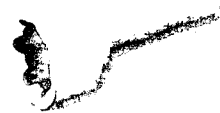
16



# Precision Forged parts



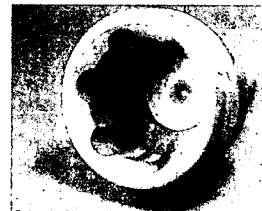
Cage steering



Inner race



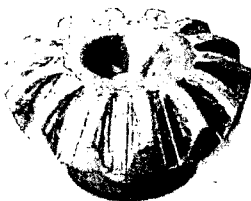
Ball Housing



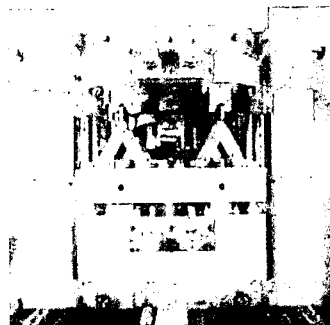
CV joint

17

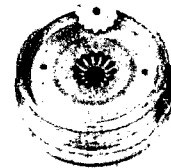
# Bevel Gear Precision Forming technology



Forged Bevel



Enclosed Die set



Die



Blank



Blank



Pre-forging



Precision Forging



Piercing

# Inner Race Precision forming technology



As Forged



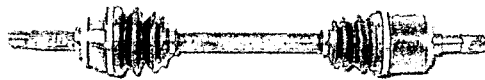
Die



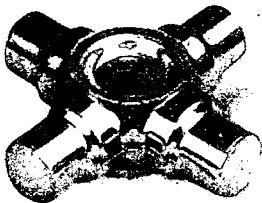
Forming process



CV Joint Assy.



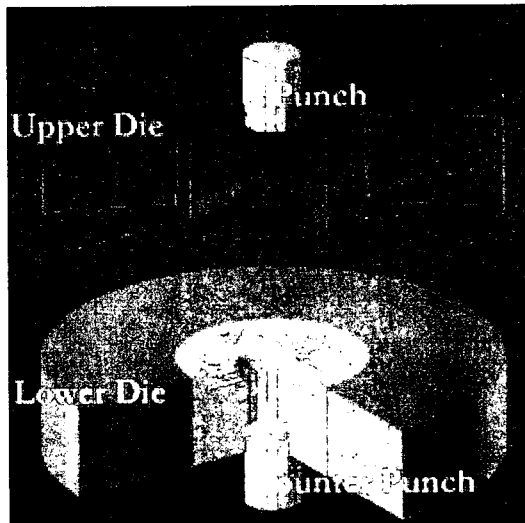
# Spider Precision forming technology



As Forged



Die



Upper Die

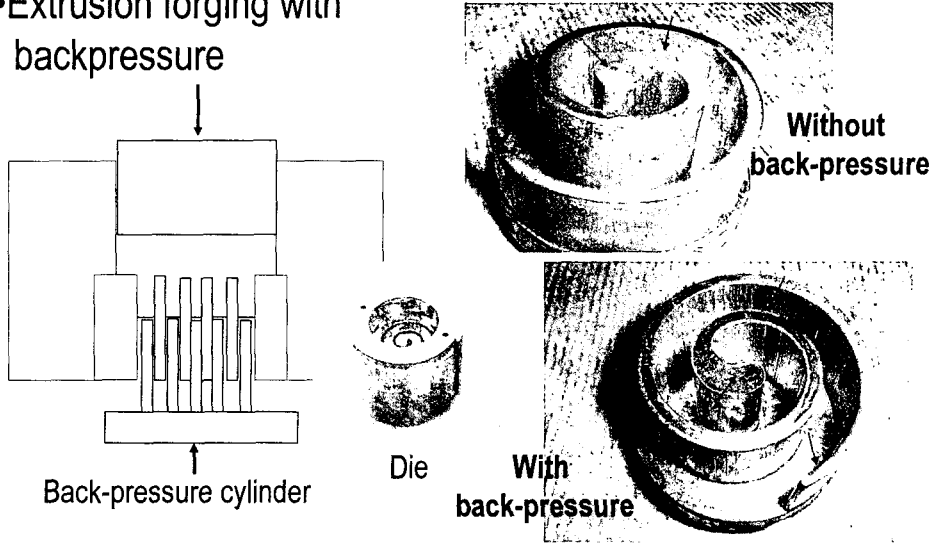
Punch

Lower Die

Counter Punch

## Examples of Precision Forging Components

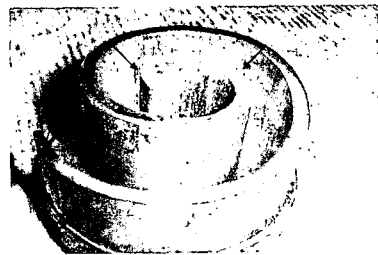
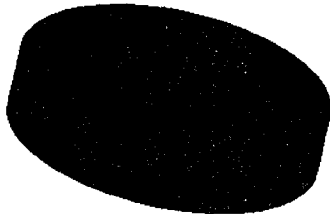
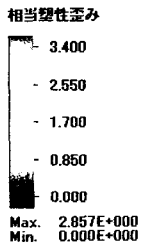
- Extrusion forging with backpressure



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## 3D Analysis of Scroll Precision Forging (1/2)

- Extrusion forging without backpressure



Without back-pressure



0.00%

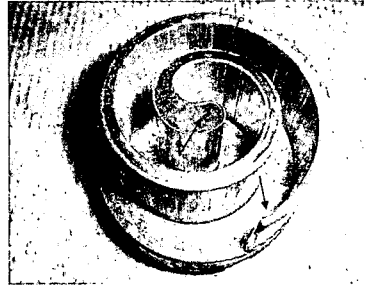
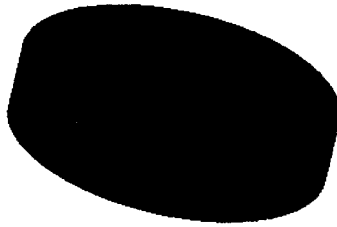
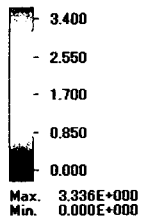


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## 3D Analysis of Scroll Precision Forging (2/2)

### •Extrusion forging with backpressure

相当塑性歪み

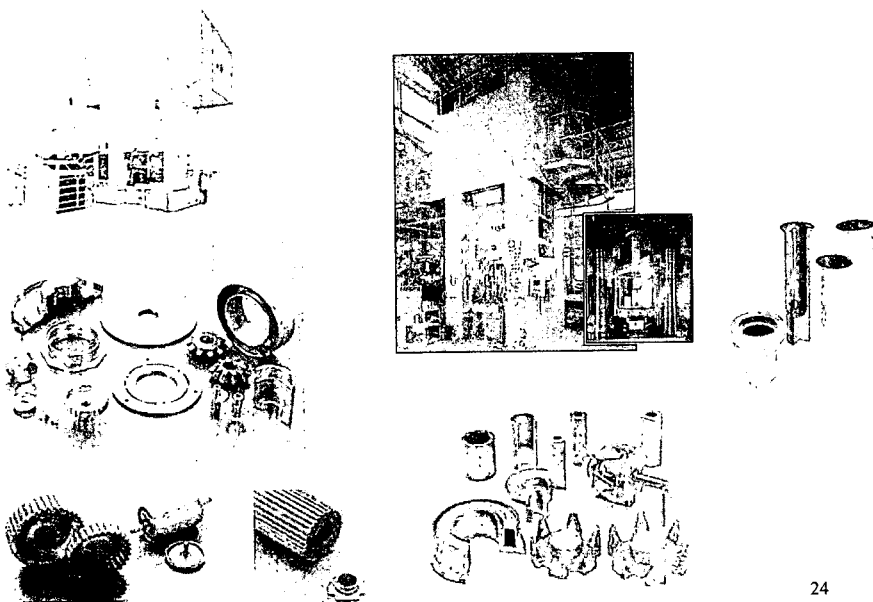


0.00%

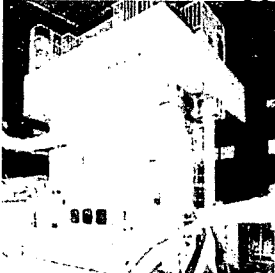


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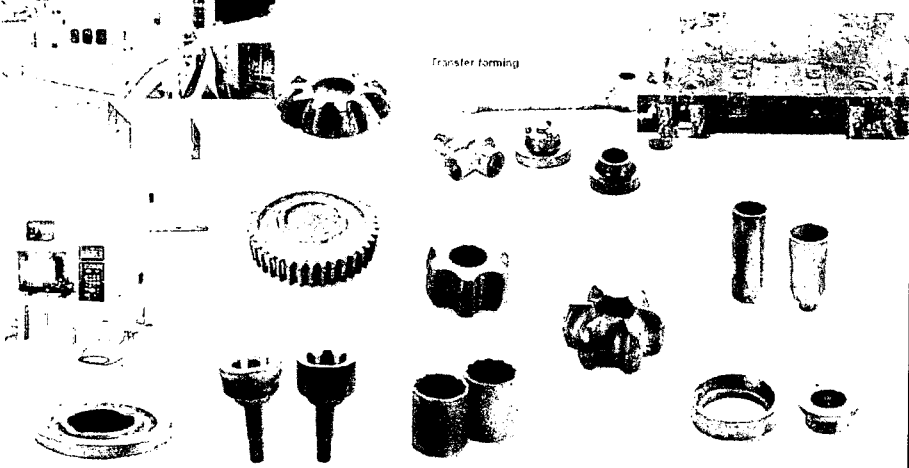
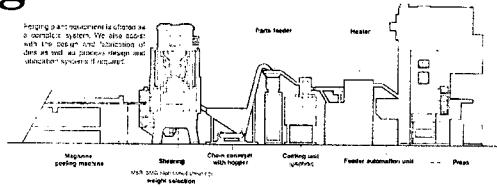
## Cold forging press



# Warm forging

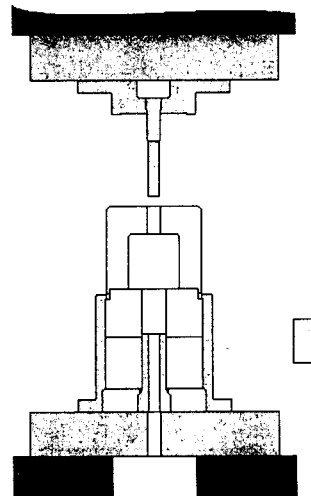
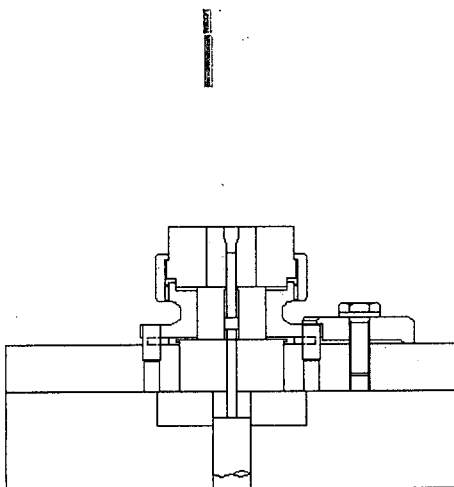


Forging is an important technique in a number of systems. We also assist with the design and construction of dies as well as process design and selection systems if required.

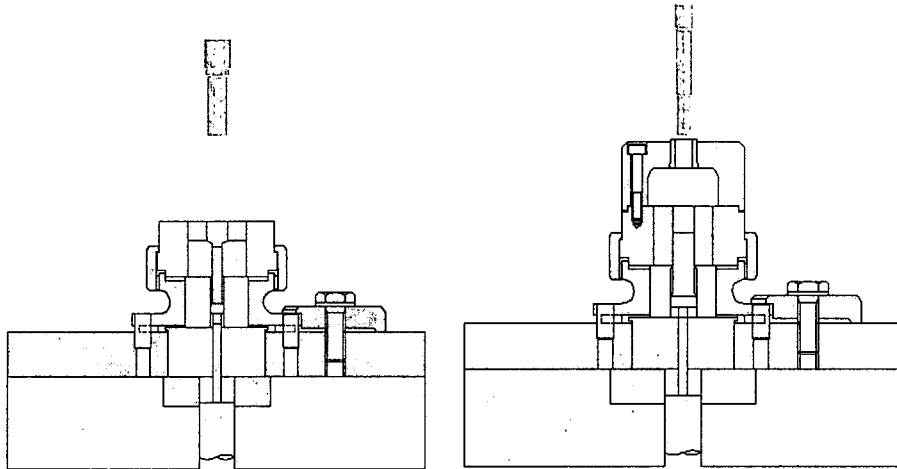


## Ironing

## Piercing



# Extrusion



**Forward Extrusion**

**Backward Extrusion**

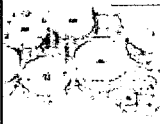
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# Total Forging solution

by **NICHIDAI**

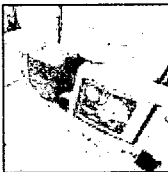


Billet



Die Set

<http://www.pressall.com/>



Analysis



Machine



Products



Human Resource



Production Line

