

J.P. Morgan Chemicals
Jeff Zekauskas Moderator
Fireside Chat with Linde COO Sanjiv Lamba
June 16, 2021; 10:00 AM ET

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Operator:

Much of this conference call may also be reproduced in J.P. Morgan research. If you have any objections, you may disconnect at this time. At this time, all participants are in a listen only mode. I will now like to turn the call over to your host, Mr. Jeff Zekauskas, with J.P. Morgan. Please proceed.

Jeff Zekauskas:

Hi, good morning, this is Jeff Zekauskas. I cover North American Chemicals for J.P. Morgan. It's my pleasure this morning to introduce Sanjiv Lamba, chief operating officer of Linde PLC. Sanjiv began his career at Linde in 1989, in India, in finance. He was the long standing head of Linde AG's Asian operations, and served as a member of the executive board of Linde AG. The form of our discussion will be a fireside chat, but if you have a question that you would like to pose, please email me at jeffry.zekauskas@jpmorgan.com, or submit your question through the question cue on the dashboard, and I will ask them. I'll weave them into our chat.

Jeff Zekauskas:

Sanjiv, welcome. Thank you for coming to speak with us today. My first question is, how did an Linde AG guy, come to be the Chief Operating Officer of a merged company with Praxair? How did you accomplish that?

Sanjiv Lamba:

Thank you, Jeff, and it's great to be with you this morning for this chat. Jeff, I'm going to get a little bit lost as I try and answer that question, because my view is, this isn't about a Linde guy in the way maybe you've described it. I'd say, today maybe we think about ourselves, as all of us as being Linde guys and girls of course, but the way I'd like to address that is, when you think about any senior leadership position, the things that you're looking for and I'm expecting this is what Steve and the board would have thought about, is you're looking for leadership, having me demonstrate it, a track record on that.

Sanjiv Lamba:

You're looking for people who have an impact across the business, people who move the needle, and you're looking for a track record of performance. Again, I'm pleased to say that as I think about senior leadership positions within the business as well, these are things that I look for. Hopefully that's what I brought to the table as those discussions happen for me to be here today, having this conversation with you.

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Jeff Zekauskas:

Are the incentives of the new Linde PLC very different than the incentives of Linde AG, or are they quite similar?

Sanjiv Lamba:

I'd certainly say they're different. I would also say Jeff, that there's a lot more talk that goes into them. One of the things that I think makes Linde PLC today, can motivate the organization to get to the results with delivering, and hopefully meet the expectations that we've set out there, is the fact that we're able to align that compensation, and the philosophy of pay for performance runs right through. It goes from the top, right down to the guy who's filling a cylinder, or who's delivering product, or who's offering a plant.

Sanjiv Lamba:

We've been able to do that by aligning the interest of our shareholders and investors, to the interest of the senior leadership team, and cascade that down across the business. That's a fundamental difference, having that clear alignment and paying for performance, that create the motivation levels and the energy that you need in the organization to be able to deliver the results that we're doing today, and look forward to doing in the future.

Jeff Zekauskas:

How do you come from Linde AG and working with Steve Angel? How does your vision of the company overlay with Steve's, or in what way is it a different take on things?

Sanjiv Lamba:

That's a great question, Jeff. I'm going to take a step back and just try and at least articulate the vision. Then we'll talk about how it's aligned or where it overlaps. When I think about Linde PLC today Jeff, what is our vision? What do we want to be? We want to be the best performing gasses and engineering company. Best performing in every aspect of our business. We are ambitious, as you know. When we put our minds to it, we want to achieve the goals we set for ourselves. We try to capture that in our vision by staying best performing.

Sanjiv Lamba:

Whether it's on our safety performance, whether it's on our financial performance, whether it's in gross, whether it's in how we work and deliver our sustainability goals, we want to be the best performing gasses and engineering company. That's the starting point of the vision that I believe is fundamentally important, but we also want to be leaders in innovation and sustainability. We believe innovation and sustainability, innovation as you know is in our DNA. Founded by Dr. Carl von Linde, an innovator 140 years ago, and that DNA is something that we've managed to preserve and hold onto. If anything, propagate across the organization.

Sanjiv Lamba:

Innovation and sustainability leadership is important to us for a number of reasons. One, because we believe that our approach to how we engage and support our customers, how we work within our

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communities, where we operate and more broadly we set this mission statement for ourselves as well on making our world more productive. It's about how we impact the world around us and preserve it for the future. Those are aspects which are quite important for me personally, and I think organizationally these are part of our vision that can make us stronger as an organization.

Sanjiv Lamba:

There's a final piece, which I know it will bring a smile to your face, which is that we like to create value. Intrinsic to whatever we do, my vision is, as an organization, we measure our success with the amount of value we create, and that value gets created for our investors. Many of them on this call, that value gets created for our customers because of the mix of technology and solutions that we bring to bat. That value gets created for our employees, because with our growth, and our continuing moving ahead, we offer opportunities for growth to our employees as well, and finally into our communities where we participate more actively and continue to find opportunities to give back where we can. Again, if I package that all together Jeff, that's how I describe my vision for Linde PLC.

Sanjiv Lamba:

Now, I'm going to disappoint you, I know, by saying that I think this is entirely aligned not just with Steve, but in fact it's entirely aligned with 73,000 people across the world. That is our vision. Each one of us takes it and puts a personal plan to it, but that's how we think about what we do every day. I hope that helps.

Jeff Zekauskas:

Yes, it does help. Thank you for that. Maybe, would you describe current business conditions? How they appeared at the beginning of the second quarter, and how they appear today. Has the world changed very much over the past three months?

Sanjiv Lamba:

Right. Maybe the way I'll try and answer that Jeff, is maybe give you a slightly geographic view of what's happening as I see it across the various segments in which we operate, and then maybe talk a little bit about our end market. Between those two perspectives, you'll get a reasonable sense of what we're seeing in our world around us.

Sanjiv Lamba:

I'll start with Asia right down on the East, and tell you that the momentum that we've seen in the first quarter, and you're reading about it every day, that momentum largely continues across most parts of Asia. There are some COVID, there are some countries which have been tackling the COVID pandemic in a second wave, and so on and so forth, but despite that, the underlying performance more broadly across Asia, continues to be strong. China, obviously very strong volumes. Pulling along at an excellent pace.

Sanjiv Lamba:

We see with electronics lens, we see Taiwan and South Korea moving along very, very well as well. Australia's had a good recovery and they're back to pre COVID levels. You would have seen that in their

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macro numbers that came out. Again, more broadly across that path, doing reasonably well. I come to the Europe or [EMIA's 00:09:45] we call that segment. Again, I have to tell you that I've been pleasantly surprised. I think the industrial recovery, we talked about it in our earnings goal that we were starting to see, and we described the hypothesis about how the industrial recovery will move forward, and we'll see the decline on medical.

Sanjiv Lamba:

For some reason, a number of investors had asked the question about, where medical oxygen volumes were, and was that a reason for the Q1 being that strong. The reality is, I mentioned it then and I'll repeat it now, that over the first quarter, we saw in most of our developed markets, the medical volumes were coming down, and many markets had pre COVID levels already. Now we can talk about the healthcare business separately and I can describe to you what the other dynamics there are, but for now, I've been pleasantly surprised. Germany and most of Europe, including Eastern Europe, many parts of Eastern Europe, showing that recover that I described was beginning in Q1.

Sanjiv Lamba:

Moving on to the Americas, very strong momentum. You read about it every day. I'm not going to belabor the point. Yes, we see some inflationary cringe around that, but again, we've been talking about inflation in the company since the beginning of the year. We've been looking at it and saying, well there's a lot of money being printed across the world. Inflation's around the corner. We've got to be prepared as a team. A lot of conversations on that happen every month in fact, when we do our business reviews.

Sanjiv Lamba:

That's how I see the strength in the Americas. The US obviously our largest market and our biggest business. Seeing very strong focus growth. I know there was a winter storm. To be honest, we took it in our stride, and I don't think in the earnings we mentioned it, but the reality is, we've seen a very strong recovery from that. Everything is looking pretty solid from the US point of view, and from Lat Am, it's a mixture of countries as you know, but despite some of the COVID impact there, we are seeing that momentum that I described again in the Q1 earnings call hold nicely, and it's good to see that.

Sanjiv Lamba:

That's a geographic view. Let me talk end markets a little bit, and again, I have to tell you, it's a rare occasion I probably say, when I would say to you that all the end markets have shown consistent and good growth. I described on the Q1 call, and everything else that you read about in the press, only suggests that that momentum is likely to continue. Let me talk about a couple of those end markets and give you a sense.

Jeff Zekauskas:

Thank you.

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Sanjiv Lamba:

Healthcare is the obvious one. I described it as being up double digits. I think 13% in Q1, sequentially up 3%. Obviously a component of the healthcare piece is the medical oxygen. I just described what we're seeing on that. Just to elaborate a little bit on that Jeff, now to say that as we see those volumes decline, the reason I've described to some investors in previous conversation, the reason I believe we'll still see that mixed single digit growth in that space is because elective surgeries which were put on hold for almost 18 months now, there's a huge back log of those elective surgeries. They're going back and action rating those surgeries across the world, and you'll see the volumes reflect that in the quarters ahead.

Sanjiv Lamba:

Electronics again have been very steady across those 18 months. I described that again for Q1, plus 10% year on year, plus 6% sequentially. I expect electronics to continue to have that momentum. You read about Intel and TSMC and Samsung making great announcements on new fabs being built. A number of them in the US as well. Contemplation of some fabs in Europe, and of course continued expansions in Asia. I would expect Jeff, talking about the back log just briefly, large part of the back log I expect this year, to come from that electronic space, because of a lot of this activity that's happening. Including a lot happening in China, which is also building its own base around that semiconductor market.

Sanjiv Lamba:

Then whether it's metals, up I think 3, and 2% probably, manufacturing up 4 and 2%, in terms of year on year and sequential, or chemicals and refining where we've seen chemicals really bounce back very strongly. In many cases, our customers running flat out on chemicals. On refining, we've seen a very strong and steady progress. It's not been, you haven't seen very significant jump ups, but very steady progress and of course the oil price as it stands today clearly supporting that. The fact that you and I are talking about traveling and meeting in person, or traveling for holidays obviously helping that cause as well.

Sanjiv Lamba:

I didn't talk about food and beverage, and I know that was a negative number in the Q1 numbers I showed, and that is really all driven sequentially around the Christmas and New Year period, which has a big swing, largely for our gist business, and the gist business is a food logistics business, and that impacted that number for Q1. Other than that, food's been very steady. It's been very stable and solid. Beverage obviously, when you shut down fast food each region, pubs and bars, then you will see an impact. I described again, I think also on the earnings call, I was describing the UK where there's obviously a lot of pent up demand for good beer, so people with these pubs opening up, we were jumping from 200 small cylinders that we'd use for carbonation, going up to 6,500 cylinders, just to give you a sense of, just a perspective of how that opening up was impacting.

Sanjiv Lamba:

That 6.5 was just marginally ahead of what we would have seen on a normal pre COVID basis. I'm going to stop there Jeff. I'm conscious that, hopefully that gives you a roundabout view on how things look like moving forward.

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Jeff Zekauskas:

If I remember correctly from first quarter conference call, we were early in the recovery, and I think Linde's general approach was, as a base case, we might be flat from here. Whereas, it seems now that your vision of the way the economy is moving, is that second quarter is sequentially stronger than the first quarter in terms of business conditions, and it sounds to me like you're optimistic that the third quarter would be stronger than the second quarter sequentially in terms of business conditions. Is that fair? Is that a correct reading of your remarks?

Sanjiv Lamba:

Jeff, as we mentioned in the earnings call for Q1 as well, we saw that, we provided an uplift into the Q2 guidance that we provided. You saw that we felt that we had enough visibility at that stage to provide that, and I think Matt uncharacteristically I have to say, as a CFO, was a bit optimistic and said hey you know what? We might be at the top end of that guidance for Q2. We're seeing, and again, you read about it in the press. You can see what's happening around and I think that momentum has held well.

Sanjiv Lamba:

Obviously we're spending a lot of time now looking at Q3 and Q4. We have our global business reviews on Monday. I'm going to spend the weekend pouring over, I think it's about 450 pages of reports that we get from everyone, and we have this very conversation you're asking me to talk about, and I'll be challenging them to understand, what are we seeing into Q3, because I know in a few weeks' time we'll have to come to you guys and have a conversation about Q3 and provide some guidance around that. We'll be having that very conversation. At this stage, I have to tell you, I am not finding things that are looking different, or which might impede the momentum that we've described in Q1 and that we reflect in our guidance for Q2.

Jeff Zekauskas:

One of the remarks that Matt made on first quarter call, is he said there was a tie between industrial gas volumes, and a rising commodity price environment. Can you speak to that remark that he made?

Sanjiv Lamba:

Sure. When Matt described that, he made a great point, and I'm going to just elaborate a little bit on that and explain to you that linkage. When you think about commodity pricing and commodity cycles, and Jeff you guys follow this very closely I know, but if you go back year on year today, it doesn't matter which commodity we pick up. Whether I go back to [inor 00:19:00], whether I go to coal, or whether I look at copper, just to name a few. Obviously oil, we know what's happening, but the reality is, all of those commodity pricing is in most cases, close to 100%. In most cases, close to double, which is all demand led. We've seen that demand come back, whether it's automotive, whether it's general manufacturing, whether it's [mexfab 00:19:31], whether it's infrastructure investments that various governments have proposed and discussion in the US is ongoing.

Sanjiv Lamba:

All of that is obviously helping that commodity cycle. The reason volumes look good for us in that commodity cycle, and when you see that commodity pricing move in that direction, is that most of our

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customers in this cycle are then running flat out to make sure that they are generating the product that the demand pool is looking to fulfill. Yeah, we see that positive correlation at that stage. That's when the conversations on pricing are the easiest with customers as you'd expect, and that correlation stands.

Sanjiv Lamba:

My only word of caution over here is, if you see a very significant commodity cycle that tends to start breaching levels where economic value is meaningful, it's at that stage you see that markets will cool off. I'm not seeing that yet, but I know pricing double. I think it does have an impact on metals customers, and I'm sure they're thinking about it. Coal price is double of what they were 12 months ago, and they're thinking about it. We just keep a watchful eye on that, because that's a leading indicator as I think about it, on how the cyclical industries in particular play out.

Jeff Zekauskas:

In the first quarter, Linde had quite a positive spread of pricing above raw material changes. With such commodity inflation, do conditions change, or does it turn out because your main input is electricity, it doesn't affect you as much?

Sanjiv Lamba:

Again, a great question Jeff. When we think about inflation, Jeff, if you think about the pillows of inflation if you will in our cost stack, we've got a large piece around electricity. You've just described that. You've also got a piece around natural gas, as an example, or we've got piece around fuels for distribution purposes, and then the last piece tends to be wages and salaries, which is a large part of that stack. The first three typically, we've got contractual structures in place to ensure that we're able to pass that on.

Sanjiv Lamba:

You're aware of that in our pricing mechanisms that we have in place, allow us not be able to do that effectively. In many cases, going on to pricing for a minute there and just elaborating that point Jeff, pricing's all about smarter point of contracting, being smart about how you describe the constraints in which your business is likely to be, and we have the ability and have done that in the past effectively, and the contracts put surcharges in with different trigger events, which allow us to go in and look at inflation. Particularly if you're seeing a particular trend.

Sanjiv Lamba:

As an example, if in a particular market you're seeing a great shortage in drivers, in some cases we've been able to put that as a surcharge through because in reality, we're having to spend higher on distribution of that product. Those bits get covered adequately on the regional salaries. You're aware that we are extremely focused and rigorous around what we call TCFC, or our total cash fixed cost. Every dollar movement over there is looked at with a magnifying lens if you will. We work our way through understanding why that is. Also, innovation in salaries is the component that we tend to manage this summer, because that's something that we can control. It's something that as management, I expect the teams to be accountable for in looking at, and managing activity.

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Sanjiv Lamba:

That piece has our attention if you will. That describes to you how we think about inflation, and how we let that then go across that business. Having said that, we're still mindful that there is inflationary environment. From a pricing perspective, two things happen. The first, that provides a trigger for a pricing conversation to happen a little more easily than you would have in a deflationary environment. It does open the door for that conversation a lot quicker than in other environments we have. That is a positive for us, because it allows that conversation then to lead to that pricing spread that you referenced earlier on.

Sanjiv Lamba:

Also, I think we are very mindful of how we manage that inflationary impact across these elements of the cost pack, and then there's always an others basket. I'm a great believer that there's nothing called others. It's always something that you've got to put a lot of attention to, so we break that down and look at the various components within that as well. We also actively manage that through our engineering business, because that's the other place where you see that inflationary pressure. Again, we have a very strong process in the insuring business that we have, that looks and actively manages that.

Jeff Zekauskas:

If I understand your remarks, it sounds like you're not stressed over inflation. That is, you have contractual structures in place that can manage some of the quick inflationary costs, and then you have pricing over and above that. Maybe Sanjiv, if you can just comment a little bit on the performance of the packaged gas business, both in the United States and Europe, in that packaged gas in the US makes you unique in the size of the operation that you've got. You're also substantial in Europe. Are those sequential volume changes positive, and if you look at them verse the same merchant trends, are they very different?

Sanjiv Lamba:

Jeff, that's a great question. I'm delighted you asked that question, because I think sometimes it's not seen as being as glamorous and sexy as the rest of our business. I'm going to spend a couple of minutes if you allow, to just talk about it and to get, and then get on to talking about the package business, the unsung hero of our business portfolio if you will.

Sanjiv Lamba:

If you think about the integrated model Jeff, and you've followed this industry for very long, so I know you understand our philosophy around our integrated business model. It's all bent around the fact that we put in these large investments for on-site customers. We have guaranteed cash flows which you generate out of this contract, and of course we provide really value added services to these customers in terms of high reliability, critical for these large processes, and safe deliver of product and meeting the requirement.

Sanjiv Lamba:

That's the way the investment typically goes in, and then down the chain, and I know Juan likes to call this gravy, but down the chain is where the value creation happens. You remember my vision about

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creating values. We see the value creation happen in the merchant side of the business, and then we go further down in the package side of the business. Lower investment, ability to really extract value through pricing, ability to leverage network density effectively, and distribute efficiently, optimize those processes. Great opportunity for us to really be able to not just meet the demands the customer has, bring the applications that we have to support them in that use, and also then get the value that we deserve as a consequence of doing all that. That's an important piece to just keep in mind as I then talk about the package business.

Sanjiv Lamba:

The other piece I'd probably say, I think our investors do not fully appreciate, I'd say, the resilient nature of the packaged business. That resilience comes from a couple of different elements. One, as you know and while I may not tell you the number, but you know that we have a substantial rental model in the package business. That's been there for I don't know, decades. When I joined the company now more than 30 years ago, I got a whole briefing on hey, we've got to do this on rentals. When you go off, this is what we need to do. Rental is very important and that builds inherent resilience over there.

Sanjiv Lamba:

It's also a very defensive part of our business because even when you see some movement and volatility on the industrial side, most of these applications and uses, still very stable through that larger volatility. Again, I think it's a very nice and defensive part of our portfolio, and remember, while I call it defensive, the reality is, when there is recovery, we can leapfrog on that recovery, because that's when the opportunity to get the volume in, and using a network density and pricing, get the value from the market, but also remember, very little incremental fixed cost, because you've got the base there. You're sitting right there, and you're just waiting to make sure you meet whatever demand generation is happening through the industrial activity.

Sanjiv Lamba:

Again, whichever way you look at it, it's a beautiful business. While you guys don't get in love with cylinders and stuff like that, but some of us in the industry love this business, I have to say. Now, let's talk about a market. I'm going to refer to the US and the European markets, which I think you asked about. In the US, we see double digit growth in the first quarter. As I said, it's a great business. We were leveraging the recovery, and we were happy to see that happen. It is good to see that on the gasses side. I think the hard goods is working very hard to keep up with that.

Sanjiv Lamba:

Just about flat out say year on year, and again in a good shape, and we saw pricing come through. All of that was really a strong performance overall from the package side. In Europe, I described that we were seeing the beginnings of the recovery. We were pleased to see that packaged business recover in that space. Both merchant and package I told you, have pleasantly surprised me. While I'm not going to give you a number today as to what I've seen thus far year to date, but they've been a pleasant surprise. The hypothesis was that we would see that industrial recovery come in and ramp, and we'd see medical oxygen volumes ramp down. That hypothesis is actually playing out exactly as we had forecast today.

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Jeff Zekauskas:

Sanjiv, if I can just go back one moment to your task as chief operating officer, from an outside point of view, investors think okay, in the packaged gas business, it's transportation of cylinders, and even getting them to various customers. In merchant gas, it's putting liquid gas into trucks, and shipping it. These businesses feel very old. It feels like people have been doing this for decades, but what Linde has done, is it's really been able to increase its returns. How do you creatively look at a packaged gas business, or a merchant business, and extract more efficiency in these businesses that have existed for decades, and there's been so much time to make them efficient?

Sanjiv Lamba:

Right. That's an enviable task you've give me Jeff there, because I've got to now make this look sexy to you guys. Let me try and attempt that. You're right, and to be honest, getting efficiency and productivity as we talk about it, if you can call it an old business in which we are working hard, it's about getting back to basics. It's about understanding what your supply chain looks like, what opportunities are there to optimize, and how do you make sure that you have a number of projects working in the business at any point in time to extract the value that you need for the margins to be where we want them to be?

Sanjiv Lamba:

Now, that's the oatmeal. That's how you've described it, and I would agree with that, that a large part of what we do absolutely has to do with getting back to basics. You know what? There are a number of angles that actually make it exciting to fill up the icing on the cake if I may describe it as that, in these businesses as well. One of them that we get very excited about, we put a lot of effort into, is applications.

Sanjiv Lamba:

Our folks are working constantly, and again, this is where the coming together of the companies has been enormously helpful because we've been able to bring enormous insight and confidence together to look at that applications landscape and say hey, what are the applications we'll be doing on the legacy practice side? What are the applications we'll be doing on the legacy lender side? Bring that into a companion that we can now use and make sure that we are leveraging that knowledge and insight fully. That's not all.

Sanjiv Lamba:

You've got folks working every day, typically with customers. The way our application development works Jeff, is we work closely with customers in their processes, improving their process, because our folks have a deep knowledge of the customer process. Again, that's the slant we bring to the merchant and package side, by creating new applications that allow us to be able to create new users for the gas, or help our customers become better at what they do, by either using a new gas, or utilizing a different application model for an existing gas they might be using. That's one way to think about it.

Sanjiv Lamba:

The other is digital. I don't know if you're going to get as excited as I do, but the reality is, this is a businesses where digital tools have an enormous impact, and whether it's the growing web presence

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that we have in the web shop that we're using and leveraging, to make transactions easier and to make the customer experience better, and at the same time remember, it's a productivity benefit. I've said this before. I think of digital and digital solutions that come as a result of the work we do in that space, as a productivity booster.

Sanjiv Lamba:

It's something that allows us to get more value, but at the same time, creates a better customer experience. Balancing those two, extremely helpful for both the merchant as well as the package side of our business. Then we're also innovating continuously in that space. Again, it's not visible to investors typically, but the reality is, we have been an industrial leader in moving the pressure of which we fill cylinders.

Sanjiv Lamba:

The reason that's important is twofold. One, it ensures our customers have gas for longer. Two, it's obviously significantly impactful on our distribution cost. Moving from 150 bar, 200 bar, 230 bar, 300 bar in cases, we are now experimenting with hydrogen at 700 bar. We are stretching the limits. Obviously always in a safe manner. Always by leveraging technology that we have. Always by introducing new packages that allow us to be able to provide this benefit directly to the customers.

Sanjiv Lamba:

There's a lot of new stuff happening, whether it's on the digital side, whether our customers, we can track on the merchant side. We can track stock levels at every customer's premise at any point in time, real time. I can get onto the net right now and figure out what my customer at point X hasn't done to the stock, and what I need to do in terms of deliveries, helping me optimize how I do that delivery portion as well.

Sanjiv Lamba:

Again, these are small initiatives. I can't give you one very large one that will excite everyone. Each one of these small initiatives has a deep impact on the business, and obviously has a good solid impact on our margins.

Jeff Zekauskas:

Thank you for that. We have a question from our investor audience about your hydrogen initiative in South Korea. I think this is a venture where you may invest over time, almost \$300 million. What our investors would like to know is, was there some kind of memorandum of understanding signed with the Korean government? What's the scope of this multi-year effort you have in South Korea?

Sanjiv Lamba:

Thanks for that question. I'd really like to spend a couple of minutes describing that. We've got these [crosstalk 00:37:06] happening in Korea Jeff. You've heard Steve say this before, and I'm a firm believer that for hydrogen to pick up, you need three things to be happening. You need regulations and government policies in place that have teeth. We have that in South Korea. We have a very strong

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incentives, and a clear roadmap that they set up for their green new deal. You need to make sure that you are working actively to bring down the cost of production and the cost of distribution in the space.

Sanjiv Lamba:

If adoption has to happen, costs have to come down significantly, and it doesn't matter what the color of hydrogen is. For widespread adoption to happen, that cost needs to be done quite significantly, and we can get into a bit more detail if you like on that. Then the final piece is, you need to have OEM's in the case of mobility as an example, to be working on trucks, and buses, and cars, and fairies, and trains to make sure that once you've got the cost down, and you've got great policies with teeth, that there is actually a vehicle for taking the hydrogen and utilizing it effectively as an energy.

Sanjiv Lamba:

In Korea, we ticked all of these three boxes. That is one thing, and the reference to the MOU, the MOU we signed last night with Gyeonggi Province of Gyeonggi-do Provincial Government, which basically reiterates our ongoing commitment. Remember, in that Province we've already spent hundreds of millions with our Samsung project. There's a deep recognition of the government there, and we will continue to spend there and invest there, and we're also building some hydrogen refilling stations, and we're working with the government on the bus refueling et cetera, et cetera. That memorandum that was reflected that happened last night, last morning Korean time, was just a reflection of that.

Sanjiv Lamba:

Let me come to the other part that I want to describe to you as to what we're really doing in terms of that investment of 300 million Jeff, which is also your question. We signed up with a partner. Again, our philosophy around hydrogen and you'll hear me say it over and over again, you guys might get bored with it, but we work in tandem with our partners. We are constantly working with OEM's, whether it's with Dimbler, or Korea whether it's with, we are working with partners to make sure that we keep peace with them.

Sanjiv Lamba:

We're not looking to build lots of assets ahead of the time before the demand comes in, but we want to make sure we're tracking that. We have a deep insight into what developments are happening and therefore we are preparing ourselves and staying ahead of the curve as a result of that working together in partnership. Those partnerships are proving to be invaluable. They are proving to be invaluable and again, in Korea, we have a strong partnership, both taking hydrogen off of PDH stream, so again we've got low carbonate density hydrogen coming off. A proper dehydrogenation unit, which we're taking, we are cleaning up, we're liquefying and we're then building this large liquid hydrogen, the first liquid hydrogen ecosystem in South Korea.

Sanjiv Lamba:

It does benefit from support of incentives and government subsidies that are linked to that, but for business case, stands on its feet, it meets our investment criteria, and we're excited that we've got a great partnership going over there and of course the continuous work that we're doing with various local and provincial governments helping build that base and the ecosystem that we believe essential for

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the growth of the hydrogen business going forward. I hope that gives you a sense of what's happening in Korea.

Jeff Zekauskas:

It does. It doesn't sound like Korea immediately wants to be focused on green hydrogen. It sounds like they have over a longer period of time, more of a commitment to use hydrogen itself and then perhaps to change the color of hydrogen gradually, over time. Is that fair?

Sanjiv Lamba:

I think that's a fair description, Jeff. I think it's not just Korea. There are a number of other countries that are also seeing, and I think it's a very pragmatic philosophy. The philosophy says, we want to be green and blue in due course, but there is a transition. A energy transition for a reason, and their view is that they want to make sure that the investment in infrastructure ecosystems necessary.

Sanjiv Lamba:

Mobility is an example in particular. It's made as early in the process, while they think about that transition and work to incentivize that transition to green, ultimately. Yes, we will see that blue and green transition happen over time, but they're not going to wait for that. They're going to build that infrastructure and ecosystem necessary to leverage that fully in the future. I think that's a very pragmatic way of looking at it. Number of countries, particularly in Asia, looking at that with the same lens I would say to you.

Jeff Zekauskas:

Do you think that if you execute well in your venture in Korea, that it can be a much larger venture over time?

Sanjiv Lamba:

Jeff, I recently joined a large forum that the government runs called the Strong Korea Forum. I made this point there as well, and I'll make it again today, just to say that my view is, our first investment in Korea is, our investment philosophy around what we do, this is modular. I expect that we will build on this investment that we have made. This is the foundation, if you will. We will continue to move forward with this, but we're also open to other partnerships in Korea, so we're not limiting ourselves.

Sanjiv Lamba:

As I said to you, I believe for the development of hydrogen and clean energy transition to be successful and effective, partnerships will be a key, and we remain open to more partnerships in Korea, number of discussions ongoing where we will look to see if we can further interest in other areas as well. We think we've got that right model, and we think our philosophy and strategy around clean energy and clean hydrogen in particular, which is driven, and recapping this.

Sanjiv Lamba:

I know you guys have heard me say this before, but if I break it down very briefly, it's about making sure we have local insight. We have local footprint, local execution of strategy, and we meet local demands.

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That's how we think about that strategy, and we firmly believe that clean hydrogen strategies are evolving and developing with very local of mind. Of course, we also are, and I remind myself this and my colleagues this often, that we have the largest installed base of assets that currently work with hydrogen anywhere in the world.

Sanjiv Lamba:

That install base Jeff, between you and me, doesn't care for the color. The trailer that moves hydrogen, doesn't care if the hydrogen is gray, whether it's yellow, whether it's a turquoise. I keep hearing of these new colors that get introduced Jeff. I don't know if you've been tracking them, and obviously they're blue and green. Our trailer doesn't really care. All it cares is that hydrogen is 500 bar in there, or my cryogenic time is going to take liquid hydrogen.

Sanjiv Lamba:

That as-is base allows us to accelerate growth in this clean hydrogen area immediately. That installed base is available today. Whether it's storage, whether it's pipelines, whether it's tankers, whether it's tanks. All of those are available to us today, and our technology around hydrogen dispensing, the best in the world. I put it up against any technology anywhere in the world, and it will win, hands down. The best technology whether it's iron and compression or whether it's on cryo farm, liquid compression. We have amazing technology, and again, we've leveraged that as well as we move ahead in this area.

Jeff Zekauskas:

I remember at the end of the first quarter, I think you said that you were assessing something like 210 or 220 different hydrogen projects. I was wondering what you thought that assessment would amount to in the end? In other words, in very rough terms, how many projects might you do? How much might you invest? Are the returns up to your standards? Can you give us some idea of what you're looking to do with it and what that might do [crosstalk 00:46:07]?

Sanjiv Lamba:

Absolutely, Jeff. Again Jeff, if you go with me, I'm going to pick up with your first and then talk about specifics and the number of projects that I referenced earlier on. On the larger picture, I just want to remind everyone on the call, on the fact that given the strength of our balance sheet, and given our willingness to invest in every good project, whether it's a 10 billion dollar project, which always gets Juan very excited, or whether it's a \$5 million project.

Sanjiv Lamba:

If it ticks the boxes on investment criteria that we've set out for ourselves, it is a project that we will invest in because we have the best suite of technologies and capabilities available in the hydrogen space, to be able to go out and build, own, operate, and deliver. We feel very strongly about that philosophy that we've set out, and we don't make a distinction between, and I know that everyone talks about mega projects, but we don't really make a distinction.

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Sanjiv Lamba:

It could be a \$10 billion project, or it could be a \$5 million project. For us, it has to meet the criteria. That's important. Having said that, let me now talk about the project itself. Since the last time we spoke, we are 238 projects. We just had our hydrogen council meeting earlier this week. 238 projects, probability rated and that's quite important Jeff to understand. If I was to look at the full capital impact of these, and remember, some of these Jeff, we will go down the path of sale of gas, and some of these, because of a host of reasons, including the risk that we see, et cetera, we may decide to go down a sale of equipment, or sale of plot.

Sanjiv Lamba:

We have the unique privilege in lender to be able to do that because of the strength of our engineering business and our ability to go in and look at it slowly, and convert that into an SOG and visa versa. 238 projects probability rated. The way the probability rating works, is we look at the projects going ahead, so we do a goal, and our ability to get the project and after consideration, being willing to continue to invest in the project, which is a guess.

Sanjiv Lamba:

Based on that go get probability rated, we were at \$3.5 billion. Therefore, all of these decisions are likely in the next three years. We will be making decisions on these projects in the next three years. What is going to happen, and I want to be realistic about this, what's going to happen is new projects will come into this pipeline, so from the 210 we're already 238, and some projects will drop off.

Sanjiv Lamba:

There will be some projects Jeff where we'll say, actually you know what? We're not comfortable doing this as an SOG. We'll move it into an SOE, or in some cases, we just don't think this is a project that we can create that value that is needed. We're going to back off this one. We will make decisions like that, that's just how the portfolio projects will look. These 238 projects are all hydrogen related. They are in mobility, they're industrial applications. They spread. They include carbon capture and decarbonizing. They are well spread across that, there are some in heating and stuff, which is really not something that I get hugely excited about, I have to say, but the industrial application, that's in our wheelhouse.

Sanjiv Lamba:

That's what we do. That's where we are awesome in what we do with our customers, and mobility. Some of the best technology piece we have, and our ability to bring that to bear, and really make a difference. All of that comes in there. Really making decisions on these 3.4, 3.5, I'm assuming that number will grow over the next three years in terms of real projects that we'll be making decisions on.

Sanjiv Lamba:

Typically, our probability rated is probably conservative. Like most of what we do, you guys probably constantly tell us that our guidance is conservative. I would say that in most matters, Linde tends to be a bit conservative.

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Jeff Zekauskas:

Yep.

Sanjiv Lamba:

I hope that helps.

Jeff Zekauskas:

It does. Very much. There are a couple of questions that I'm going to put together. Maybe this is the flip side of the hydrogen opportunity. One investor is wondering about the steam methane reformer production that you have over time, and whether the change in the global hydrogen market will jeopardize the growth rate, or lower the growth rate in hydrogen from SMR's. Or, another investor is wondering in Canada for example, there's different blue hydrogen efforts, and whether demand for gray hydrogen in some way will diminish. Is there some way that you can speak to the issue of the changes in the hydrogen market as it affects the production of traditional gray hydrogen?

Sanjiv Lamba:

For sure, and these are good questions. Let me try and address them and tell you how we feel about these.

Jeff Zekauskas:

Thank you.

Sanjiv Lamba:

Jeff, I'll take a step back and just say that in our baseline thinking, and as our investors are thinking about these topics, the one thing we must keep in mind, is that oil and related products, will be part of the fuel portfolio for decades. There just isn't an easy alternative that's going to completely change that balance. It will be diminishing part of the portfolio for sure, and into that portfolio you will find hydrogen, you'll see electrification, et cetera come in, but it will still be part of the portfolio.

Sanjiv Lamba:

But, I recognize that there is significant societal pressure. We've seen that more recently on some of the large oil and gas majors, and we know that that pressure is not going to go away. I think it's absolutely right that we're thinking about these things. What are we seeing happen in that space to try and address that question?

Sanjiv Lamba:

The one thing that we are very conscious of, and we're working with a number of customers on this as we speak Jeff, is in some cases a pivot to biofuels. As you know biofuels are a more low carbonate density in that sense. They're widely recognize as that. The LCFS pathway, in California for instance, rewards you for that, et cetera. Our customers are also looking at that, and a number of cases we're supporting them through their feasibility studies, et cetera, et cetera.

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Sanjiv Lamba:

Now, the benefit of the biofuels from our perspective is that it requires more hydrogen in some cases. Now, it does depend on the refineries. I'm not going to suggest to you that in every case, but in a large number of cases it requires more. There's more hydro treating to be done, and therefore more hydrogen requirements come as a result of that. That's one way to just understand where the refining thought processes are developing.

Sanjiv Lamba:

Obviously the other conversation that is happening and I think we must recognize this, is what are we going to do with the carbon that is currently there? Carbon capture, and storage of sequestration, is becoming a really I'd say a very real prospect. We're obviously thinking about it for ourselves, but my view Jeff, is that if we can create enough low carbonate density hydrogen, then the pressure that is there on many of these oil and gas majors, will reduce substantially because if we do a good carbon capture in storage, you can get down to 95 to 98% of the missions being captured and stored. 98%.

Sanjiv Lamba:

It takes some work. It takes some capital on the ground, and it takes good technology. Again, the good news here for our investors, is the fact that Linde has its own technology around this. We're currently developing projects in the space. We have done capture and sequestration projects over the last decade. This is not new. We do capture and upland even to date, a large part of our CO2 business has been developed on the basis of carbon capture purification liquefaction and creating the whole CO2 market that exists in the world today.

Sanjiv Lamba:

We've done this forever in many cases, and the new element to this for Linde would be, on the storage and sequestration side, maybe working with some really competent partners to develop the solutions that are essential. Now, the reason I am optimistic and the reason I think our investors should be also positive on this, is that not only is this an opportunity for me to capture and look at my own admissions, but as uniquely placed and enclaves around the world where large refining and chemical complexes are situated, we have the ability to provide a solution given that technology knowledge, and operating background on this, to allow us to be able to capture, and help with working with a partner. Help with the storage and sequestration part of it.

Sanjiv Lamba:

A carbon management solution for our customers. The reason that is important just because for us to get effective capture and sequestration to happen, you need scale. You can't do that with disaggregated amounts of CO2. To get scale, somebody needs to be there to aggregate it and of course if you have your own base load added to that, obviously makes the economic case a lot better. Now, I also have to be very clear and tell you that for this to really take off, you need some form of carbon pricing to happen.

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Sanjiv Lamba:

You've heard us talk about carbon pricing, and the range of 100 to \$150 or \$200. You constantly look at these numbers and again, as you create scale, that number obviously gets more economically acceptable if you will, but the reality is, you do need that. Today in the US as an example, we have section 45Q. In Europe, you have different regimes of carbon, carbon tax. I think thinking on this is progressing I would say quite rapidly.

Sanjiv Lamba:

Whether it's an incentive, or whether it's a tax, it doesn't really matter. Economic decisions are best made and accelerated when you've got some form of incentive like this, and that supports the economic goal as well. The incentive cannot make it, it doesn't make the entire case stand on its feet by itself, but you need that incentive to support that longer term view of what you want to do with that carbon.

Jeff Zekauskas:

Sanjiv, I think that that topic will continue the next time we do a call with you. We very much appreciate you taking the time to speak with us about overall prospects and your opportunities in hydrogen, and we look forward to speaking with you again in the future. That will close our call for today. Thank you.

Sanjiv Lamba:

Thank you, Jeff. Thank you very much.

Jeff Zekauskas:

Take good care.

Operator:

That concludes today's call. Thank you for your participation, and have a great rest of your day.

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