

Brass Case Studies

Illustrating the cost-effectiveness
&
recyclability of
Brass



MECO International Heavy Duty Valve Chest



High Tensile Brass versus Steel

	HTB	Steel
Working pressure (bar)	350	350
Non sparking for mining application	Yes	No



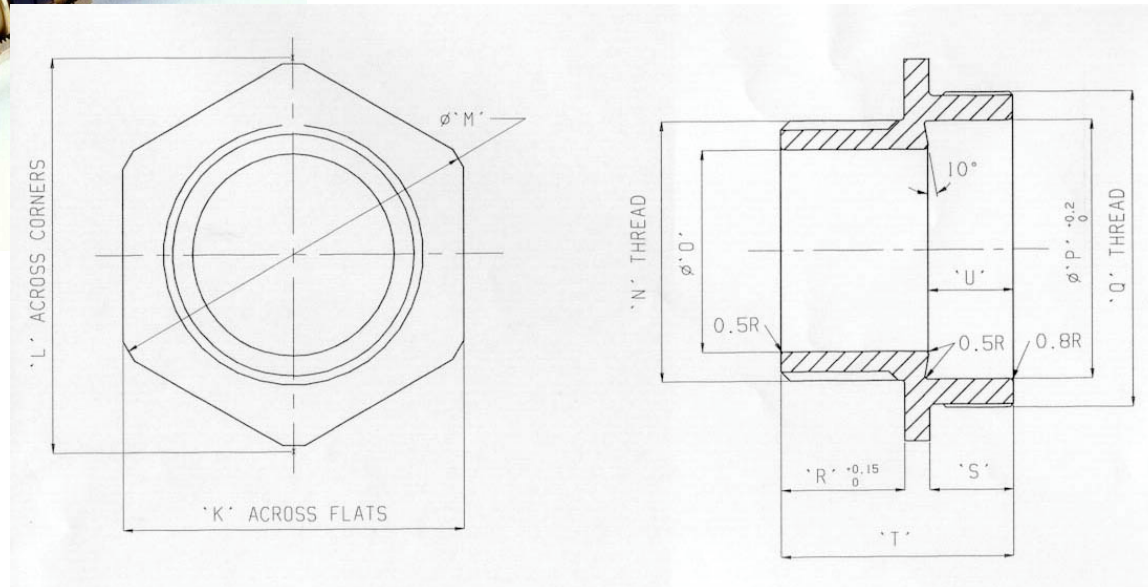
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MECO International Cost Breakdown

	High Tensile Brass	Steel
Raw material cost	£6.22	£2.35
Pre-machining cost	£0.00	£3.50
Milling	£0.00	£2.50
Drilling & threading	£7.90	£11.70
Plating	£0.00	£1.41
Total	<u>£14.12</u>	<u>£21.46</u>
Total Saving	<u>£7.34</u>	



Cable Glands



Courtesy Hawke Cable Glands



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Tooling Comparisons

	Brass	Steel
Tools	H.S.S	Carbide
Average cost per tool	£15	£60
Average qty per re-grind	20K	2K
Average tools per set	10	10

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Cable Glands Machining Benefits

	Brass	Steel
Machining cycle time	7 seconds (complete)	21 Seconds (incomplete)
Machine efficiency	89%	40%
Average components/hour	410	68

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Other Benefits

	Brass	Steel
Swarf	High re-sale value	None
Cutting fluid	Water Base	Special water base(HP)
	Light Machine Oil	Special oil with additives
Labour requirements	Low	High
Environmental protection	None	Plating

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Cable Glands Swarf

Brass



- Valuable
- Easy to handle
- Compact

Steel



- Value negligible
- Clogs up machine
- Difficult to handle
- Bulky

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Cable Glands Cost Comparisons

	Brass	Steel
Net material cost	10.00	8.0
Machining cost (£40/hr)	9.75	59.0
Component cost	19.75	67.0

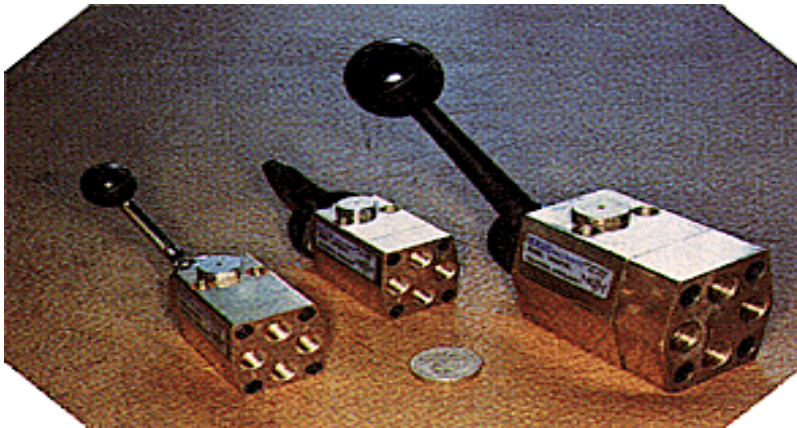
NB
Additional threading op required
Plating required

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Vickers Systems Division



Courtesy of Vickers Systems Division, Trinova Ltd

- Process with no special dies required
 - Machining ideal
- Easily machined materials to be identified
- Corrosion resistant a requirement
- Good wear properties also required
- Brass was most cost-effective material



Vickers Valve Costing Analysis

	Brass	Aluminum
Cost of Raw Material (Extruded bar)	45%	21%
Machining cost	63%	66%
Cost of finishing (Hard Anodising)	0%	29%
<i>Sub total</i>	<u>108%</u>	<u>116%</u>
Less scrap value of machining swarf	8%	1%
Total Cost	<u>100%</u>	<u>115%</u>



Linic



Courtesy of Linic Plastics Ltd

- Mild steel replaced by brass
- Plating eliminated
- Cost reduced
- Lubricant eliminated
- Increased perceived value



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ERA Concealed Security Bolt



Courtesy of J E Reynolds & Co Ltd

- Good corrosion resistance
- No machining burrs
- Attractive self colour
- Readily joined cold riveting
- Productivity increase of 300%



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Attractive Colours

CuZn5 4-6 % Zn

CuZn10 9-11% Zn

CuZn15 14-16% Zn

CuZn20 19-20% Zn

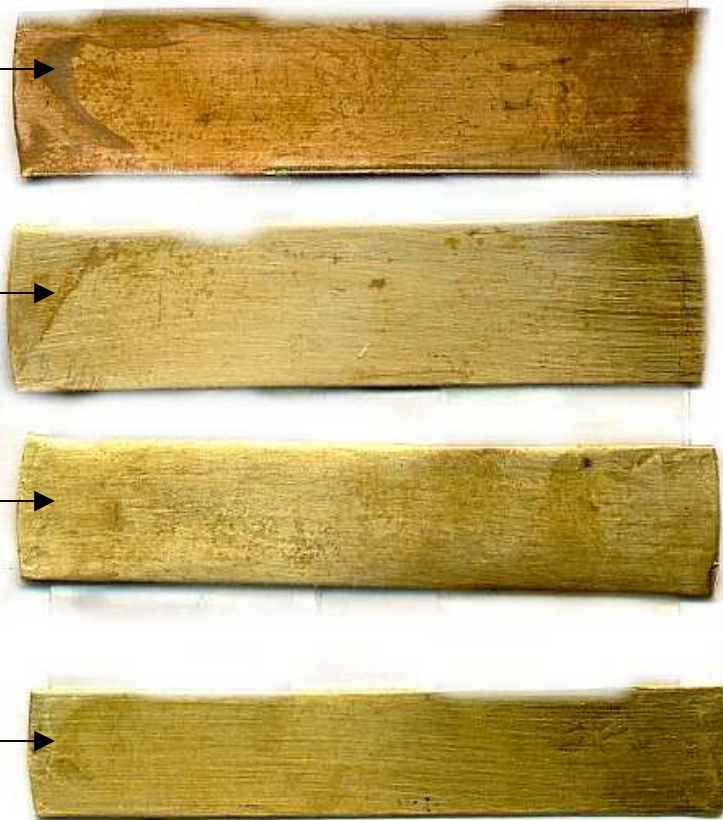
CuZn30 29-31% Zn

CuZn33 32-34% Zn

CuZn36 34.5-36.5% Zn

CuZn37 36-38% Zn

CuZn40 39.5-41.5% Zn



Courtesy of EIP Ltd



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Summary

- Brass is cost-effective
 - Close tolerance manufacturing processes give near-net shapes
 - High-speed machining
 - Swarf/scrap commands premium price
 - No plating or painting required
- Brass is recyclable
 - Without loss of properties
 - The recycling infrastructure is already in place

