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Issue 1, 2015

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FOCUS

Issue 1, 2015

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CONTENTS

1. New Members	1
2. Macroeconomic Review of the Indian Economy	2
3. Technology Update	11
<i>↳Increasing Forging Die and Tool Life using Japanese Cold-Welding Technique</i>	11
<i>↳Automation of Large Forging Lines by the use of Robots</i>	17
4. Ekla Chalo Re	24
5. Upcoming Events	26
6. Industry News	27
7. Automobile figures at glance	29
8. AIFI Corner	35

AIFI WELCOMES NEW MEMBERS

1. **Emkay Forgings Pvt. Ltd., Nashik** - Company started as a greenfield project in October 2012. The firm caters to automobile and electrical segments. It aspires to set-up mobile plants across the country according to opportunity in hot forging, cold forging, ferrous & non-ferrous forging.
2. **Intech Forge (India) Pvt. Ltd. Metoda, Rajkot** - This company is established in 2009. Its products include crankshafts, flanges, gears, connecting rods, yokes, power transmission parts and lever.
3. **Suryaa Steels, Ghaziabad** - Located in the northern region of the country, the company manufactures forged flanges, forged rounds, non standard forgings/ tailor made forgings, windmill products.
4. **Shoranur Agri Tools, Shoranur, Kerala** - Established in 2014, this company is basically in agricultural & construction hand tools.
5. **Imco Alloys Pvt. Ltd., Mumbai** - Established in 2001, IMCO Alloys has been able to establish itself in sintered carbide technology in Sugar, Cement, Power, Steel and Mining sectors in India and abroad with offices in India, USA, South Africa and UAE.
IMCO exports to major clients in USA, Thailand, Mauritius, China, Australia, Africa, Indonesia, South America and Europe. Imco's capabilities include Wear Resistant Casting, Vacuum Heat Treatments & Brazing, Tungsten Overlays and Coatings, Micro Repairs of Dies & Moulds and Welding.

MACROECONOMIC REVIEW OF THE INDIAN ECONOMY

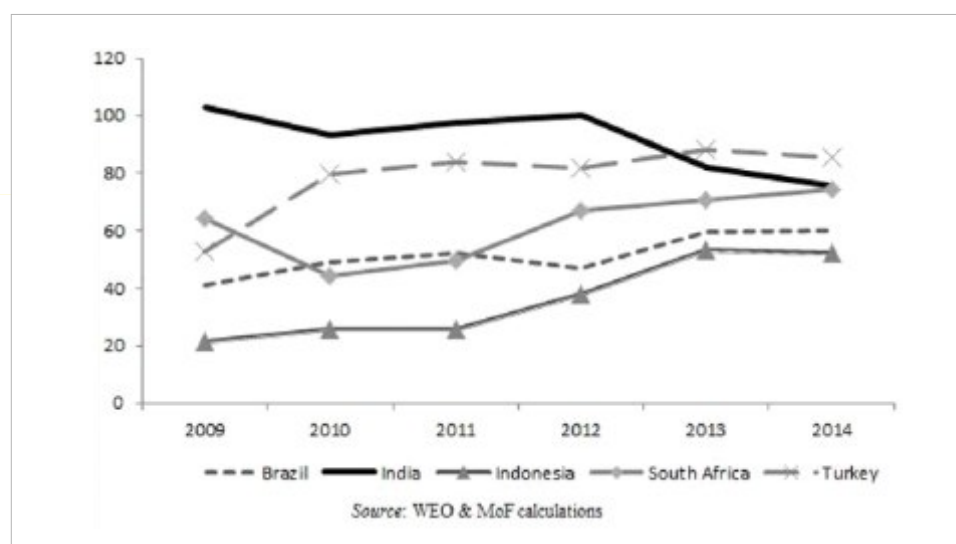
Source : Ministry of Finance, Department of Economic Affairs, Economic Division

- 1 In July 2013, India was teetering on the edge of macroeconomic crisis with double digit inflation, a high and rising current account deficit (CAD), and a falling rupee as investor sentiment turned sour in the aftermath of the Fed's taper decision to signal the end of its quantitative easing. India was grouped with Brazil, Indonesia, Turkey, and South Africa to constitute the Fragile (Famous) Five amongst the emerging market countries (EMs).
- 2 Nearly 18 months on, the landscape has vastly changed. Macro-economic stability has returned, reforms are being undertaken, the external environment has moved in India's favour, and above all, a new Government has come into power with a relatively unencumbered political mandate for decisive economic change, a mandate that markets have enthusiastically embraced. The Indian stock market has increased in value by 33 percent since March (in dollar terms), amongst the highest in the EMs, benefitting from surging foreign capital inflows. India now represents one of the sparks in the world economy and the only major country not to suffer a growth downgrade by the IMF. From Fragile Five to Near-Solitary Spark of the global economy is the Indian narrative of the last year.
- 3 Figure 1 captures the change on the macroeconomic front. For the same Fragile Five, a macroeconomic vulnerability index (MVI) has been constructed which adds together a country's inflation rate, current account deficit, and fiscal deficit (all obtained from the latest World Economic Outlook of the IMF). The index is thus comparable across countries and across time. Heading into 2013, India was at the top of the pack on vulnerability with an index value of 22.4, comprising a 10.2 percent inflation rate, a budget deficit of 7.5 percent and a current account deficit of 4.7 percent of GDP well above that in the other countries. Turkey in 2013 surpassed India because of high current account deficit (of nearly 8 percent). Since then, India's fortunes have improved dramatically and India demonstrated the greatest improvement in the MVI while the others maintained the status quo or showed only a marginal improvement. The chart, nonetheless, under-states the Indian improvement because the WEO has probably over-estimated India's inflation outturn for 2014. India still needs to be watchful in terms of its macro-economic fundamentals. The value of the index currently is well above 15 (recognizing that a value below 12-say 4 percent inflation, 2 percent CAD, and 6 percent fiscal deficit-is perhaps safer macroeconomic territory).

MID-YEAR ECONOMIC ANALYSIS

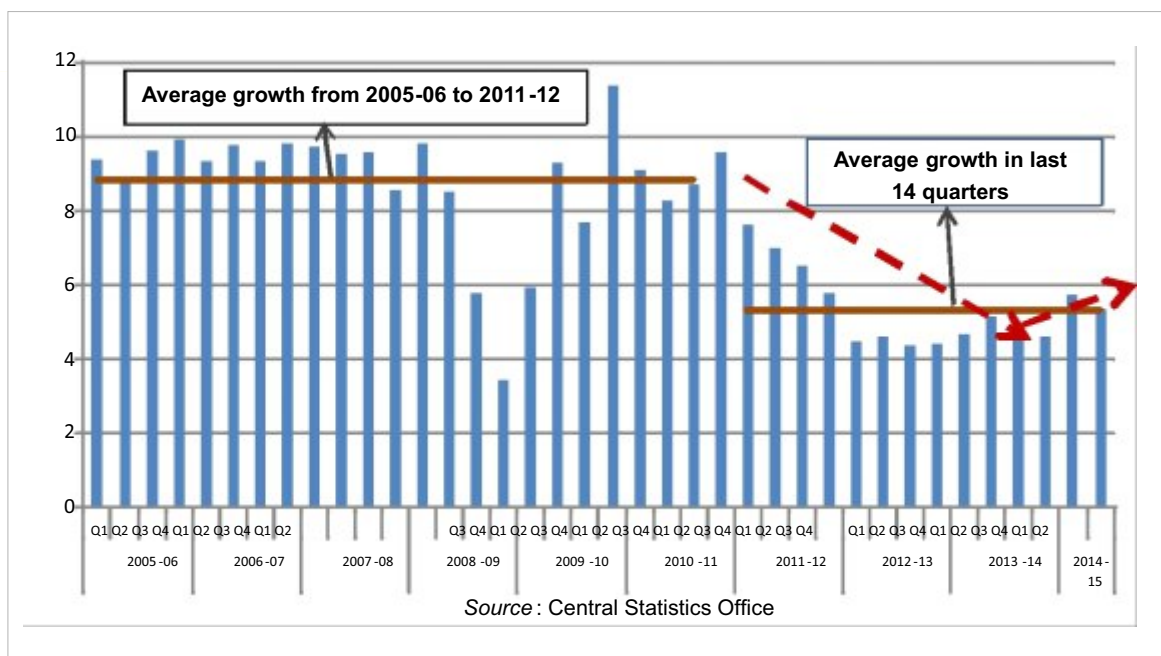
Figure 1 : Macroeconomic Vulnerability Index

(Sum of inflation, current account deficit and fiscal deficit)



- 4 India's vulnerability to the Fed's "taper tantrum" owed also to investor perceptions about the underlying growth momentum. After several years of near 9 percent average growth, India's growth decelerated for about 12 quarters, declining below 5 percent in the last 2 quarters of FY2014 (Figure 2).

Figure 2 : Quarterly Growth Rate of Real GDP



- 5 Although it is still too early to detect signs of robust recovery, emerging trends indicate that the growth deceleration has bottomed out, manifested in the relative improvement in growth in the latest 2 quarters.
- 6 The macroeconomic improvement and the consequent turnaround in investor sentiment were spurred by the Government's policy actions. A non-exhaustive list of the major reforms includes:
- ▶ Deregulating diesel prices, paving the way for new investments in this sector;
 - ▶ Raising gas prices from US\$ 4.2 per million British thermal unit to US\$ 6.17 (a 33 percent increase), and linking pricing, transparently and automatically, to international prices so as to provide incentives for greater gas supply and thereby relieving the power sector bottlenecks;
 - ▶ Increasing FDI cap in defense to 49 percent, and targeting 100 percent FDI in investment;
 - ▶ Replacing the cooking gas subsidy by direct transfers on a national scale;
 - ▶ Instituting the Expenditure Management Commission that will lay out a plan for rationalizing expenditures;
 - ▶ Reforming the coal sector via auctions and greater private sector entry;
 - ▶ Instituting a major program for financial inclusion--the Pradhan Mantri Jan Dhan Yojana -- under which over 9 crore new accounts have been opened till December 11, 2014;
 - ▶ Continuing the push to extending coverage under the Aadhaar program, targeting enrollment for 1 billion Indians;

- ▶ Eliminating the quantitative restrictions on gold;
 - ▶ Expediting environmental clearances;
 - ▶ Facilitating Presidential Assent for labour reforms in Rajasthan, setting an example for further reform initiatives by the States; and consolidating and making transparent a number of labour laws; and
 - ▶ Implementing a program of disinvestments
- 7 On the inflation front, the key actions were the interest rate increases (of 75 basis points) by the RBI since August 2013, and the broader signalling of anti-inflation policy and framework in the form of the Urjit Patel Committee Report -- all of which contributed to policy credibility. This was significantly helped by this Government's actions including the continuation of fiscal consolidation, release of food stocks, and crucially by the moderation of minimum support price (MSP) increases, from near double digits previously to 3-3.5 percent, in the case of rice and cereals.
- 8 On the current account, the increase in tariffs and imposition of restrictions on gold last year (since liberalized in two stages in May and then in November 2014) were the key actions that helped reduce the CAD and hence reliance on foreign financing.
- 9 At the same time, the external environment has turned in India's favour. In this fiscal year, there has been a substantial reduction in the global prices of India's major commodity imports -petroleum, gold, coal, vegetable oils, fertilizers, and silver (that together constitute 51 percent of total imports and 12 percent of GDP). The reduction in prices has been substantial in some cases-40 percent in the case of oil, so that the average reduction weighted by GDP is about 1.8 percent of GDP (around 1.5 percent of GDP if India's exports of oil are also taken into account). The collateral benefit has been an improvement in the current account, moderating pressures on inflation, and relief for the fiscal situation as oil subsidies which accounted for about 1 percent of GDP have also come down.

Short-term Growth Outlook

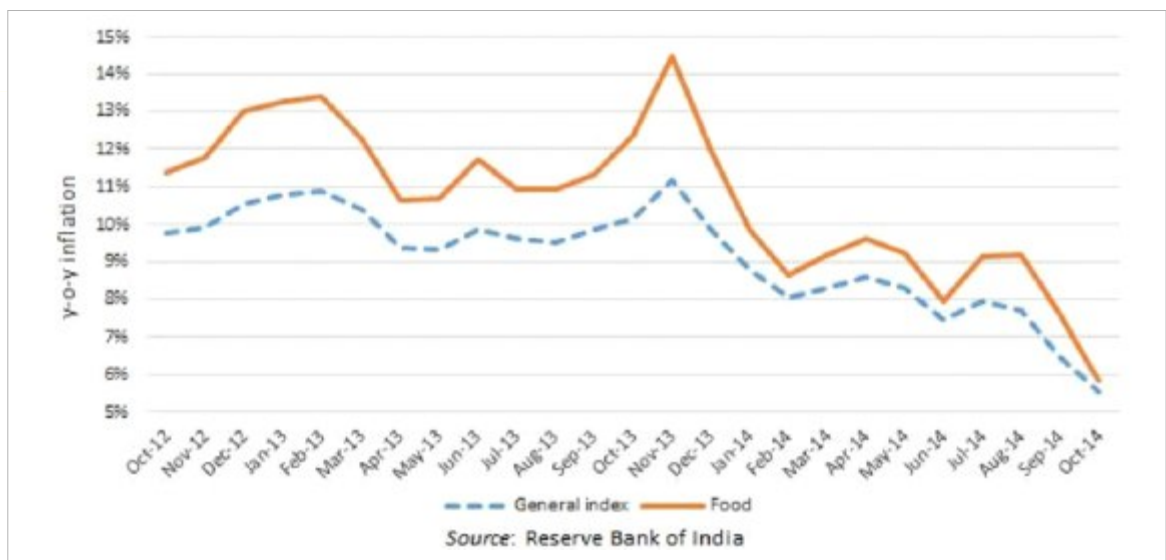
- 10 The Economic Survey 2013-14 (published in July 2014) observed that during 2014-15 the Indian economy was expected to recover only gradually with growth in real GDP likely in the range of 5.4 - 5.9 per cent. It also noted the possibility of growth remaining on the lower side of the range for the following reasons: (i) lagged effects of reforms undertaken to restart the investment cycle; (ii) weak growth outlook in some Asian economies, particularly China that would depress Indian exports; (iii) elevated levels of inflation that limit the scope of RBI to reduce policy rates; and (iv) expectation of below-normal monsoons. The prospect of economic reforms and a stronger-than-expected recovery in some major advanced economies, especially the United States, were expected to bolster the Indian recovery.
- 11 Investment is yet to pick up significantly. But on the upside, inflation has come down dramatically, the monsoons failed to exact as much of a toll on growth as expected, and India received a large supply side shock in the form of reduced commodity prices that amounted to about 1.5 percent of GDP. The year could end with growth around 5.5 percent.

Monetary Policy and Inflation

- 12 One of the dramatic macroeconomic developments in recent months has been the decline in inflation, see Figure 3. November inflation printed at 4.4 percent. This represents a dramatic

decline from the peak level of 11.2 percent reached in November 2013. These low numbers are not just due to base effects (high inflation today because of low inflation at this time last year). Even the momentum of headline inflation for the latest three months (average) is 2.4 percent, down from 11.8 percent in (the third quarter of FY2014), a staggering decline.

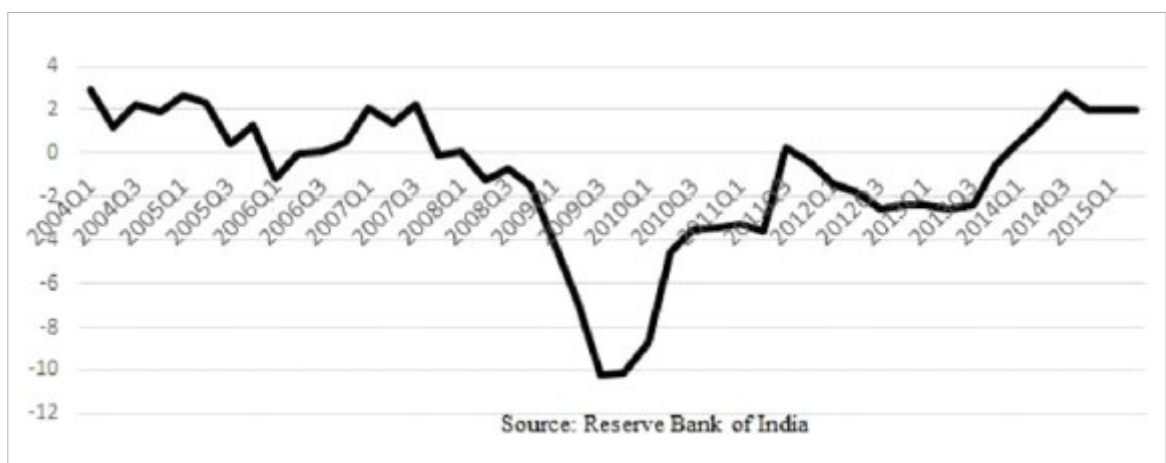
Figure 3: CPI (New Series) Inflation



- 13 Moreover, these developments were unanticipated. Even as recently as September 2014, the RBI's projection for January 2015 was 7.4 percent, representing an over-estimate of nearly 200 basis points. The same was true for most financial market assessments.
- 14 Understanding the latest trends is critical to an assessment of the inflation outturn for 2015 and for the stance of monetary policy going forward. The decline in inflation owes to four factors that are discussed in some detail subsequently:
- A. A decline in agricultural prices;
 - B. A decline in commodity prices, especially oil;
 - C. Continued economic weakness relative to potential; and
 - D. Credibility of policy making
- A. Agriculture:** Since, agriculture constitutes almost 50 percent of the consumer price index (CPI), it has a decisive impact on the headline. The following developments are particularly noteworthy:
- ▶ Between January 2011 and October 2014, the World Bank's Food Price Index for food, oil and meals, and grains declined, respectively by 20, 27, and 29 percent.
 - ▶ Moreover, the rate of growth of rural wages, after having averaged 18 percent (26 percent at its peak) for the previous five years, has now decelerated sharply into single digit territory. This reflects strong disinflationary pressures in agriculture and signals a slack in the labour market.
 - ▶ Further, the Government has consciously moderated the rate of growth of minimum support prices (MSPs). After having averaged at over 12 percent from 2007 to 2013, the MSP for rice and wheat has been brought down to 3.8 percent in the current fiscal year.
- B. Oil prices:** Declining commodity prices, especially of oil, have driven inflation down. Oil and petroleum accounts for about 37 percent of imports and 9 percent of GDP. Oil prices have declined by about 40 percent this year and have contributed positively and substantially to declining inflation.

- C. **Economic activity:** Despite the sprouting of green shoots, a robust recovery has still to fully take hold (an overview is contained in Chapter III).
- ▶ In the most recent quarter, the economy grew at 5.3 percent largely due to a positive performance of agriculture.
 - ▶ Private investment has not yet picked up, and is being held back by the legacy of distressed corporate balance sheets.
 - ▶ The performance of indirect tax receipts, which grew at 5.6 percent in the first six months, and the muted pick-up in credit also point to ongoing weakness relative to potential.
- D. **Credibility of monetary policy:** For a long time, the Indian economy had been drifting without a credible monetary anchor. Since late 2013, however, this has been laudably reversed. Figure 4 illustrates this.
- 15 For nearly six years (2007 third quarter to 2013 third quarter), India lost monetary policy credibility, reflected in the fact that real policy interest rates were consistently negative at a time when inflation was persistently in the double-digit territory. For the first time in decades, inflation in India exceeded that in comparator countries (Figure 1.4).

Figure 4: Real Policy Rate



OUTLOOK AND CHALLENGES

- 16 That has been reversed since the end of 2013, with real interest rates climbing back into positive territory, and as of today stand just above 2 percent (on a 3-month forward-looking basis). Monetary policy credibility has been gained through important actions both by the RBI and by the Government. For its part, the RBI raised policy rates since July last year and published the Urjit Patel Committee Report, both of which signalled the move towards a flexible inflation targeting regime. In doing so the RBI has clearly demonstrated the capacity to rein in inflation.
- 17 But the Government's contribution to inflation control has been important if somewhat under-recognized. By releasing stocks at a time that food availability seemed worrisome, and crucially by reining in the increase in MSPs, Government actions, along with declining world prices have moderated the inflationary impulses stemming from agriculture.

Inflation outlook

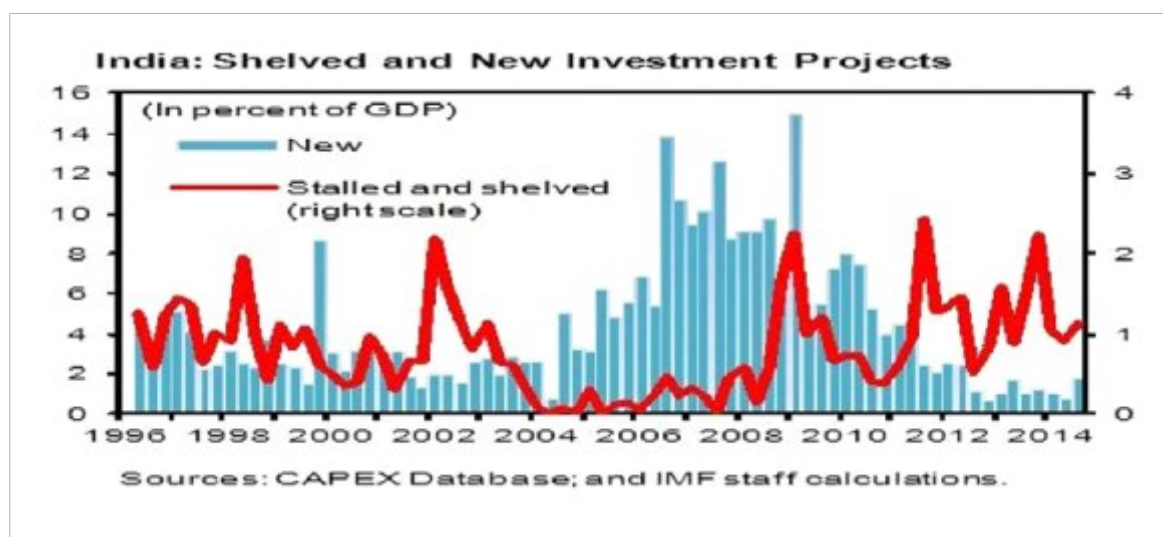
- 18 The stance of monetary policy will be determined not just by the past developments but an assessment of inflationary impulses going forward. Of the four factors considered above, the most important will be agriculture. But before we discuss agriculture, it is useful to review the outlook for the other factors.
- 19 **Oil Prices:** The risk that the decline in oil prices will reverse itself always exists. However, the persistence of tempered oil prices seems highly probable for at least three reasons. Demand is softening because of slowing growth in major areas of the world economy, including China and Europe. Noteworthy supply shifts are occurring related to the increase in oil and shale gas production in the U.S. and the concomitant decline in the oligopolistic power of OPEC (notably its swing producer, Saudi Arabia). Finally, the anticipated end to the abnormally low interest cycle in the US and the prospect of future rate increases will favour extraction of oil over keeping it in the ground, thereby further boosting supply and keeping prices soft. Higher rates will also lead to financial asset-reallocation away from commodities, especially oil, as a class into US financial instruments.
- 20 **Economic Activity:** Shortfalls in the ambitious revenue target in the current fiscal year will likely lead to expenditure cuts, which impact growth especially since expenditure multipliers tend to be high. Therefore, aggregate demand pressures on future inflation from the fiscal side will remain muted.
- 21 **Agricultural Inflation:** A useful perspective can be gained by categorizing the agriculture sector into tradable and non-tradable components (recognizing as always that the boundaries between the two are blurred). Tradability and non-tradability vary according to commodity, more in the case of oilseeds and pulses, and also across time as Government policy attempts to insulate the economy from foreign prices, not always symmetrically depending on whether the priority is accorded to producers or consumers. More recently, domestic prices have converged toward international prices.
- 22 Broadly, the determinants of agricultural inflation are external and domestic. On the former, a combination of international prices and the concomitant pressures to adjust minimum support prices influence inflation. Domestic demand pressures depend on the strength of the economy and the fiscal deficit; domestic cost pressures are related to wage growth that may stem from Government programs.
- 23 Looking ahead, we need to assess the outlook separately for these external and domestic determinants of agricultural inflation. According to World Bank projections, global agricultural prices will remain muted, a likely decline of 1 percent in 2015 relative to 2014. This will have a key impact on MSP increases. In wheat and rice, the FOB price and the MSP are close. For this reason, it is likely that the recent trend of modest MSP price increases (of 3 3.5 percent percent) will continue, moderating inflationary pressures.
- 24 The really striking development is domestic and relates to wage pressures. As shown below in Figure 5, a dramatic change seems to have happened to rural labour markets since 2012 because wage growth has plunged. A combination of softness in the economy and reductions in MGNREGA expenditures (declines of 3 and 36 percent in the last two years) have played a key role. If these trends continue, rural wage growth can continue to decelerate, further moderating inflationary pressures.
- 25 Increasingly, market participants have begun to revise downward their CPI inflation forecasts and some expect the inflation trajectory to be below the RBI's glide path. We therefore take an average of the assessments of three prominent market participants, in some cases taking their

favourable scenario and get an average of 5.3, 5.4, 5.1, 5.2, and 5.8 per cent respectively for the end of next five quarters starting with December 2014.

THE GROWTH OUTLOOK

- 26 Medium-term economic growth depends on ensuring macro-economic stability (which India is achieving) and on creating an enabling environment for the private sector to invest which the new Government has embarked upon reflected in the policy reforms enacted thus far and described earlier. Fundamentally, India's medium-term growth prospects are promising, and trend rate of growth of about 7-8 percent should be within reach (Rodrik and Subramanian, 2004). With basic public good provision and investment tapping into cheap labour, India can easily get closer to its growth frontier laying a strong foundation for the long-run.
- 27 But India faces challenges. Investment has not durably rebounded as Figure 5 indicates.

Figure 5 : Outlook on Projects



- 28 There are the usual headwinds from the external sector. But at the current conjuncture the gradual reversion to normal monetary policy in the US is less of a threat to India given the improved macroeconomic situation, broad balance in the external sector and reserves that provide a modicum of insurance against shocks. And, barring exceptional developments such as the ongoing turmoil in Russia, the external environment in terms of oil and agricultural commodity prices, is not likely to turn adverse.
- 29 Rather, India faces challenges that are mostly domestic. The most important amongst them relates to the experience of the last few years that led to over-exuberant investment, especially in the infrastructure and in the form of public private partnerships (PPPs). There are stalled projects to the tune of ` 18 lakh crore (about 13 percent of GDP) of which an estimated 60 percent are in infrastructure. In turn, this reflects low and declining corporate profitability as more than one-third firms have an interest coverage ratio of less than one (borrowing is used to cover interest payments). Over-indebtedness in the corporate sector with median debt equity ratios at 70 percent is amongst the highest in the world. The ripples from the corporate sector have extended to the banking sector where restructured assets are estimated at about 11-12 percent of total assets. Displaying risk aversion, the banking sector is increasingly unable and unwilling to lend to the real sector
- 30 India has been afflicted by what might be characterized as the "balance sheet syndrome with Indian characteristics." Like Japan after the real estate and equity boom of the late 1980s, and

like the US after the global financial crisis, balance sheets are over-extended. The Indian case resembles Japan more than the US since it is firms' balance sheets (and not those of consumers) that are over-extended, exerting a drag on future investment/spending.

- 31 This syndrome has three distinctively Indian characteristics. First, India is not suffering from recession or stagnation. Economic growth, despite all the difficulties, is still 5.5 percent not 1 percent or negative.
- 32 Second, drawbacks in the Indian real sector co-exist not with weak macro-economic demand but with moderately strong demand (at least relative to supply) reflected in moderately high inflation and a moderately high current account deficit. Japanese and American balance sheet recessions were associated with price deflation. A consequence, which contrasts with the current predicament in the Euro area, is that India's fiscal indebtedness (i.e. the stock problem) has been improving courtesy of high inflation while that in the Euro area is worsening from deflation. Another consequence is that fiscal pump-priming is less of an option for India.
- 33 Third, perhaps even more distinctly, the Indian balance sheet problem has also arisen partly out of public sector financial concerns which led to the encouragement of private sector investment in infrastructure via the so-called public private partnership (PPP) model.
- 34 Figures 6 and 7 illustrate this. Growth in real capital formation was around 15 percent and private corporate investment surged, East-Asia-style, over a very short period from 6.5 percent in 2003-04 to 17.3 percent in 2007-08, amounting to an increase of nearly 11 percentage points of GDP. Investment was based largely on the perception that growth rates of 8.5 percent would continue indefinitely and banks, especially public sector banks could lend to private sector investors in infrastructure.

Figure 6 : Growth Rate of Gross Fixed Capital Formation (Per cent)

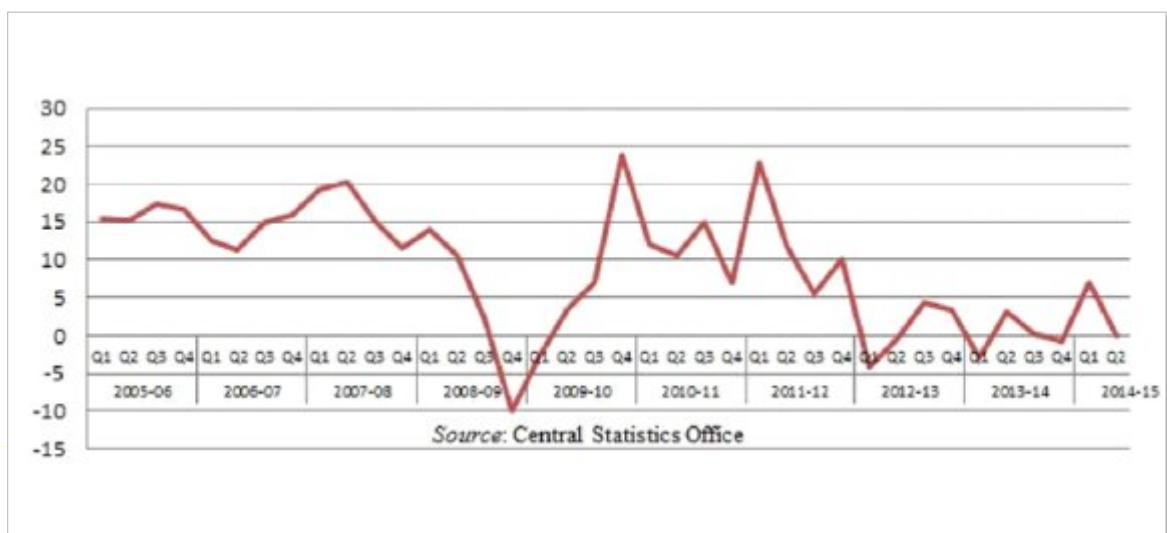
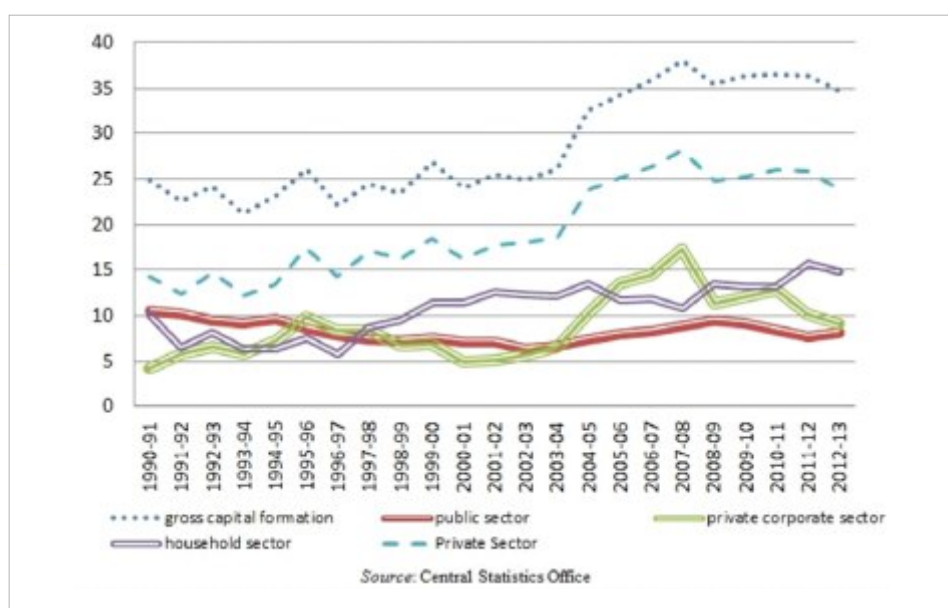


Figure 7 : Growth Rate of Gross Fixed Capital Formation (Per cent)



35 As the growth boom faded, projects turned sour, leaving a legacy of distressed assets. This stock problem is weighing down profits and hence investment. The problem is compounded by relatively weak institutions. Effective legal processes (the Corporate Debt Restructuring System and the SARFAESI Act) that can allocate the pain of past decisions between investors, creditors, consumers, and taxpayers are a work-in-progress.

The Way Forward

36 First, the backlog of stalled projects needs to be cleared more expeditiously, a process that has already begun. Where bottlenecks are due to coal and gas supplies, the planned reforms of the coal sector and the auctioning of coal blocks de-allocated by the Supreme Court as well as the increase in the price of gas which should boost gas supply, will help. Speedier environmental clearances, reforming land and labour laws will also be critical (see Box 1.2 for some ideas that have been suggested on how the recent Right to Fair Compensation and Transparency in Land Acquisition, Resettlement and Rehabilitation Act 2013 can be improved to reduce the obstacles to investment while protecting the most vulnerable, an objective that cannot be undermined).

37 But even if the backlog is cleared, there is going to be a flow challenge: attracting new private investment especially in infrastructure. The PPP model has been less than successful. The key underlying problem of allocating the burden from the past—the stock problem that afflicts corporate and banks' balance sheets—needs to be resolved sooner rather than later. The uncertainty and appetite for repeating this experience is open to question.

38 In this context, it seems imperative to consider the case for reviving public investment as one of the key engines of growth going forward, not to replace private investment but to revive and complement it. While private corporate investment surged in the boom phase, public investment too grew by about 3 percentage points. And just as corporate investment declined by 8 percentage points between 2007-08 to 2013-14, so too has public investment by about 1.5 percentage points. Pro-cyclical public investment during the downward phase has been driven in part by fiscal targets which have resulted in large cuts toward the end of the fiscal year as the constraints of fiscal consolidation have loomed large.



TECHNOLOGY UPDATE

Increasing Forging Die and Tool Life using Japanese Cold-Welding Technique



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Die, mould and tool wear are major reasons for production downtime and increased costs in most industries. Apart from using strong base metals for making dies, few effective treatments can be administered to dies to increase their service life. Even if possible, such treatments are not feasible for all forging units. This article introduces a practical and economical technique to increase die, mould and tool life. The technique can be easily adopted by all forging units, big and small.

Popular treatments to increase die life or repair / reclaim forging dies:

1. Nitriding

Gas Nitriding / Plasma Ion Nitriding are popular surface hardening treatments carried out on dies. With an initial die hardness of 42 HRC, the nitriding process can further harden the surface of die up to 64 HRC. Many large forge shops in India carry out nitriding of 100% of their forging dies. However, very few forging companies have an in-house nitriding facility. Nitriding is found effective in many cases. The skill of the nitrider, flawless nitriding facility and process play a vital role in the success of this technique. Nitriding is also a capital-intensive technique and not many companies can afford the finance, space and skilled workforce to set up an in-house nitriding facility. Getting the dies nitrided from commercial heat treat shops is not always feasible. Finally, additional efforts are required to carry out selective nitriding and mask areas of components where nitriding is to be avoided.

2. PVD, CVD

Treatments like PVD (Physical Vapour Deposition) and CVD (Chemical Vapour Deposition) are popular in the machine-tool industries in America and European countries. These techniques are yet to evolve completely in the Indian forging industry. PVD is slowly gaining share in the Indian machine-tool treatment market. It ensures surface hardness of up to 90 HRC. However, the result of PVD treatment on forging dies is not documented. Cost of PVD is approximately Rs. 800/- per kg. of metal that is treated (as on date of this article). CVD technology is not yet introduced in India.

2. Welding to repair / reclaim worn out dies

Apart from the mentioned treatments, the only option available is to repair and reclaim the dies through welding. Conventionally, welding of the worn out areas of dies or welding of cracks in dies is carried out. Flood welding of the dies is also carried out to completely reclaim the dies. However, this technique also poses its own limitations:

Limitations of Conventional Welding:

1. Requirement of skilled welders
2. Requires open space or effective ducting for carrying out welding operation

3. Time consuming process as forging dies must be taken to welding area
4. Pre and post welding heat treatment / stress relieving is necessary

Usually, conventional welding is a 'Repair-Oriented' technique. It is carried out after the dies are damaged or worn out.

New Protective Treatment to Increase Die Life: Japanese Cold Welding

A new Japanese cold-welding technique enables appropriate surface hardening of dies, moulds and tools to increase their service life. The technique involves electronic coating of tungsten carbide on selective wear-prone areas of dies/ moulds / tools through Japanese Cold Welding Technique.

Cold welding is carried out as a 'Preventive Maintenance' technique on new dies. It is a surface hardening technique, similar to nitriding and PVD, but is administered using a completely different technique. Hardness of tungsten carbide layer deposited by cold-welding on dies can surpass nitriding to reach hardness of more than 70 HRC.

Photographs indicating beginning of die wear on forging dies are given below



If the indicated areas are protected before using the die, the wearing will be postponed and substantial increase in die life can be expected.

Benefits of Japanese Cold Welding Technology:

1. Skilled welders not required. Can be carried out by anyone
2. Open space not required. No fumes are generated during cold welding
3. Time saving process as dies need not be removed from forging equipment
4. Pre and post welding heat treatment not necessary. No stresses are generated during cold welding as it is a cold process.

Additional benefits of Japanese Cold Welding Technology:

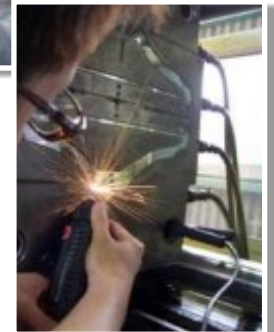
1. Nitriding of dies not required as hardness of tungsten carbide coating is more than 70 HRC, which is higher than nitriding hardness (62-64 HRC).
2. Increased die life due to high wear resistance.
3. Substantially reduced maintenance downtime of dies and tools.
4. Can be carried out on selective areas of dies that are prone to wear. Does not require the complete die to be treated/ protected.

COMPACT COLD WELDING EQUIPMENT AND APPLICATORS



Argon gas cylinder is shown in the photograph. It is recommended to be used during the cold welding process to avoid oxidation of carbide electrode.

CAN BE USED BY ANYONE, ANYWHERE

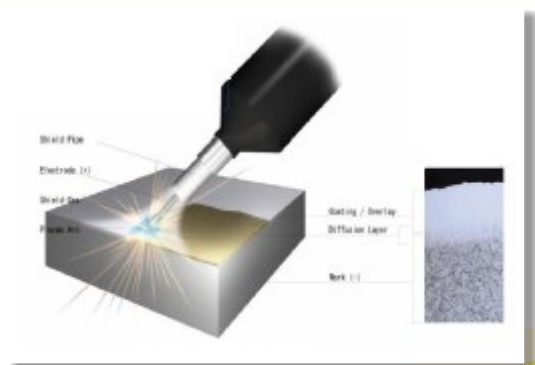


PRINCIPLE OF OPERATION:

Consumable electrode made of alloys and intermetallic compounds are deposited on the die by means of electronic spark at a frequency f 10-1 to 10-3 second for one to millionth of seconds per spark. Direct current from the power supply will heat the electrode to 8,000 to 25,000 deg. C., only at the contact areas and transfer a small quantity of electrode to the work piece under an ionized state. A strong metallurgical bond is thereby produced.

Characteristics of carbide coating:

1. Wear resistant: Due to inherent strength of tungsten carbide, the wear resistance is high. If the die is hard and heat treated well, a good forging die life can be expected after carbide protective coating.



2. Heat resistant: The coating is heat resistant and will not cause heat checks. Excessive heat leading to die wear will be prevented in protected areas.

3. Scuffing resistant: Scuffing and bruising is the initial stage of having serrations on die. This scuffing will be prevented or substantially delayed.

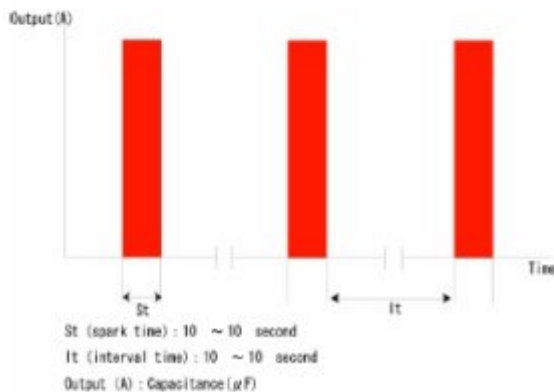
4. Lubricity: Many times, due to very smooth finish of new dies, the forging die lubricant does not adhere to the die. This problem is not faced in the case of carbide coated dies. It is observed that die can be lubricated better than before.

■ High Quality and Performance Procedure

- 1. Extremely low heat input eliminates distortion, shrinkage, under-cut, or stress.**
- 2. Provides excellent bonding by the formation of diffusion layer under work surface. No re-movable after procedure.**
- 3. Shield Gas (Ar, He etc.) avoids oxidation during its procedure and may provide excellent thick overlay.**

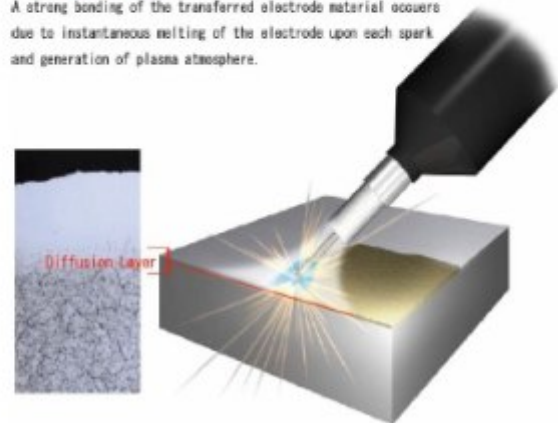
Reason for Low Heat Input

The spark time (S_t) is extremely short compared with the interval time (I_t) so that no heat accumulation occurs during diffusion and deposition periods.



Why Strong Bonding is Possible

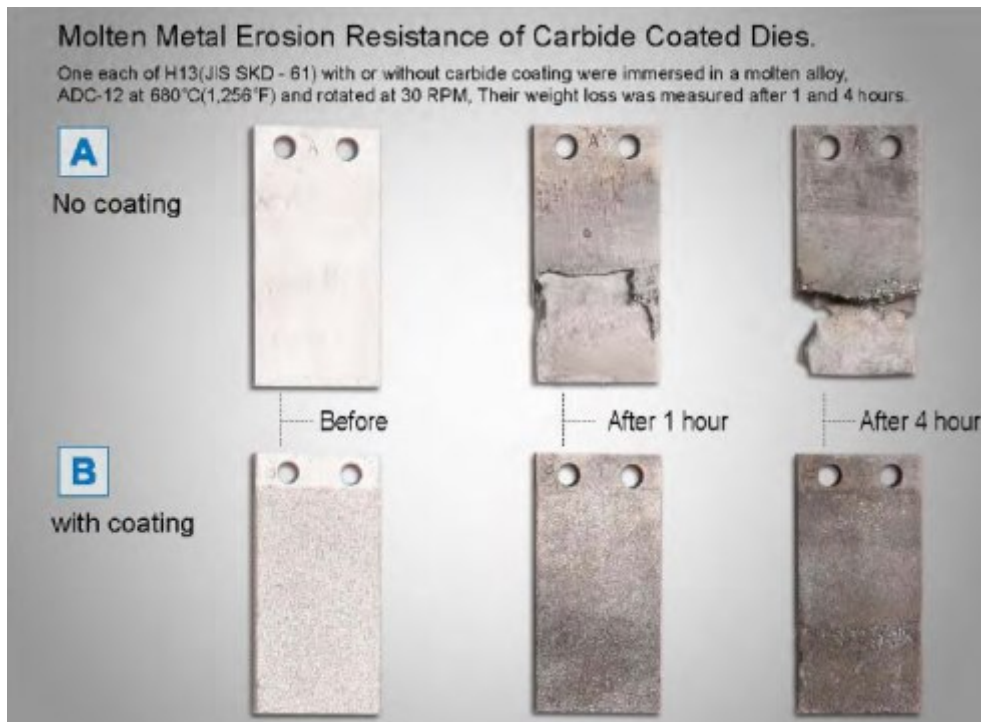
A strong bonding of the transferred electrode material occurs due to instantaneous melting of the electrode upon each spark and generation of plasma atmosphere.



Reason for low heat input: The spark time is extremely short compared to the interval time so that no heat accumulation occurs during diffusion and deposition periods.

Why strong bonding is possible: A strong bonding of the transferred material occurs due to instantaneous melting of the electrode upon each spark and generation of plasma atmosphere.

PROVEN EXCELLENT HEAT RESISTANCE



[Applicable Substrates]

Available Overlay Substrates are Low & Medium Carbon steels, Tool steel, Die & Mold steels, Cast steels, Stainless steels, Aluminum alloys, Copper alloys, and the majority of alloys and composites having sufficient electrical conductivity.

[Applicable Examples]

1. Coating as preventive maintenance and Overlay repair on Aluminum Diecasting and Casting Dies
2. On-Site Overlay Repair of Machine Parts
3. In-Line Overlay Repair of Injection Molds
4. Overlay Repair and Coating procedure on Press-Squeeze Dies
5. Overlay Repair of Casting Defects in Casting Aluminum and Copper

[Safety -- Humans & Eco-friendly --]

1. Easy operations make High Quality Procedure by anyone.
2. Environmentally safe. No produces toxic gas, drainage, or unpleasant odor and noise.
3. A gear in safety operations is only safety glasses against weak UV light.
4. Safety operation is secured by double safeguards in every machine.

COMPARISON WITH OTHER TECHNIQUES:

Item	Method	COLD WELDING	Thermal Spraying	Spot Welding		Welding	
				Sheet · Wire	Powder · Paste	Argon Welding	Laser Welding
① Easy to handle		5	3	5	5	2	3
② Heat input		5	3	5	5	1	5
③ Distortion · Under Cut		5	3	5	5	1	5
④ Bond strength		4	2	1	1	5	4
⑤ On-site work		5	3	5	5	5	1
⑥ Deposition Speed		3	5	2	2	5	2
⑦ Equipment cost		4	3	4	4	5	1
⑧ Treatment cost		5	3	4	4	4	1
⑨ Materials		Ni · Co etc. (electrode)	Ni · Co (powder)	Steel (sheet · wire)	Steel (powder · paste)	All materials (rod)	All materials (wire)
⑩ Applicable Substrates		Steel · Al · Cu alloys	Steel · Al · Cu alloys	Steel only	Steel only	Steel · Al · Cu alloys	Steel · Al · Cu alloys

Rating : 5 to 1. 5 for the best, appropriate or least expensive to 1 for the worst, inappropriate or most expensive

SUMMARY

Japanese cold welding technique of electronically laying protective carbide layer on forging dies holds promises of increased die & tool life, reduced maintenance downtime, convenience of operation and better productivity. As the concept is proven, it is a requirement in every modern forge shop seeking cost reduction and increased profitability.



AUTOMATION OF LARGE FORGING LINES BY THE USE OF ROBOTS

Klaus Merkens, Sales Manager,
Closed Die Forging Division
SMS MEER GMBH, Mönchengladbach, Germany

Topic and Abstract:

'Automation of big Forging Lines by the use of Robots'

The focus of this presentation is to describe the possibilities of automation on big Forging lines for automotive products. This includes an introduction of the SMS Meer Company, a short view into the history of automation concepts and equipment and a view to the actual technology of SMS Meer GmbH, especially of the Eumuco Hasenclever Closed Die Forging division.

Taking the example of a fully automated forging line for crank shafts and front axles for trucks the presentation shows the process from development to realization of an automation concept.

As one of the leading companies offering complete equipment for forging plants, the product program of SMS Meer includes stroke, force and energy-bound presses in all sizes as well as the required pre-forming and finishforging equipment. Our own developments in the areas of transfer technology, spraying technology as well as plant control and visualization, permit plant concepts with all the machine elements working in harmony with each other.

SMS MEER GMBH

SMS GmbH is the holding company of a group of internationally operating companies in the plant and equipment-building business for the processing and shaping of steel and NF metals. One part of the group referred to as SMS metallurgy comprises SMS Siemag and SMS Meer. In 2010, around 9,000 employees all over the world generated sales of approx. 2.9 billion •.

In the field of tube, long product and forging technology, SMS Meer ranks among the world's leading machine designers and constructors.

Beginning 2007 the various forging activities of the SMS group merged under the roof of SMS Meer GmbH. Within SMS Meer GmbH you will find the well known companies of the former SMS Eumuco GmbH like Eumuco, Hasenclever, Berrenberg, Banning, Thyssen Wagner, Schloemann etc. and this is in addition to our Hydraulic Open die forging press manufacturing.

The competence SMS Meer has in the layout of technologies and processes is an important prerequisite for the drafting and successful realization of turn-key plant concepts.



Beside megatrends such as geopolitical change, sustainability and evolution of mobility, it's not only stricter ecological requirements, but also increasing international competition and global cost pressure caused by increasing material prices that present a constant challenge to the forging industry.

Identifiable ecological trends in the forging industry include:

- ▶ Reduction of process chains through new developments
- ▶ Increase in efficiency
- ▶ Reduced energy input
- ▶ Reduced spraying fluids

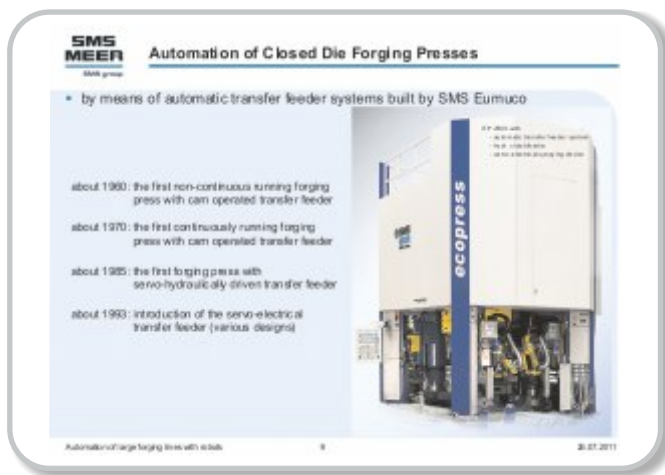
- ▶ Reduced material input
- ▶ Use of new materials
- ▶ Increased flexibility

Especially with today's high cost, but also due to technological developments, rising demand and stricter environmental legislation, flexibility is a must for every future-oriented company.

For customers around the world in the Automotive and Non-Automotive Industry it is a big challenge to deal with this situation.

In this colloquium it is our target to show that traditional processes like massive forming are still highly innovative.

Development of Automation Technology



Eumuco Hasenclever has concentrated on automatic forging from very early on.

For press sizes of up to 6.300 ton forging capacity, automatic walking beam transfer systems have been developed.

The consistent ongoing development resulted in an innovative automation system with a high degree of flexibility. A great many development steps were made from the continuous-type, cam-controlled automatic walking beam system to today's electrically powered units.

The continuous type cam-controlled automatic walking beam system was developed in the 1970's.

The functional principle of this automatic workpiece conveying system was based on direct coupling to the press drive unit.

The automatic walking-beam system was directly driven by the eccentric shaft of the press via a cardan shaft. The rotary motion was distributed to the cam-controlled stroke and step-by-step motion linkage.

The continuous type cam-controlled automatic walking beam system was subsequently replaced by the camcontrolled automatic walking-beam system that operates separately from the press drive unit.

The three-dimensional conveying motions, i.e.

- ▶ Conveying step
- ▶ Lifting/lowering
- ▶ Opening/closing

are generated by a cam plate drive unit. This cam plate drive unit is equipped with an electric motor. The press could thus be switched on at maximum speed for each stroke so as to ensure short pressure contact times. In the process, the automatic walking-beam system was circulating continuously.

In 1985, customer requirements for making automatic systems more flexible led to the development of the servo-hydraulically controlled automatic walking-beam system type GHA.

In this system the three-dimensional movement of the walking beams is powered by electro-hydraulic

linear amplifiers. The stroke, speed, acceleration or deceleration are all set via stepper motors.

The system's cycle time can be preselected via the control unit.

As a function of the occupation of the forming stages in the press, the automatic walking-beam system operates on full or half steps, with a pause for spraying between two dies.

When fully utilising the performance potential of the servo-hydraulic axis drive units, this system achieves a number of strokes of 30 per minute.

The power of the hydraulic drive units has in the meantime also now been achieved or even surpassed by new, more powerful electric servo drives. Based on the relevant knowhow and consistent further development, at the end of the 1990's SMS Eumuco managed to design a new generation of walking-beam systems, viz. the EHA electric type automatic walking-beam system with linear drive units.

The EHA is rated for a working speed of up to 30 strokes per minute and compared with the GHA includes a number of additional special features. The EHA consists of four individual housings with drive units which are fastened to the press frame. It has two exchangeable walking beams with their own drive units which are independent of the press.

Each of the EHA's axes of motion is separately driven by a total of 10 electric servo motors that may be changed independently of each other.

The latest-generation automatic walking-beam system, GEA, combines the benefits of the two systems described.

The high degree of flexibility of the EHA's servo-electrical system with the GHA's rocker arm unit.

Here again each axis is individually driven by servo motors.

The two separately operated walking-beams at the front and rear are electronically coupled to each other.

The GEA's stroke axis is arranged completely in an airpressurized, enclosed housing. All openings are sealed by covers and additional labyrinths.

The rotary guides of the other axes of movement are equipped with seals and labyrinths to avoid the ingress of dirt.

As compared to the previous drive units, the maintenance effort required is reduced.

The rotary transmission elements are arranged outside the lifting-axis box. Further benefits of this type of automatic system include:

- ▶ Major reduction of protective hoods, covers, hoses and rotary screw joints
- ▶ More freedom in designing the walking beams due to the absence of linear guides and no more protecting hoods in the press area
- ▶ Removal of additional balancing joints, since potential axis errors in the drive units are directly balanced by the joints
- ▶ All components now essentially contained within the press frame. This provides an optimal infeed and withdrawal of the forgings as well as improved access to the press side as well as freedom in the layout design.

The resulting reduction of the masses moved and thus the necessarily shorter, more torsion-resistant walking beams eventually lead to a rise in the maximum number of strokes and hence to an improved performance.

The GEA has its own control system with the variety of functions of a Sinamics Motion Control. From the parameters input for the individual axes, this control establishes the total cycle time as well as the resulting number of press strokes.

The individual housings with drive unit can be adapted to every press size. Different opening strokes can be performed and in addition the elevation of the beams relative to each other may be varied.

The central parts of the walking beam are equipped with a tried-and-tested quick-clamp mechanism and can be changed with the help of a changing arm or alternatively together with the tool holders.

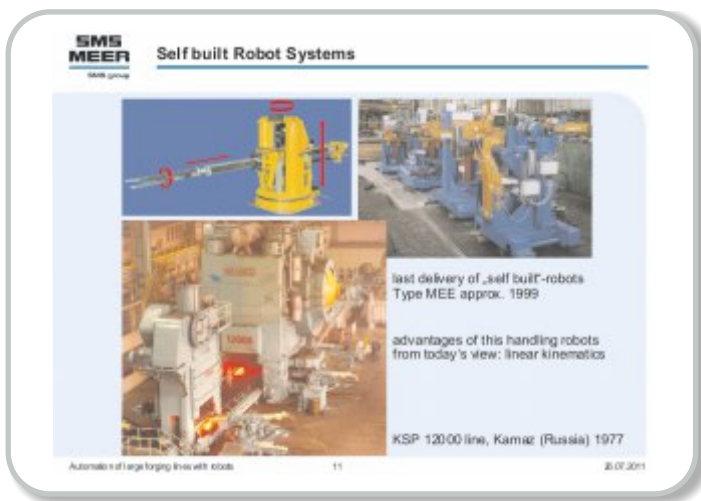
The workpiece grippers of the automatic walking-beam systems are monitored by sensors. In the event of a workpiece misplacement the press is immediately shut down.

If a workpiece is to be turned through 90° or even 180° between two forming stages, rotatable grippers are used.

The system may also be designed as a one-sided walking beam with controlled grippers.

The servo-electric drive units are designed to allow retrofitting on existing hydraulically powered automatic GHA systems.

Consequently in this manner since 1990, more than forty presses have been equipped with such types of automatic transfer feeder systems.



For a long time Eumuco and Hasenclever have been automating big forging lines with the help of robots.

The pictures above show a choice of our “Self Made” robots which were developed including the controls in our own company because at the time suitable industrial robots with acceptable payloads were not available.

The manipulators were e.g. used for automation of 12.000 t wedge press lines, and a 14.000 t eccentric press line.

The robot systems in different sizes were capable of handling workpieces weighing from 5 to 300 kg under the extremely hard conditions of hot forming.

Movement Options: (maximum 6 axis)

- ▶ x-axis Horizontal advance and retract of the tong arm
- ▶ y-axis Rotating of tong arm
- ▶ z-axis Raising and lowering of tong arm
- ▶ c-axis Transverse movement of the robot
- ▶ a-axis Horizontal rotation of grippers through 360°
- ▶ b-axis Upward and downward pivoting of grippers from + 30° to - 95°

A big advantage – still valid today - of this type of manipulator was the linear kinematics which is optimum for workpiece handling in the tool area.

As shown on the picture, the last “Self Made” robots were delivered in 1999 due to the fact, that meanwhile industrial robots with acceptable payloads and the necessary number in degrees of freedom were available in the market to cover almost all requirement profiles.

Presentation of Implemented Projects

Accordingly, our first line based on using industrial robots was realized at CDP Bharat Forge, Ennepetal.

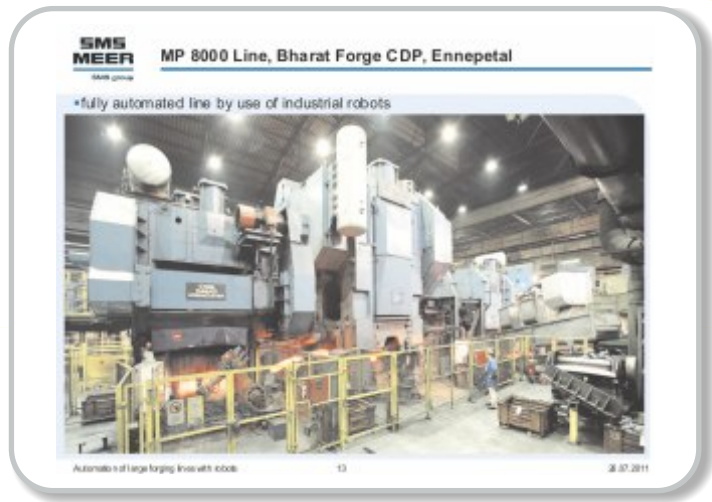
The Project was realised by SMS Eumuco as general contractor.

Line engineering incl. automation concept and process development were executed by SMS Eumuco.

The main unit in this line is an eccentric press size MP 8.000.

The whole line consists of:

- ▶ INDUCTION HEATING SYSTEM
- ▶ HOT SHEAR
- ▶ PRE- FORMING PRESS
- ▶ MAIN PRESS MP 8000
- ▶ TRIMMING PRESS
- ▶ CALIBRATING PRESS

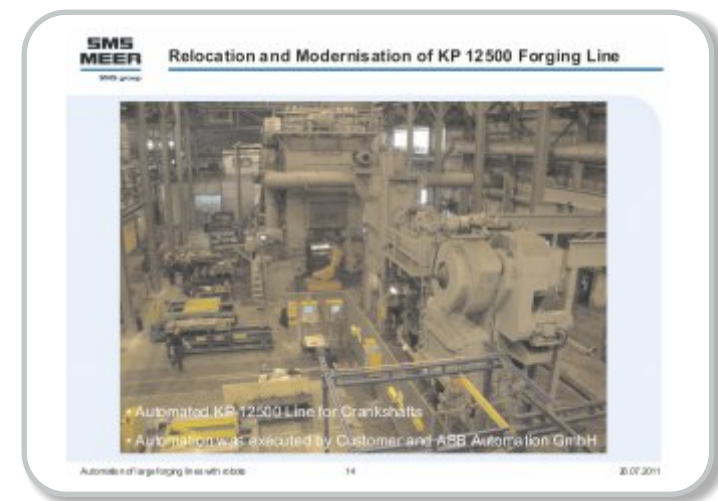


For the automation, we used 8 robots made by Kuka.

As part of a move of equipment from Germany to the U.S., robot automation by ABB Automation was implemented to a 12.500 t. SMS Eumuco forging line for crankshafts.

The whole line exists of:

- ▶ INDUCTION HEATING SYSTEM
- ▶ FORGING ROLL
- ▶ PRE- FORMING PRESS
- ▶ MAIN PRESS KP 12.500
- ▶ TRIMMING PRESS
- ▶ TWISTER
- ▶ CALIBRATING PRESS



So not only new lines but also existing equipment can be upgraded by integration of robots into the process.

Presentation of Actual Project

When looking to the potential of forging processes on big forging lines one big aspect is the automation by use of robot systems.

SMS Meer GmbH, with their product area Closed Die Forging, has carried out numerous automation projects in connection with forging machines built new, as well as with overhaul and modernisation projects. Many previously manually executed processes have now been automated.

The basic aim of the automation is on one hand to lower the production costs and on the other hand to raise the process quality.

The degree of the automation is an important factor. Complicated automation does not necessarily fit to the specific demands especially when dealing with varying or very diversified product ranges.

Generally automation can be used in the process chain in all areas, beginning with the material supply, the cutting, heating up, pre-forming, finish-forging up to the final manufacturing.

A team of project engineers develops, on this occasion, with the help of the given parameters the first layout as a base of the discussion with the customer.

Under consideration of the planned forgings and in connection with the planned cycle time, in the next step selections of the necessary machines, robots, gripper systems and peripheral facilities are made.

After final discussion and arrangement with the customer final investigations occur.

A collision investigation, a cycle time analysis and optimization with dynamic load, the definition of a regular sequence as a template for the line control with integration of the signal exchange with other system components, serve as baseline data for the robot programming.

Only after all of these have been done do we get to the final implementation of the project.

The automation of forging lines is a possibility to further improve already cost-effective processes. Our project shows this example of the fully automated production of crankshafts and truck axles, with a concatenation of forged preforms to finished forging products that was put into a line.

The crankshafts and axles to be produced belong to the group of forgings, which place high demands on the forming technology. This makes the task of automating such a forming process more difficult, but still possible.

There are extreme workpiece geometries in left-and righthand direction to be taken into account that often overwhelms the space in the tool area of the forging press. Thus a line concept for manufacturing this type of forgings is obvious, where preforming and finish forming is shifted to auxiliary equipment.

A multiple occupancy of the forming stations in the main press, as is usual with an automatic workpiece transfer, is generally not realizable due to the sum of high forging forces.

Hence, forging robots with up to five degrees of freedom and self made individually adaptable gripper systems are the suitable solution in general.

Thus the following forging sequences were determined for manufacturing crankshafts and truck axes:

Crankshafts	Truck Axles
▶ roll forging I	▶ roll forging I
▶ roll forging II	▶ roll forging II
▶ preforming	▶ bending
▶ finish forming	▶ preforming
▶ trimming	▶ finish forming
▶ twisting	▶ trimming
▶ calibrating	▶ calibrating

The forging line designed for this purpose consists of five individual units and is linked with appropriate intermediate transport:

- ▶ FORGING ROLL size RWW3
- ▶ WEDGE TYPE PRESS KP 125 MN
- ▶ TRIMMING PRESS
- ▶ TWISTER
- ▶ CALIBRATING PRESS

A total of eight robots most with individual configurations, as well as individually adapted gripper systems designed by SMS Meer, guarantee the fully automatic operation of the whole forging line.

To be able to respond flexibly to new trends, in-depth market studies are an absolute must for success. of course, this is also true for machine designers and constructors. Experience gained during the last few years has shown that technological developments never stop. The name SMS Meer continues to stand for innovative, customer oriented solutions.

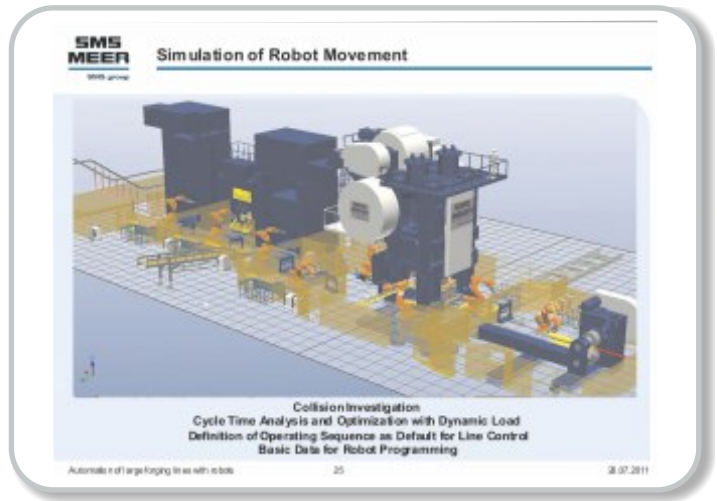
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- (2) Dipl. Ing. Lorenz Wenzel, Weiterentwicklung der automatischen Hubbalkensysteme, Facha



EKLA CHALO RE

Amitabh Chandra, Secretary General, AIFI

One often hears these days a reference to “Ekla chalo re”, particularly in the context of adventures of political parties. Some recent happenings in the context of government formations have reminded me of this phrase which literally means, walk alone. So I thought, why not try to explain this metaphor; hence this short piece.

Ekla Chalo Re is a Bengali patriotic song written by Rabindranath Tagore in 1905 at a relatively small place called Giridih in modern-day state of Jharkhand. It was one of the 22 protest songs written during the anti-partition (of then united Bengal) movement in the Swadeshi period of the Indian freedom movement. Along with "Aamar Sonar Bangla" (later to become the national anthem of Bangla Desh), it became one of the key anthems of the Bengal Presidency in 1905.

Originally titled as "Eka" ("Alone") the song was first published in the September 1905. The musical notation of "Ekla Chalo Re" was prepared by Indira Devi, a niece of Tagore. Ekla Chalo Re was first recorded by Rabindranath Tagore himself sometime between 1905 and 1908.

The song exhorts the listener to continue his or her journey, despite abandonment or lack of support from others. The song is often quoted in the context of political or social change movements. Mahatma Gandhi, who was deeply influenced by this song, cited it as one his favorite songs.

The verses of Ekla Chalo Re read in Romanized Bengali as follows.

*“Jodi tor daak shune keu na aashe, tobe ekla cholo re,
Jodi tor daak shune keu na aashe, tobe ekla cholo re.
Ekla cholo, ekla cholo, ekla cholo, ekla cholo re.
Jodi tor daak shune keu na aashe, tobe ekla cholo re.
Jodi keu kothaa na koi, ore ore o obhaaga, keu kothaana koi,
Jodi shobaai thaake mukh firaey shobaai kore bhoy,
Jodi shobaai thaake mukh phiraae shobaai kore bhoy,
Tobe poran khule
O tui mukh fute tor moner kothaa ekla bolo re.
Jodi shobaai fire jaae, ore ore o obhaaga, shobaai phire jae
Jodi gohon pothe jaabaar kaale keu phire na chaai,
Jodi gohon pothe jaabaar kale, keu phire naa chaai,
Tobe pother kaanta
O tui roktomaakhaa chorontole ekla dolo re.
Jodi alo na dhore, ore ore o obhaaga,
Jodi jhor-badole adhaar rate duar deay ghore ,
Tobe bojranole
Apon buker paajor jaliey niye ekla jolo re.”*

Rabindranath Tagore himself translated into English the song as below.

If they answer not to your call walk alone
If they are afraid and cower mutely facing the wall,
O thou unlucky one,
open your mind and speak out alone.
If they turn away, and desert you when crossing the wilderness,
O thou unlucky one,
trample the thorns under thy tread,
and along the blood-lined track travel alone.

If they do not hold up the light when the night is troubled with storm,
O thou unlucky one,
with the thunder flame of pain ignite your own heart,
and let it burn alone.

However, a more literal and simpler translation of the song runs as follows.

*If none answers to thy call,
Walk alone!
Walk alone! Walk alone! Walk alone!
If they are afraid and cower mutely facing the wall,
O thou of evil luck,
Open thy mind and speak out alone!
If they turn away,
and desert you when crossing the wilderness,
O thou of evil luck,
trample the thorns under thy tread,
and along the blood-lined track travel alone!
If they do not hold up the light
When the night is troubled with storm,
O thou of evil luck,
With the thunder of flame of pain
Ignite thy own heart
and let it burn alone!*

The message of the song is that there would be times when one would find oneself all alone in the pursuit of one's goal. What does one do then? Change the goal? Give up pursuing? Here I am reminded of a saying: On a matter of principle, stand like a rock; on a matter of fashion, swim with the current. If you find your goal to be noble, pursue it. Sort out the obstacles; bear the pin pricks; endure the pains. After all, "No pains, no gains." Given the merit of your objective you may find these pains a no match for your goal.

However, one question may arise in your mind: Is my goal a noble one and worth the pains? Here is a test for that: you may fool others, albeit for a short while, but you cannot fool yourself. So there is no way of cheating yourself and telling yourself that a particular goal or path is noble when you know very well that it is not. The path then is clear. Fight for a good cause, and fight alone if need be. Ekla cholore!



UPCOMING EVENTS

Event	Date	Venue	Website
Forge Fair 2015	14 th April to 16 th April 2015	Cleveland Convention Center, Cleveland, USA	https://www.forging.org/ events/forge-fair-2015
Auto Shanghai 2015 - The 16th International Automobile & Manufacturing Technology Exhibition	22 nd April to 29 th April 2015	National (Shanghai) Center for Exhibition and Convention Shanghai,	http://autoshanghai.auto- fairs.com/general- information/
The 11th China (Beijing) International Forging Industry Exhibition (CIFE)	8 th September to 10 th September 2015	New China International Exhibition Center (Beijing)	http://www.fmfexpo.com/ en/index.asp?id=1001
13th International Cold Forming Congress	2 nd September to 4 th September 2015	The Technology and Innovation Centre, Glasgow, UK	http://www.strath.ac.uk/ afrc/coldformingevent/
ChinaForge Fair 2015	16 th September to 19 th September 2015	Shanghai World Expo Exhibition & Convention Center, China	http://www.china- exhibition.com/ trade_events/6790- ChinaForge_Fair_2015.html

INDUSTRY NEWS

Bharat Forge starts supplying locomotive parts to Indian Railways

Bharat Forge Limited (BFL), flagship company of the \$2.5 billion Kalyani Group, has started supplying locomotive parts to the Indian Railways. Baba Kalyani, chairman and managing director, said it is the first Indian company to supply parts to the Indian Railways. In the past, the company has been supplying parts to Russian and European locomotive manufacturers. Some of the components, including turbo chargers and crankshafts, would be supplied to the Indian Railways. The components will be manufactured at the company's high-tech locomotive manufacturing facility at Baramati, which was inaugurated by Union Minister of State for Railways Manoj Sinha recently. During the event, Sinha said that every year the railways has to foot bills worth over Rs 2,000 crore to import small components for the railways. Talking about the move, Kalyani said that initially they will supply 400 locomotive components and gradually supply more. The technology used by the company has been developed in-house. The Baramati facility will also manufacture crankshafts for the automobile sector. To start with, the company would produce 1,000 crankshafts a year, of which 400 would be supplied to the Indian Railways and the rest would be exported. The company hopes to cross Rs 500 crore in all verticals by 2018. At present, the non-auto business of the company is around 41 per cent.

Bharat Forge Buys EU Precision Machine Shop

CDP Bharat Forge GmbH, the wholly owned German forging subsidiary of India's Bharat Forge Limited, has purchased a French machining operation for a reported \$14.27 million. Mecanique Generale Langroise (MGL), situated at Saints-Geosmes, in eastern France, is mainly dedicated to precision-machining components for oil-and-gas exploration, as well as other value-adding processes like cladding.

Amtek Auto to acquire firms in Europe, South East Asia

Amtek Auto plans to acquire two Europe-based and one South East Asia-based auto as well as non-auto component makers through its Singapore-based wholly owned subsidiary. "The acquiring companies have six world-class manufacturing facilities across Europe and South East Asia, which have a combined sale in excess of Rs 2,000 crore to blue chip OEM's and tier one customer worldwide," Amtek Auto said in a filing to the BSE. The proposed acquisitions will further strengthen Amtek's position as one of the largest integrated global forging, casting and machining business house, the filing said. Earlier this month, Amtek Global Technologies, a Singapore-based unit of Amtek Auto, had secured a long-term loan of 235 million euro (over Rs 1,800 crore) from global investment firm Kohlberg Kravis Roberts (KKR), to replace its existing short-term loan. The automobile parts maker also plans to raise up to Rs 200 crore from issue of non-convertible preference shares. The company today reported 12.13 per cent increase in net profit at Rs 61.82 crore for quarter ended September 30, 2014 compared to Rs 55.13 crore in the year-ago period. Net sales of the company stood at Rs 760.09 crore, up 36.15 per cent as against Rs 558.25 crore in the same quarter last year.

Amtek Global Technologies secures long-term financing from KKR

Amtek Global Technologies (AGT), a subsidiary of Amtek Auto, one of the world's largest global forging, casting and integrated machining companies, and the credit business of leading global investment firm KKR today announced the signing of definitive agreements under which KKR will provide AGT with €235 to replace its existing bridge loan and consolidate all of the million of long-term, Company's existing debt. This facility will also act as a catalyst to help integrate Amtek Auto's existing international operations under the Singapore headquartered AGT. The Amtek Group has annual turnover of over US\$2.7 billion and manages 65 world-class facilities. It has an extensive auto-product portfolio with a range of highly engineered components for passenger cars, commercial vehicles and two- and three-wheelers, and also caters to the non-auto sector. In recent years, the Amtek Group has expanded its operations both organically and through strategic acquisitions. AGT has 19 manufacturing facilities across Germany, Italy, UK, Brazil, Hungary, US and Mexico. AGT

produces high-technology products including turbochargers, precision camshafts, valve train components, conrods, and safety fasteners. The Company contributes close to 40% of the Amtek Group's revenues. Through its credit business, KKR looks to provide companies achieve their objectives of balance sheet consolidation, deleveraging and long-term growth. KKR provides structured financing solutions across junior debt, senior loans, mezzanine and direct lending through multiple capital pools.

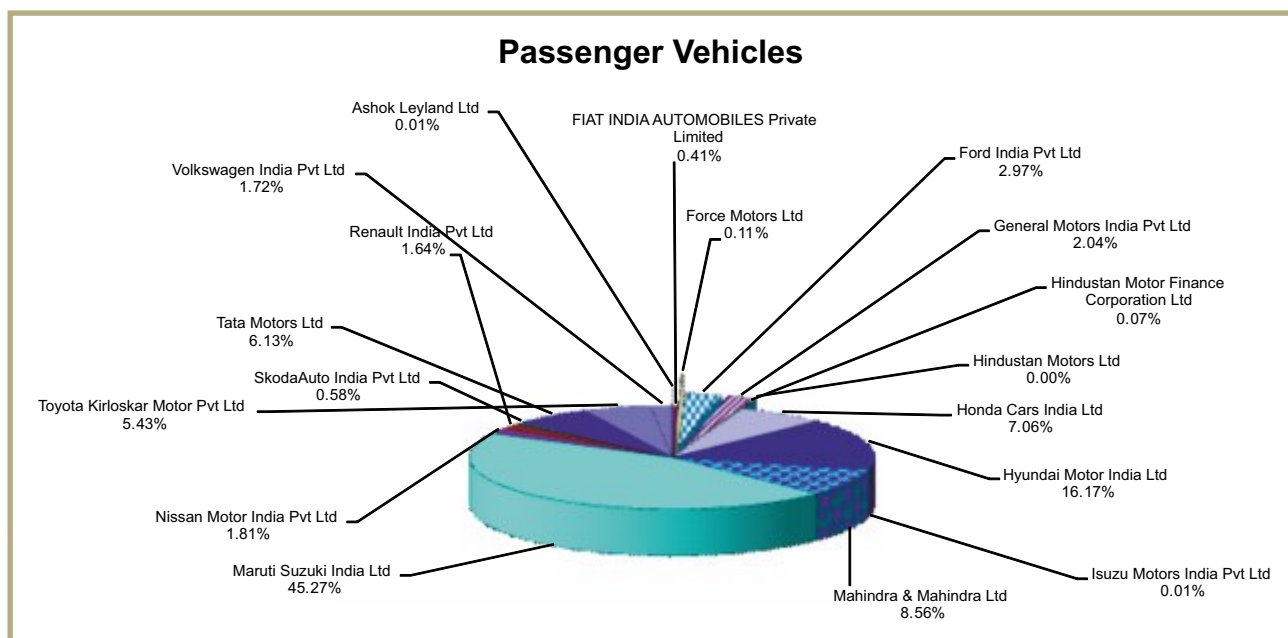
Indian Forging Industry comes out with its wish list

Vice-Chairman of Association of Indian Forging Industry (AIFI), Ranbir Singh and Chairman of Northern chapter of AIFI, Capt Alok Sharma at a joint press interaction at Chandigarh said that the forging industry has pinned high hopes on the new government at the Centre and expects it to take necessary steps to ensure that steel prices are in tandem with international prices. They said that Indian trade policies should be reviewed in a holistic manner to make it more competitive. The government should take necessary steps to help companies reach out to international buyers, share relevant industry information via Indian consulates in respective countries, creating opportunities for participation in trade shows at a discounted price, participation in buyer seller meets/events and gathering of market intelligence. The Government should also consider investments in development of power generation infrastructure and distribution mechanisms. Ranbir Singh and Capt Alok Sharma said that the Government should help facilitate creation of shared infrastructure and capacity development for R&D and testing labs. Schemes run by institutions like National Manufacturing Competitiveness Council (NMCC) and some Ministries like Micro-Small and Medium Enterprises (SMEs) can be tapped to meet financial requirements of setting up such facilities. Awareness about such organizations and schemes is also very low which needs to be worked upon. The Government should create awareness among SMEs about the need for getting credit worthiness rating done. There is also a need for creating awareness among the SMEs about availability of low cost institutional equity capital and risk capital funds for expansion plans of SMEs.

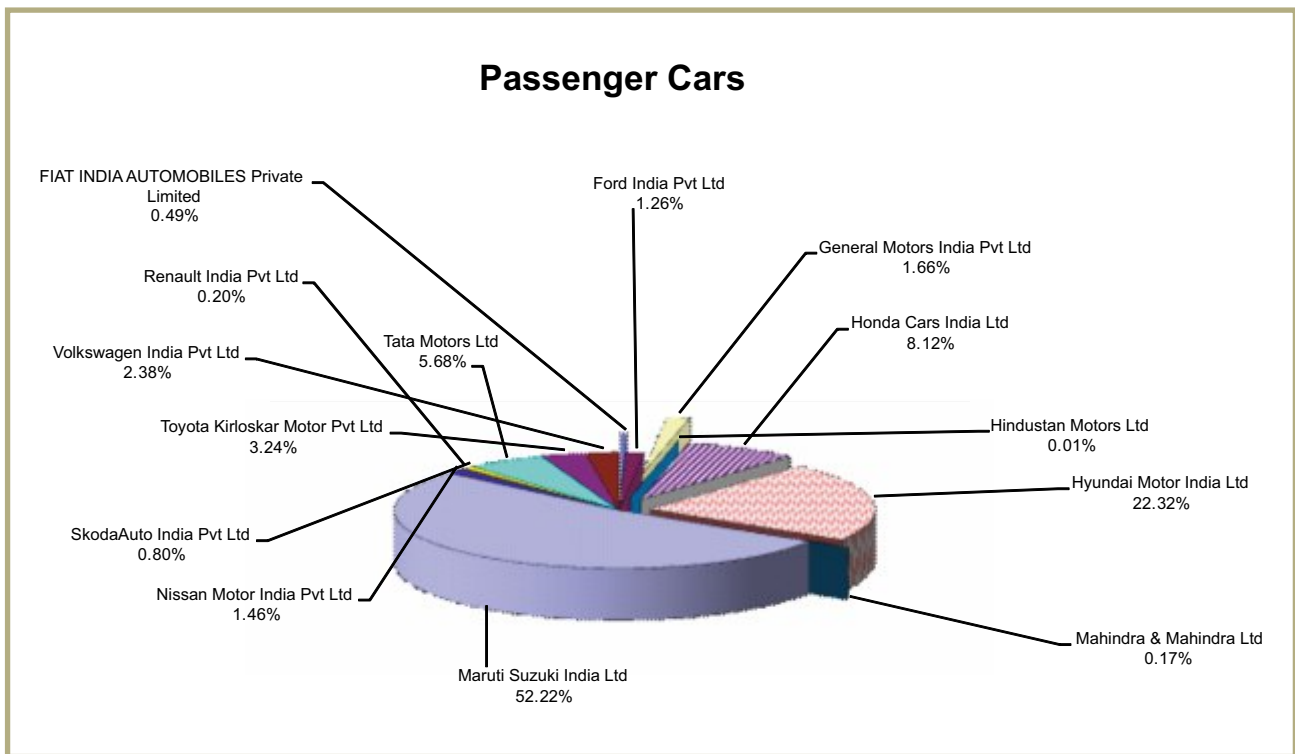


AUTOMOBILE FIGURES AT GLANCE

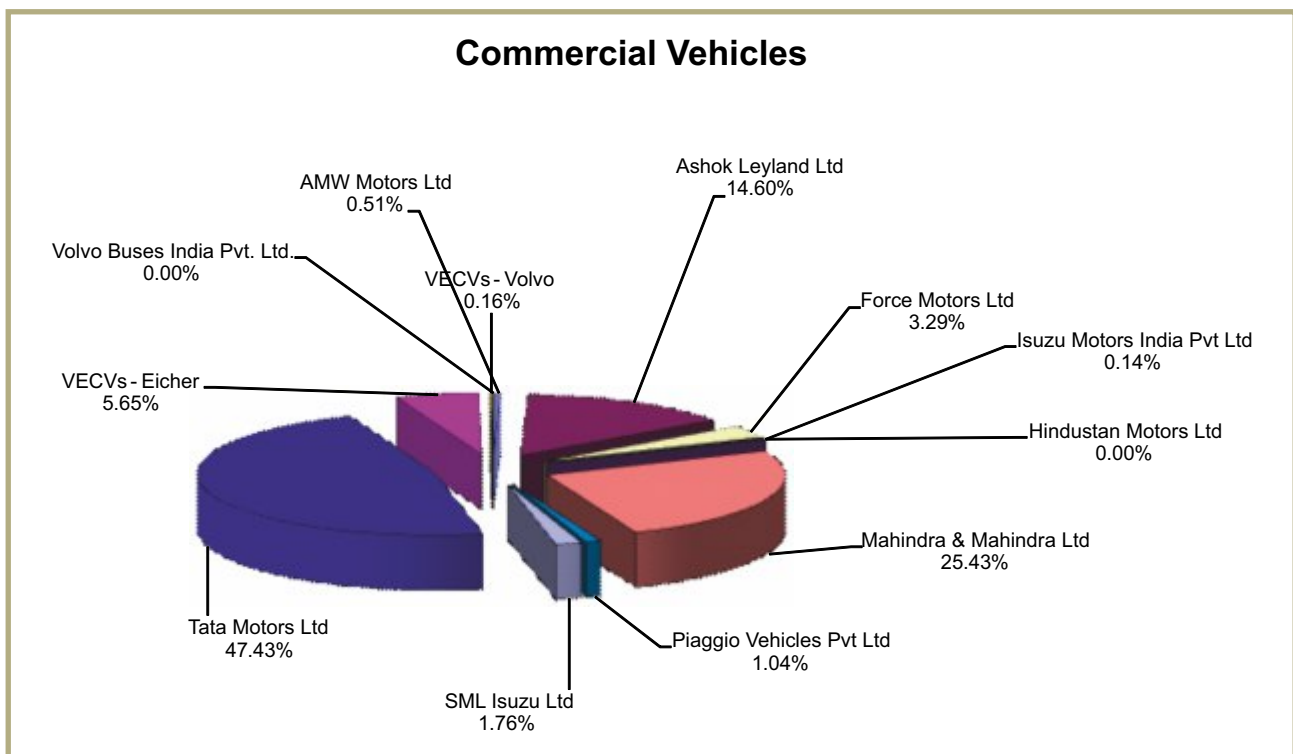
Market Share Analysis				Report V	
				(No. of Vehicles)	
Passenger Vehicles					
Manufacturers	Domestic Sales (In Numbers)		Market Share (In Percentage)		
	April-February		April-February		
	2013-14	2014-15	2013-14	2014-15	
Ashok Leyland Ltd	738	336	0.03	0.01	
FIAT INDIA AUTOMOBILES Private Limited	10,425	9,629	0.46	0.41	
Force Motors Ltd	3,143	2,513	0.14	0.11	
Ford India Pvt Ltd	78,113	69,885	3.45	2.97	
General Motors India Pvt Ltd	74,289	48,016	3.28	2.04	
Hindustan Motor Finance Corporation Ltd	0	1,607	0.00	0.07	
Hindustan Motors Ltd	3,526	113	0.16	0.00	
Honda Cars India Ltd	1,15,913	1,66,366	5.12	7.06	
Hyundai Motor India Ltd	3,45,250	3,81,143	15.24	16.17	
Isuzu Motors India Pvt Ltd	56	239	0.00	0.01	
Mahindra & Mahindra Ltd	2,28,937	2,01,785	10.11	8.56	
Maruti Suzuki India Ltd	9,51,420	10,66,983	42.00	45.27	
Nissan Motor India Pvt Ltd	31,114	42,757	1.37	1.81	
Renault India Pvt Ltd	51,904	38,602	2.29	1.64	
SkodaAuto India Pvt Ltd	18,472	13,707	0.82	0.58	
Tata Motors Ltd	1,82,759	1,44,580	8.07	6.13	
Toyota Kirloskar Motor Pvt Ltd	1,20,605	1,28,014	5.32	5.43	
Volkswagen India Pvt Ltd	48,787	40,441	2.15	1.72	
Total	22,65,451	23,56,716	100.00	100.00	



Market Share Analysis				(No. of Vehicles)	
Passenger Cars					
Manufacturers	Domestic Sales (In Numbers)		Market Share (In Percentage)		
	April-February		April-February		
	2013-14	2014-15	2013-14	2014-15	
FIAT INDIA AUTOMOBILES Private Limited	10,425	8,320	0.65	0.49	
Ford India Pvt Ltd	36,415	21,350	2.25	1.26	
General Motors India Pvt Ltd	47,798	28,243	2.96	1.66	
Hindustan Motors Ltd	2,113	113	0.13	0.01	
Honda Cars India Ltd	1,14,973	1,38,070	7.12	8.12	
Hyundai Motor India Ltd	3,44,739	3,79,466	21.34	22.32	
Mahindra & Mahindra Ltd	9,199	2,826	0.57	0.17	
Maruti Suzuki India Ltd	8,04,437	8,87,798	49.80	52.22	
Nissan Motor India Pvt Ltd	18,614	24,791	1.15	1.46	
Renault India Pvt Ltd	9,453	3,453	0.59	0.20	
SkodaAuto India Pvt Ltd	18,046	13,594	1.12	0.80	
Tata Motors Ltd	97,426	96,493	6.03	5.68	
Toyota Kirloskar Motor Pvt Ltd	52,913	55,054	3.28	3.24	
Volkswagen India Pvt Ltd	48,784	40,435	3.02	2.38	
Total	16,15,335	17,00,006	100.00	100.00	

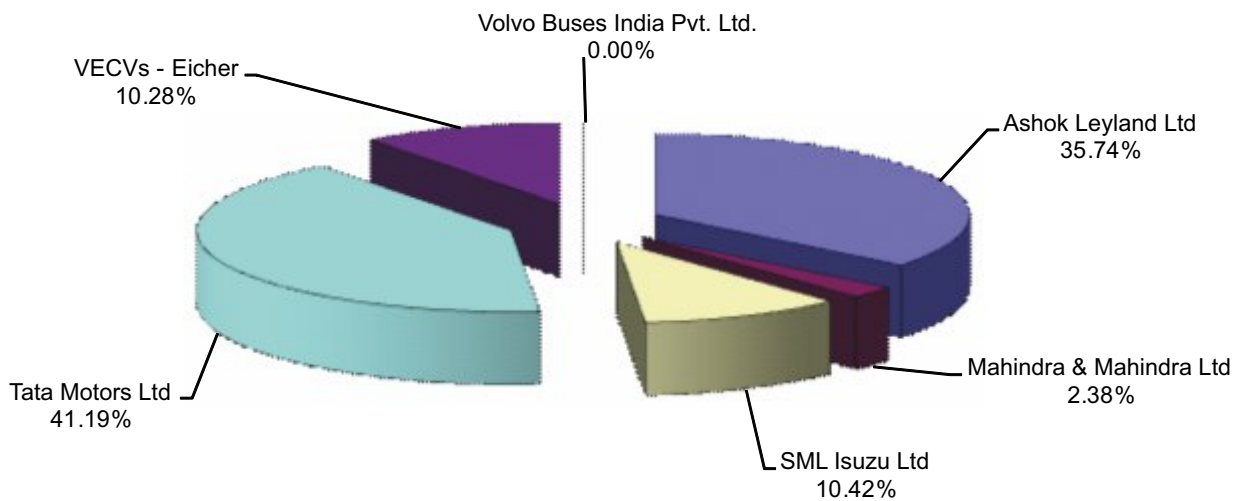


Market Share Analysis				(No. of Vehicles)	
Commercial Vehicles					
Manufacturers	Domestic Sales (In Numbers)		Market Share (In Percentage)		
	April-February		April-February		
	2013-14	2014-15	2013-14	2014-15	
AMW Motors Ltd	4,181	2,815	0.74	0.51	
Ashok Leyland Ltd	70,278	80,229	12.36	14.60	
Force Motors Ltd	16,854	18,066	2.96	3.29	
Hindustan Motors Ltd	181	0	0.03	-	
Isuzu Motors India Pvt Ltd	112	783	0.02	0.14	
Mahindra & Mahindra Ltd	1,43,784	1,39,718	25.28	25.43	
Piaggio Vehicles Pvt Ltd	6,388	5,694	1.12	1.04	
SML Isuzu Ltd	8,089	9,661	1.42	1.76	
Tata Motors Ltd	2,87,944	2,60,597	50.63	47.43	
VECVs - Eicher	30,167	31,044	5.30	5.65	
VECVs - Volvo	622	879	0.11	0.16	
Volvo Buses India Pvt. Ltd.	150	NA	0.03	-	
Total	5,68,750	5,49,486	100.00	100.00	

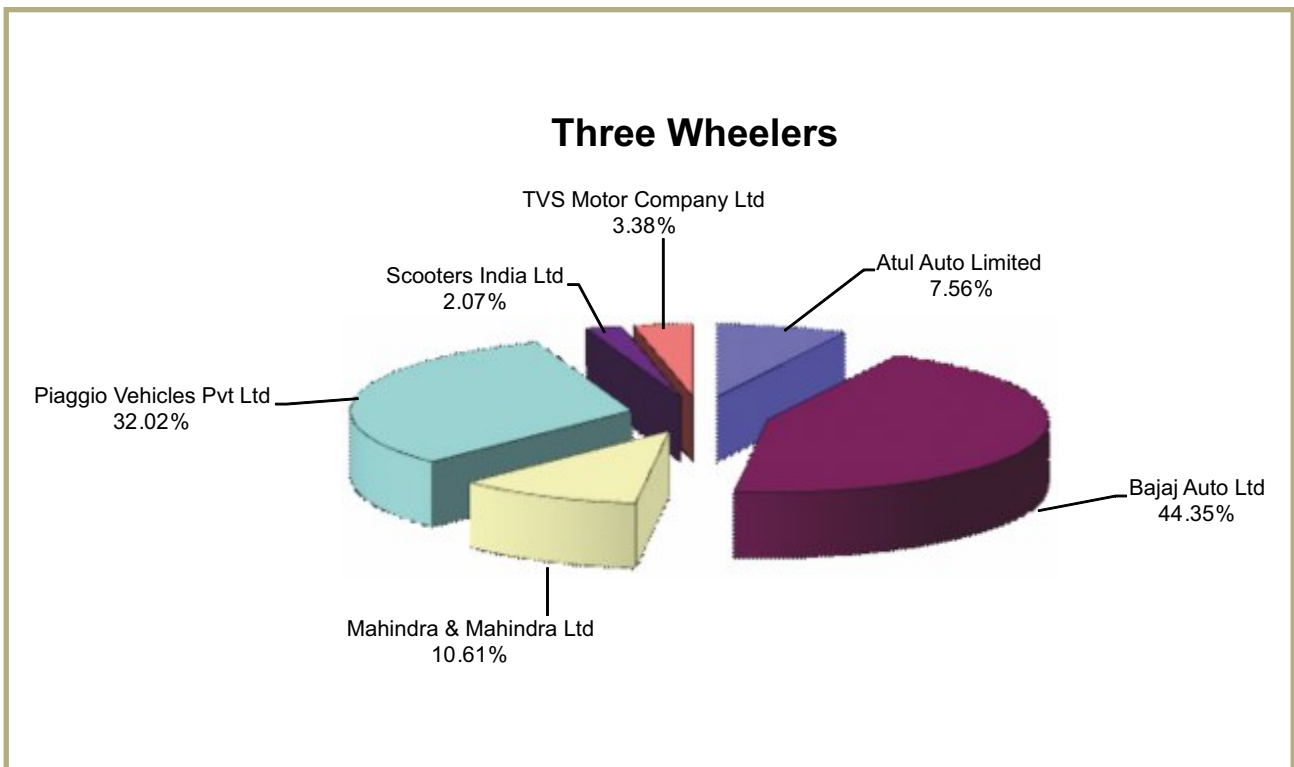


Market Share Analysis				(No. of Vehicles)	
M&HCVs (Passenger Carrier)					
Manufacturers	Domestic Sales (In Numbers)		Market Share (In Percentage)		
	April-February		April-February		
	2013-14	2014-15	2013-14	2014-15	
Ashok Leyland Ltd	13,614	11,240	39.62	35.74	
Mahindra & Mahindra Ltd	833	749	2.42	2.38	
SML Isuzu Ltd	2,802	3,277	8.15	10.42	
Tata Motors Ltd	13,707	12,955	39.89	41.19	
VECVs - Eicher	3,256	3,232	9.48	10.28	
Volvo Buses India Pvt. Ltd.	150	NA	0.44	-	
Total	34,362	31,453	100.00	100.00	

M&HCVs (Passenger Carrier)



Market Share Analysis				(No. of Vehicles)	
Three Wheelers					
Manufacturers	Domestic Sales (In Numbers)		Market Share (In Percentage)		
	April-February		April-February		
	2013-14	2014-15	2013-14	2014-15	
Atul Auto Limited	33,838	37,013	7.71	7.56	
Bajaj Auto Ltd	1,70,647	2,17,104	38.89	44.35	
Mahindra & Mahindra Ltd	56,309	51,956	12.83	10.61	
Piaggio Vehicles Pvt Ltd	1,54,278	1,56,767	35.16	32.02	
Scooters India Ltd	12,202	10,155	2.78	2.07	
TVS Motor Company Ltd	11,533	16,549	2.63	3.38	
Total	4,38,807	4,89,544	100.00	100.00	



**SUGGESTIONS SUBMITTED BY THE ASSOCIATION OF INDIAN FORGING INDUSTRY
AS PRE-BUDGET 2015-16 MEMORANDUM**

1. TECHNOLOGY UP-GRADATION SCHEME

One of the felt-needs of Indian forging units is to keep up with the technological progress in the industry. However, as the industry is capital intensive many of the units particularly those in the small and medium sector are unable to bear the financial burden of additional investment. It is therefore proposed that a Technological Up-gradation Scheme be introduced for the forging industry on the same lines as for the textile industry. Among other things this would enable the forging units to avail of bank loans at approximately, say, 5% lower than the market rate towards acquiring modern technology. This would in turn make the Indian forging industry more competitive in the international market.

It is proposed that forging units, particularly the SMEs, should also be allowed to import on concessional terms, new or used machinery of not more than 10 years, of the following types.

- i. Forging press
- ii. Induction heater
- iii. Cross roll wedge forging equipment
- iv. Shearing machinery
- v. Shears with automatic loading system
- vi. Circular sawing (only new)
- vii. Trimming process - multipurpose
- viii. Material Transfer systems including robots

2. MINIMUM ALTERNATE TAX (MAT)

The MAT was introduced in 2007 to tax companies making profits but with no significant taxable income. However, the current rate of MAT of 18.5 percent is quite high and has impacted adversely the cash flow of companies who otherwise have low taxable income or have incurred tax losses. The Finance Act, 2011 broadened the scope of MAT by bringing Special Economic Zone (SEZ) units under the ambit of MAT thereby significantly diluting benefits offered under the popular SEZ Scheme. It is therefore suggested that

(a) MAT rates be reduced substantially and the basic rate of MAT should be fixed at 5 per cent. To attract more industrial and infrastructural investments, MAT on SEZ units should be abolished; and (b) Companies be allowed to set-off entire past book losses including unabsorbed depreciation before they are subjected to MAT.

3. REPLACEMENT OF VEHICLES

The growth of the automotive industry (two-, three-, four - , and more, wheelers) through its multiplier effect has the potential to give a boost to the national economy. With a view to encouraging the growth of the automotive sector and taking note of the recent judgement of the National Green Tribunal, it is suggested that it should be made attractive for owners to scrap vehicles, both passenger and transport, of more than 15 years of age. One way of doing this is to allow the owner of such a vehicle to surrender the vehicle to the manufacturing company and be eligible to purchase a new vehicle with zero excise duty or at most 50% of the prevailing excise duty.

4. EXCISE DUTY ON VEHICLES

Excise duty on all kinds of vehicles, more particularly the transport vehicles (both passenger and goods), should be reduced by a flat 5%. Such a step can be expected to raise the demand for vehicles which in turn by a multiplier effect lead to a higher growth of the economy.

5. RENEWABLE ENERGY AND ENERGY EFFICIENT PRODUCTS

Considering the critical power situation in the country, reforms are urgently needed to encourage projects that seek to produce renewable energy. Measures need to be taken to upgrade solar energy systems, and make solar power cheaper and popular. Similarly, the use of energy efficient products should be encouraged; concessions may be given to the manufacture and consumption of such products.

AIFI CORNER

Managing Committee Meeting at Chennai on 20th December 2014



Northern Region Meeting at Ludhiana on 18th December 2014



Training Program at Ludhiana on 18-19th December 2014



Western Region Meeting on 28th November 2014



Western Region Meeting on 26th December 2014



Western Region Meeting on 30th January 2015



The Advanced Forming Research Centre
 would like to invite you to the
13th INTERNATIONAL COLD FORMING CONGRESS
 Wednesday 2nd — Friday 4th September 2015
 Glasgow, United Kingdom



INTRODUCTION

Held every 5 years since 1955, it is a great pleasure to inform you that the 13th International Cold Forming Congress will be held from Wednesday 2nd — Friday 4th September 2015 in Glasgow, United Kingdom. The conference is aimed at providing industry experts and stakeholders with an understanding of progress in cold forming in the last five years, and possible forward direction in the next.

The Steering Committee has chosen **Achieving step changes in cold formed product weight and process flexibility for future products** as the main theme of the conference and will address the following areas:

Cost effective manufacturing of lightweight components
 Press and machine technologies for process flexibility
 Modelling and simulation to support rapid change

Enabling cold forming processes to serve high demand applications
 Flexible and sustainable cold forming processes

CONFERENCE FEES

Early bird discount fee: £520, when booked on or before 29th May 2015.
 Delegate registration fee after 29th May 2015: £600
 AFRC or ICFG Member fee: £520

Optional Extras:

Study Tour (Wednesday 2nd September 2015): £80
 Accompanying person fee: £325

SUPPORT THE CONFERENCE

Sponsorship Packages:
 Gold Sponsor: £5,000
 Silver Sponsor: £3,000

Exhibition Package:

Exhibitor package: £1,400

For information on what is included in the fees, sponsorship and exhibition packages and to register, please visit the **Conference Registration** page of the website.

VENUE

The University of Strathclyde's state of the art **Technology and Innovation Centre** in the heart of Glasgow.

ACCOMMODATION

Glasgow City Marketing Bureau is the official accommodation provider of the conference and has negotiated specially discounted rates with a wide range of hotels in close proximity to the conference venue.

To view the list of hotels available and reserve your accommodation, please visit the dedicated 13th ICFG page on the **Glasgow City Marketing Bureau** website.

CONTACT US

You will find further information on the **AFRC's website**. If you have any questions, please contact us:
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