

Environmental, Social & Governance Research



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“ Nuclear fallout –

Germany's new energy policy cost impacts ”

07
2011

Overview

Based on our thematic ESG analysis framework (see: *The Halo's Creed*, 5 November 2010), we are taking a closer look at Theme 1 (Socio-economic development – Eco-efficiency) in the context of Germany's new energy policy and its cost impact on German corporates through higher electricity prices. The following report outlines key sector views within our covered German equity universe.

Any kind of cost increase is obviously not welcomed by any company. However, talking to a number of listed German companies, the impact of rising electricity costs seems to be limited. For most companies, even industrial companies, electricity costs are only a low single-digit percentage of sales, which is further mitigated by the fact that most companies produce globally. Even for some energy intensive industries, higher electricity costs might have a lower impact than assumed at first glance. This is due to these companies generating electricity from their own power plants. In this case, electricity costs increase only due to higher prices for gas and coal, driven by higher demand. The impact of the changed energy policy will be felt by small companies (without their own electricity production) or companies with thin margins, which are hurt more in relative terms by any additional cost increases. However, the full impact is much more complex. The changing energy mix is just one element of a trend toward more sustainable economic growth in many ways. In this regard, new business opportunities will arise. The following comments have more the character of anecdotal evidence than a complete discussion of all consequences of the stopping of nuclear power generation in Germany. However, they highlight the general impact in a much broader sense than just rising input costs.

- **For companies, indirect effect more important than direct electricity cost increases:** 1. accumulation of electricity cost increases throughout the full value chain (not only in the production step of a single company), 2. negative impact of consumer spending due to higher energy bills, 3. long-term expansion of capex re-allocated to other countries.
- **Measures to increase energy efficiency could offset negative cost impact:** By assessing all negative factors of incremental electricity/energy costs, it should not be forgotten that the cessation of nuclear power generation is bundled with additional actions to offset the rise of CO2 emissions that would otherwise occur. These measures to increase energy efficiency and intensify the use of alternative energy sources, as well as the general trend towards green products, also offer opportunities for additional business. These effects could outstrip the negative impact of higher energy costs in Germany. This is not least the case, as the trend of a changing energy mix is by no means an isolated German issue and solutions for energy efficiency can therefore be sold worldwide.
- **Sustainability and green products gain in importance:** The efforts to change the energy mix support the general importance of sustainability. End-customers will be more focused on bio-based/green products, which help to reduce CO2 emissions.

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Utilities

Trouble ahead. Apart from the obvious consequences of seeing their earnings hit by the loss of nuclear output from the early nuclear phase-out, the other main impact of Germany's new energy policy for utilities is on power prices. Irrespective of what some politicians claim, nuclear can't be replaced by renewables. Not until electricity storage on a larger scale becomes a reality, which is a long way off.

- **Merit order shift:** The shift in the German merit order, as a result of taking 8.4GW of nuclear capacity out of the market, caused power prices to rise some EUR 6-8/MWh across the curve. The parallel shift does not reflect potential tightness in the supply/demand balance, which seems unreasonable to us (see: *E.ON/RWE – Merit order shift*, 27 April 2011).
- **Reserve margin getting tight:** If German electricity consumption were to grow by 2%-2.5% per annum over the next few years, the system could already look tight by 2013-14. At 1.5% per annum demand growth, new capacity would be needed by 2015. Only if demand were to grow closer to the long-term average of 1% – a somewhat harsh assumption given that German electricity consumption is still below pre-crisis levels and grew by 4% in 2010 – would the system not see tightness before 2018.
- **Subsidy junkie:** Forcing an avalanche of renewable capacity into the European electricity market by way of generous subsidies could turn out to be one of the less impressive examples of political interference in competitive markets. Without subsidies the renewable capacity would not have been built, as power prices simply weren't high enough to offer an adequate return. However, now that they are in the market and run as must-feed, they are limiting the number of hours other capacities can run and are depressing clean dark and spark spreads. Current spreads would not encourage new built, but renewables are unlikely to let power prices go to new-entry level. A perfect Catch 22 situation, which, in our view, can only be fixed by throwing more (public) money at the problem. Having used subsidies to create the problem, the government will have to use further subsidies, this time in the form of capacity payments, to rectify some of the unintended consequences of the first round of subsidies. (see: *E.ON/RWE – No peace at last*, 29 June 2011).
- **Grids the biggest bottleneck?** The volatility from renewables feed-in is making it very challenging for grid operators to balance the grid. The existing infrastructure has to deal with volatility and flows (north to south) for which it was never built. In 2005, long before the exponential growth in renewables took hold in earnest, the German energy agency, Dena, published its first review of the German transmission grid (*dena-Netzstudie I*), which stated that 850km of new HV grids were required by 2015. As of today only 90km of this has been completed due to a tedious planning process and local opposition. The latest Dena study (*dena-Netzstudie II*) states that 3,600km of new high voltage grid are required by 2020. If the past rate of progress is anything to go by, only a fraction of this will be built on time.
- **Brown/blackouts?** We believe that the accelerated nuclear phase-out, combined with the continued backing of renewables, the slow roll-out of new grid capacity, and delays in bringing new capacity online (up to 10GW of new coal fired capacity could see significant delays due to problems with the steel used) all combine to create the real risk of brown/blackouts, possibly as soon as over the next two years.
- **Going for EUR 68/MWh.** In our forecast, we do not assume that market prices will rise to new-entry cost (which would be around EUR 74/MWh at present fuel and capital cost) but instead merely assume that German nuclear closures, over-investment in renewables and under-investment in grids, will severely test the system and bring a risk premium back into the power price.

Solar sector

Solar can't benefit yet from energy revolution due to high cost level. The u-turn of Germany's energy strategy with a nuclear exit in 2022, created positive sentiment for the solar sector. However, the government's Renewable Energy Law (EEG) draft, which will be implemented in January 2012, contains no change in favor of solar energy.

- **Solar not mature enough yet.** 7.4 GWp of new installation volume in 2010 in Germany was double the government's target range of 2.5-3.5 GWp and increases pressure on subsidy cuts. Related high subsidy payments are guaranteed for the next 20 years and put additional pressure on consumer bills.
- **Sector fundamentals are challenging** with double-digit price and margin pressure in 2011. This reflects, on the one hand, global overcapacities driven by aggressive Asian competitors and, on the other hand, a transition phase as growth will have to be driven by new volume markets outside Europe.
- **Grid parity implies ongoing margin pressure.** Grid parity, which makes solar energy competitive against traditional energy sources, is expected over the next 2-5 years, but implies margin pressure due to challenging cost and price levels for European solar companies.

Capital Goods

The electrical engineers should be winners from the proposed changes. The nuclear baseload capacity will need to be replaced, most likely with gas turbines, where Siemens ranks No. 2 globally, behind GE. Siemens has just launched a new generation of turbines, the H-frame, which is being tested in a plant operated by and to be transferred to E.ON.

- **Increased investment in (offshore) wind should also benefit Siemens,** which is the global No. 1 in the offshore segment and the only company that can offer an integrated solution including grid connection, automation and financial package.
- **Increasing renewables to 35% of the mix by 2010 will require a substantial build-out of the electricity grid.** Siemens as the No. 2 globally, behind ABB, should be a major beneficiary from the construction of new power lines (assuming Germany's complex planning laws can be amended).
- **All these investments will need to be paid for and as a result electricity prices are likely to rise significantly.** Energy efficiency will become an even more important demand driver, coupled with a greater push by the EU Commission to achieve its 2020 target for a 20% increase in energy efficiency. Siemens has a broad portfolio of energy efficiency products and solutions for industry (e.g. variable speed drives), buildings (HVAC, lighting controls) and smart grid applications.

Semiconductors

We also see semiconductor technology, in particular power semiconductors and LEDs, as winners from a trend to higher energy efficiency. Power semiconductors are increasingly used to reduce power losses in various applications ranging from power generation (wind/solar), power transmission (HVDC) to power consumption (cars, industrial drives, power suppliers for consumer electronics and white goods, etc.). While LED chips are already widely used in TVs to reduce power consumption, the technology is just starting to penetrate the general lighting market. As manufacturing costs of LEDs on the one hand, and the lighting performance of LEDs on the other hand, is steadily improving, we project an increasing penetration in general lighting over the coming years.

- We believe that German semiconductor maker **Infineon (Buy, target price EUR 9.00)** is at the sweet spot of the trend for power efficiency. Infineon has been the technology as well as the market leader for power semiconductors (see our research from 19 May *PCIM feedback: Leading innovations in power semiconductors*). As power semiconductors are responsible for the major part of Infineon's sales, we believe that "The New Power House" (see our research from 17 September *The New Power House*) will be able to grow sales at an annual rate of 10% after the cyclical tailwind has slowed down.
- While **AIXTRON (Hold, target price EUR 26.50)** has been the leader in manufacturing equipment for LEDs for many years, we see the risk that order intake will slow down in the second half of 2011 and through 2012 due to overcapacity. We believe overcapacity has been prevailing since the middle of 2010, which resulted in numerous profit warnings and weak earnings reports from LED semiconductor makers. The latest being from SemiLEDs on 7 July. As a result we project lower capex of LED chip makers, which are AIXTRON's customers, in 2012. Accordingly, we have modeled in a decline for AIXTRON in 2012, whereas consensus is projecting further growth.

Chemicals

Chemicals, as an energy intensive industry, are affected by higher energy/electricity costs. However, most of the negative impact can be mitigated and, with innovative solutions for energy efficiency and renewable raw materials, the sector might profit long-term from the change of the energy policy. Chemical companies usually have energy costs of 5%-12% of sales. Due to the high need for energy in the form of electricity and steam, the large chemical companies own their own power plants at their large sites. In these cases, rising electricity costs will not be felt, the indirect effect of rising gas costs would be an issue (in the case of BASF, however, its own gas production does outstrip gas consumption in the chemical business and, therefore, a rising gas price would actually be positive). This is obviously not the case for mid-size companies and smaller sites. Rising electricity costs can therefore be more easily mitigated by the large listed companies with a global network of sites. The direct earnings impact is therefore negligible. This would obviously change if the revised electricity policy has an impact on GDP growth or results in industrial companies moving to other continents (within Europe would not be an issue). Future expansion investments in energy-intensive value chains like the chlorine industry will be less likely to be made in Germany and the existing plants might be the first to become uncompetitive in an adverse economic environment and therefore to be mothballed or even shutdown.

- **Energy efficiency/CO2 emission reduction:** The chemical industry offers a broad range of products that would profit from energy efficiency measures: insulation materials (PUR, EPS), weight reduction (plastics substituting metals), reduced fuel consumption (green tire), LNG/CO2 storage/clean coal (industrial gases), energy storage (fuel cells, lithium batteries), catalysts/filters, fuel additives, etc. Within the chemical industry, new processes (for example Bayer's Oxygen Depletion Cathode technology reduces energy consumption in chlorine production by 30%) or new catalysts that improve the efficiency of chemical production. BASF defines "Climate Protection Products" as products which reduce twice as much CO2 emissions as they consume during the production and life of the product. Such products already generate 12% of BASF sales.
- **Renewable resources:** The change from fossil raw materials to renewable resources is an intense R&D topic for essentially all chemical companies. Currently, organic chemistry uses mainly oil and gas as the source of the required carbon molecules. The starting point could also be renewable raw materials. The white biotech/fermentation technology was the main reason for the acquisition of Danisco by DuPont. Major projects are running at DSM (succinic acid, 2G biofuels), Lanxess (Gevo cooperation to produce bio-based isobutene), Solvay (bio-based production of ethylene and epichlorhydrin), BASF (bio-based plastics Ecovio, cellulose based chemical building blocks, bio-based succinic acid), KWS (special biogas corn and sugar beet varieties), Clariant (Süd-Chemie's technology for renewable raw materials), AkzoNobel (takeover of IBT's sustainable chemistry technology)
- **Green products:** These are products, which are seen by end-consumers as eco-friendly. Examples are biodegradable plastics, bio-based plastics and other products, solvent free/reduced plastics, etc.

Automobiles & Parts

- **Based on our calculations, direct electricity expenses range from 0.5% to 1.4% for OEMs, but up to 4% for suppliers.** The estimates are based on the total amount of electricity the individual companies use for their production. As most companies are producing a substantial part outside Germany (especially suppliers) the real effects are limited. BMW produces approximately 55% in Germany, Mercedes-Benz 65% and VW 30%, therefore, only these production sites would be impacted by rising energy prices. A 10% increase in electricity prices could result in burdens which are between 1%-1.5% of the 2011 EBIT estimates. The potential impact of indirect burdens coming from higher steel or aluminum prices, as both are energy intensive raw materials, can't be quantified currently. On the one hand, there is the potential of relief for energy intensive industries being discussed by the German government and on the other hand, one can not assess how much of the higher input costs will be transferred to the OEMs.
- **Energy efficiency is a key topic for the industry:** The industry has been confronted with higher raw material prices for a few years now, and has found many ways to compensate for these rising input costs. Most input factors have increased in 2011, including steel prices, plastics and rubber. BMW and Mercedes have budgeted for higher raw material costs of between EUR 400-800mn. Concerning the use of electricity, BMW is a good example of how the problem can be handled. In 2010 the total use of energy was reduced by 380,000 MWh, despite the fact that production increased by 17.7% to 1.48mn units. The energy per vehicle produced fell from 3.28 MWh in 2006 to 2.75 MWh in 2010, i.e. by 16%, despite the fact that today the share of larger vehicles is higher than in 2006. Due to the higher public awareness of sustainability, the German premium OEMs in particular, put a stronger focus on energy efficiency. This is valid not only for the products which have to fulfill the 2012 CO₂ emission regulation of 140g/km, but also for the whole production chain. Sustainability is a key factor for the future, especially for premium manufacturers.
- **Technological competence will offset some of the direct burdens from higher energy prices for the suppliers.** Parts suppliers should be relatively more heavily affected by rising energy prices compared to the OEMs, as absolute energy costs amount to up to 4% of sales. Even though suppliers increasingly focus on energy efficiency in the production process too, their chances of directly offsetting higher costs short-term are limited due to the high degree of automation (would require investment in more efficient machines) and limited possibility to switch to generating electricity themselves as most OEMs already do. However, we also see opportunities arising for the German supplier industry from the gradual shift to more sustainable, "green" vehicles. Their technological edge should enable them to even gain market share on the way to the zero-emission car. Firstly, many suppliers can offer OEMs solutions/systems/parts for more fuel-efficient vehicles and engines (with Continental being an excellent example as >50% of Automotive products are among the 25 fastest growing technologies). Secondly, they should benefit from the regulatory/public pressure for OEMs to reduce fuel consumption and, hence, CO₂ emissions (e.g. ElringKlinger -> heat shields, turbocharger parts; Bertrandt -> OEMs focusing on this topic in their R&D budgets). Consequently, we see excellent chances for many German suppliers to mitigate the impact of higher energy costs by higher growth rates.

Machinery

- **Electricity expenses range from 0.5% to 1.1% of group sales:** The sustainability reports of our small-cap industrials disclose an electricity consumption of 30 to 65 MWh/year, per EUR 1mn in sales. Assuming an electricity price of EUR 0.17 per kWh, electricity expenses would range from around EUR 5,100 to EUR 10,050mn per EUR 1mn in sales. The corresponding impact on operating profitability ranges from 0.5% to 1.1% of sales.
- **Trend towards increasing material costs:** Since suppliers face higher electricity prices they will try to pass on higher input costs to their clients. This development could result in generally higher input costs. Costs of materials for our small-cap industrials range from 44% of group sales to 65% of group sales (average level of 53%). Against this background, medium-term profitability targets might become more challenging in the years to come.
- **Opportunities for market share gains:** On the positive side, higher raw material prices will support demand for energy-efficient capital goods. Companies such as Deutz, Jungheinrich, Kronos and Wacker Neuson focus their R&D activities on the development of energy efficient vehicles and equipment. Increasing raw material prices will provide opportunities for market share gains to some of these companies.

Steel & Metal

Our rough calculation for the average cost components of steel production on a blast oxygen furnace (BOF) in 2010 were roughly 30% each for iron ore and coking coal, 10% each for scrap and labor, 8% depreciation, 4% interest and 12% for alloys, energy and others. Therefore, energy is responsible for less than 10% of total costs on average. Rising costs in Europe and Germany in particular could lead to rising steel prices which could then lead to a rising import threat or declining margins. Given the structural excess capacity in Europe, we believe that this will have a negative impact on the P&Ls of the companies. But we have to differentiate among the companies. The more the facilities concentrate on high quality niche products, the more they are able to pass on these cost increases to the customer.

- **Steel companies are partly self-sufficient in terms of electricity.** Steel production in blast furnaces produces a lot of gas emissions which can be used for the production of electrical energy. Every modern steel plant operates a reasonably efficient power plant which, for the most part, can produce enough electricity for the BOF and part of the downstream activities. Companies with electric arc furnaces have to buy most of the electricity on the market if they are not directly linked to a BOF (Salzgitter).
- **No investments in additional steel capacity.** The fact that some steel representatives have said that they will not invest further in European facilities, due to the uncertainty surrounding political decisions, is hardly a surprise. Since 2005 ThyssenKrupp, voestalpine, Salzgitter and other European companies have invested heavily in removing bottlenecks, improving quality and, in some cases, additional crude steel capacity. Most of these investment programs are now coming to an end and there is no need for additional capacity, given the low underlying growth of steel consumption in mature markets like the EU (at or slightly below GDP). After the completion of their European investment programs, the companies are mainly looking for growth outside of Europe. ThyssenKrupp made a huge step with the construction of a steel plant in Brazil which delivers slabs for the downstream capacities in Europe and has room for expansion.

- **Currently it seems that there will be a mostly free allocation for the CO2 third trading period 2013-2020 for energy intense industries exposed to international competition.** The steel industry representatives are talking about a possible burden for the European Steel and Metal companies in the range of EUR 50-100bn between now and 2020, if the worst case of European and German climate regulation emerges. Currently, in our view, it looks like these numbers are far higher than the original impact.
- **Copper could profit from a change in focus.** With the increasing pressure to invest in a new grid, decentralized energy production or an increase in the number of electric cars, demand for copper should increase. We believe that this structural development will more than counterbalance the negative effect from rising energy prices for companies like Aurubis.

Healthcare

- **Healthcare companies are not an energy intensive industry.** Generally speaking, energy costs correspond to 1%-2% of total sales.
- **Energy costs for Hospital operators correspond to 2% of total sales.** Rhön-Klinikum and Helios have special initiatives in place to handle their energy costs (including water and fuel). One main contributor to cut energy consumption is the construction of new buildings after a takeover. In addition, Helios monitors the price trends on the energy exchange daily with its web-based sourcing platform, "enportal". Due to its low margin, energy costs could play an important role for the nursing care operator, Marseille Kliniken.
- **Pharmaceutical packaging has an energy intensive production process.** Glass furnaces from Gerresheimer are fired with natural gas, heavy heating oil and electricity, and are thus very energy-intensive. Energy costs correspond to 9%-10% of total sales of the company (in Germany 8%). Only half of this percentage depends directly on variable energy costs, with fixed costs such as taxes accounting for the rest. Gerresheimer tries to offset this energy risk via hedging transactions (100% for 2011 is hedged). Additionally, there are various strategies to cushion the trend in energy prices. In Moulded Glass, the company has introduced a production cost index in North America, with the aim of achieving energy cost adjustments via higher unit prices. In Plastic Systems, price escalator clauses allow it to pass on higher raw material costs to customers with a time lag of 3-6 months. With changing energy policy, we anticipate an increase in the natural gas price, which should trigger more efforts to pass on the additional costs to clients.

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Company	Key
AIXTRON	-
Infineon	3
Deutz	-
Jungheinrich	-
Krones	-
Siemens	3
Wacker Neuson	-
E.ON	1a,3
RWE	3
AkzoNobel	3
BASF SE	3
Bayer	1a,2,3
Lanxess	2
Volkswagen	2,3
Gerresheimer	2
Rhön-Klinikum	3

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Company	Date	Rating	Currency	Target price
AIXTRON	08/07/2011	HOLD	EUR	26.50
AIXTRON	14/01/2011	HOLD	EUR	30.00
AIXTRON	01/11/2010	HOLD	EUR	26.00
AIXTRON	08/10/2010	BUY	EUR	25.00
AIXTRON	02/08/2010	BUY	EUR	27.50
AIXTRON	09/07/2010	BUY	EUR	25.00
Infineon	01/02/2011	BUY	EUR	9.00
Infineon	14/01/2011	BUY	EUR	8.00
Infineon	17/11/2010	BUY	EUR	7.00
Deutz	14/07/2011	HOLD	EUR	7.50
Deutz	01/02/2011	HOLD	EUR	6.50
Jungheinrich	14/07/2011	HOLD	EUR	32.00
Jungheinrich	01/12/2010	HOLD	EUR	28.00
Jungheinrich	27/07/2010	BUY	EUR	26.00
Krones	28/06/2011	BUY	EUR	62.50
Krones	01/02/2011	BUY	EUR	54.00
Siemens	05/05/2011	BUY	EUR	115.00
Siemens	17/03/2011	BUY	EUR	100.00
Siemens	11/01/2011	HOLD	EUR	100.00
Siemens	20/09/2010	HOLD	EUR	85.00
Wacker Neuson	01/02/2011	BUY	EUR	15.00
E.ON	30/06/2011	BUY	EUR	21.10
E.ON	01/06/2011	BUY	EUR	22.40
E.ON	31/03/2011	HOLD	EUR	22.20
E.ON	17/01/2011	HOLD	EUR	22.60
E.ON	24/11/2010	HOLD	EUR	21.80
E.ON	08/10/2010	HOLD	EUR	20.40
E.ON	14/09/2010	HOLD	EUR	25.10
E.ON	18/08/2010	BUY	EUR	29.10
RWE	30/06/2011	HOLD	EUR	39.30
RWE	01/06/2011	BUY	EUR	47.00
RWE	31/03/2011	HOLD	EUR	46.30
RWE	09/03/2011	HOLD	EUR	45.80
RWE	24/11/2010	HOLD	EUR	48.90
RWE	08/10/2010	BUY	EUR	55.30
RWE	14/09/2010	BUY	EUR	60.40
RWE	18/08/2010	BUY	EUR	63.90
AkzoNobel	28/06/2011	HOLD	EUR	48.00
AkzoNobel	07/10/2010	BUY	EUR	60.00
AkzoNobel	27/07/2010	BUY	EUR	59.00
AkzoNobel	07/07/2010	BUY	EUR	56.00
BASF SE	14/04/2011	BUY	EUR	77.00
BASF SE	20/01/2011	BUY	EUR	74.00
BASF SE	29/10/2010	BUY	EUR	67.00
BASF SE	10/09/2010	BUY	EUR	54.00
BASF SE	01/07/2010	BUY	EUR	53.00
Bayer	24/11/2010	BUY	EUR	78.00
Bayer	16/11/2010	BUY	EUR	64.00
Bayer	07/10/2010	BUY	EUR	59.00
Bayer	07/07/2010	HOLD	EUR	52.00
Lanxess	17/05/2011	HOLD	EUR	64.00
Lanxess	18/03/2011	BUY	EUR	61.00
Lanxess	15/12/2010	BUY	EUR	64.00
Lanxess	12/11/2010	BUY	EUR	62.00

Lanxess	17/09/2010	BUY	EUR	47.00
Lanxess	10/08/2010	HOLD	EUR	42.00
Lanxess	01/07/2010	BUY	EUR	41.00
Volkswagen	08/10/2010	COVERAGE IN TRANSITION	EUR	
Gerresheimer	15/07/2011	BUY	EUR	40.00
Gerresheimer	12/01/2011	BUY	EUR	37.00
Gerresheimer	15/07/2010	BUY	EUR	33.00
Rhön-Klinikum	05/10/2010	BUY	EUR	22.00

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A **Buy** is applied when the expected total return over the next twelve months is higher than the stock's cost of equity.

A **Hold** is applied when the expected total return over the next twelve months is lower than its cost of equity but higher than zero.

A **Sell** is applied when the stock's expected total return over the next twelve months is negative.

We employ three further categorizations for stocks in our coverage:

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Overweight: We recommend having a higher portfolio exposure in the name as the respective reference index (the iBoxx index universe for high-grade names and the ML EUR HY index for sub-investment grade names).

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Instrument level:

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