FOCUS ON TECHNOLOGY

Friday, February 28, 2020

CORPORATE PARTICIPANTS

FRANCESCA FERRAZZA SVP DECARBONIZATION & ENVIRONMENTAL R&D

Good afternoon, I am going to make a brief focus on research and technology development, a key activity for us at Eni both for the present business, and for the future.

At Eni, we work on a range of technologies centered around three main drivers: circular economy for completely sustainable solutions, Carbon neutrality, which includes new renewables such as advanced solar and wave energy, and CO2 transformation in useful products, And, Operational Excellence, aiming at ever improving existing business areas in terms of efficiency, economic and environmental sustainability. We will focus on some of the key technologies under development in the frame of these drivers.

Here in the picture you can see a few examples – amongst which the recently launched HPC5 supercomputer which runs all the proprietary algorithms for. exploration and reservoir, and which will be used further for new technologies. And the Inertial Sea Wave Converter, a way to exploit the largely untapped sea and ocean power.

But before we do this, let me give you some information on how we see and value research and technology development**.**

One key point of how we do research and innovation is that we work all together as a team, with an integrated and cross-fertilization approach, rather than separate innovation models for each of the business.

The R&D and technology development team is in effect at the center of the exchange of experience, problem solving and knowledge management of the company – providing experience, solutions, innovation and competences.

And talking of competences, we have the capacity to build internally the right teams, labs and assets to support current and future business needs. 1500 people are involved in R&D and over 50 pilot plants are operating, designed and realized by our r&d units. The one you see in the picture is an example - the first pilot of a bio-oil production with a proprietary process.

In developing our technologies, we can rely on our 7 proprietary centres and on a strong network of 70 research centers and universities, throughout Italy and at international scale.

And now let's have a look at three different examples of how at Eni we develop technology…

…starting from today. This is a picture of our bio-refinery in Venice, the first example in the World of a conventional refinery transformed in a biorefinery using Ecofining™ technology, an innovative process developed in house there is a second plant in Gela.

By 2021, Eni is going to have a process capacity of **around 1 million tons** per year of bio-fuels, such as Diesel, LPG, and naphtha.

The refinery is operating and development work is now concentrating on advancements.

In fact, besides being involved in deploying Ecofining™ in Italy, we are working to bring our technologies in the countries where we operate, promoting the local economy and supporting the company's geographical diversification process.

As said before, Ecofining™ is an innovative process, able to transform vegetable-oils and waste, into bio-distillates, mainly consisting in Diesel oil, called HVO (hydrogenated Vegetable Oil) a product with outstanding properties. It doesn't contain polyaromatic compounds, and has a significantly higher cetane number when compared to other diesel products, assuring lower pollutant emissions as well as higher combustion efficiency, that is to say lower CO2 emissions.

Nowadays, in line with new EU rules, we are working to accelerate the transition towards alternative feedstocks even before the EU targets set for 2030. Eni aims to eliminate first generation vegetable oils in Biofuels replacing them with more sustainable second and third generation feedstocks such as algal oil, microbial oils from ligno-cellulosic biomass or others such as castor oil, which can be grown on marginal land, in arid areas. Moreover, by promoting a circular economy industrial model, Eni is strongly committed to the use of waste as a source of energy - that's why today about 15% of the feedstock for the Venice plant is provided by Used Cooking Oil.

And now the second example

Which is the development at demonstration scale of a process to recover energy and water from urban and organic waste in a fully circular economy approach. This you see in the picture is a pilot plant in Gela (Sicily) in the refinery area and has now been operating for a full year treating 16 Tons of waste.

The Waste To Fuel technology is a proprietary technology, developed internally and protected by many patents.

The one produced is an advanced bio-oil according to the latest European Renewable Energy Directive, since it comes from waste biomass –urban waste, not in competition with food production and land usage. The Bio-oil has very interesting characteristics such as a high heating value, high

stability, very low sulphur content (less than 0,1%) which makes it compatible with the latest marine regulation IMO2020 which asks for a sulphur content less than 0,5% for marine fuels.

The process reproduces in a few hours what nature did to biomass in millions of years for producing fossil oil, with milder process conditions compared to other waste treatment processes. Starting from 100 kg of waste we can produce up to 16 kg of bio-oil, which represents up to 80% of the energetic content, and water, which makes over 70% of the starting waste and that can be reused for industrial and irrigation purposes.

With the information of the pilot, engineering work is under way for industrial application. The first plant will be realized by Eni Rewind in Venice (Porto Marghera) and will be up and running by the beginning of 2023. The plant will manage 150 kt/y of waste – the quantity produced by about 1,5 million people (a city like Milan). The amount of bio-oil produced can reach up to 21 kton/y depending on waste characteristics.

By 2023 we will start projects to build "Waste to fuel" plants with a total treatment capacity of 600,000 tonnes.

To give you a reference, every year in Italy around 7 Mton of sorted organic waste is produced with significant costs for management and disposal.

To conclude this overview on technology…

…let's have a look at the future.

We believe magnetic fusion could be the real technological breakthrough with the highest potential to respond to the world's increasing demand for clean energy .

Fusion power is a form of power generation in which energy will be generated by using nuclear fusion reactions to produce heat for energy and electricity generation. In a fusion process, two lighter atomic nuclei combine to form a heavier nucleus, and at the same time, they release energy. This is the same process that powers stars like the Sun.

The physics of this process is well understood, but to date no operating power plant using this technology still exists.

Fusion does not emit greenhouse gases (SOx, NOx) or particulate emissions.

Virtually inexhaustible fuel supply.

No physical possibility of a "meltdown" event or runaway nuclear reaction.

Eni has been a first mover in this sector cooperating with MIT from the early stage of the studies which developed into Commonwealth Fusion Systems, a spin-off working on the first magnetic

fusion plant, of which Eni holds a share. CFS will realize an innovative, compact reactor with short time-to-market, named ARC (Advanced Reactor Concept).

Eni participates in parallel R&D projects on plasma physics and fusion fundamentals launched at the MIT Plasma Science and Fusion Center.

Moreover, Eni is also contributing to this technology development together with Italian leading scientific partners, CNR and ENEA:

- With CNR, a joint Eni-CNR R&D Center was launched in Sicily on advanced modelling of plasma and materials.
- Regarding the collaboration with ENEA, Eni has just recently entered in a Joint Venture with ENEA anda University consortium called DTT company, devoted to the construction and test of heat management solutions for full scale fusion reactors.

All these initiatives will ensure Eni a privileged position in exploiting the technology. So far we have not included any industrial deployment of these technologies in our plan.

Tests are currently ongoing and expected to be completed in the next 4-5 years, after which we will know how the road to industrialization can be drawn.

Thank you very much for your attention.

"Innovative Technology's Conference Call"

"Q&A Workshop 1"

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HIMONA IRENE - Societe Generale

GAMMEL JASON - Jefferies

RAINFORTH LYDIA - Barclays

MASSIMO BONISOLI – Equita

KENNEY JASON – Santander

SYME ALASTAIR - Citi

POZZI ALESSANDRO – Mediobanca

OPERATOR: Good afternoon ladies and gentlemen and welcome to Eni's Innovative Technology's Conference Call, hosted by Ms. Francesca Ferrazza. You will now have the opportunity to ask questions by pressing "*" and "1" on your touchtone telephone, to remove yourself from the question queue, please press "*" and "2." I will now hand you over to your host to begin today's conference call. Thank you.

FRANCESCA FERRAZZA: Good afternoon and welcome. We are ready to have the first question.

OPERATOR: Thank you, madam. The first question is from Oswald Clint of Bernstein. Please go ahead.

OSWALD CLINT: Hi Francesca. Could you talk a little bit about the pricing of bio-diesel, LPG, bio-naphtha. Just to get a sense of how that compares to the more conventional products, please. Then just on bio-jet, which you spoke about as something you are working on. I do know one of your peers who is producing it, but I don't think it is very profitable so I wonder if your offering is going to be profitable, that's in terms of bio-jet component? And then, secondly, my broader question was on your Ecofining overall. I wonder if there is an opportunity to license or kind of sell this to other companies. I remember you did it with your slurry technology to China before. Is that a business opportunity at this point? Thank you.

FRANCESCA FERRAZZA: Thank you very much for the questions. I would ask Pino Ricci to answer the first one.

GIUSEPPE RICCI: Good afternoon. About the HVO, bio-LPG and bio-Naphtha, the value of these products are in premium compared to gasoil, and the premium today is related to the obligation in force in Europe because of the European Red law. The law foresees a mandatory 10% of renewable energy in the transport together with the fuel directive quality that for 2020 asks a minimum of 6% CO_2 reduction in the transport. So, from the combination of these 2 laws, the added-value above the gasoil is around $500, $600 per tons. This for the market that we are covering in Europe today. In other markets like U.S., there

are different rules, depending on the locations. There is a premium in many states and an additional very high premium in California. For this reason, our intention in the development plan of bio-refineries is to enter also in the U.S. market.

About the jet, in our plant, we are developing the modification requested in bio-refineries plants to start producing bio-jet at the end of the plan. Today, the premium for the jet is not so high, because according to the European law the incentive for jet is around 100 dollar per ton, not sufficient to cover the cost. But of course we know that the bio-jet is the only way to de-carbonize the aviation transport and the jet coming from process like Ecofining - our process where we introduced hydrogen removing oxygen from the vegetable oil or waste oil- is very clean and suitable for aviation system that is a very delicate market. So we expect that in the next future this market will grow very well not only in Europe, but all around the world.

FRANCESCA FERRAZZA: Licensing, the last question.

GIUSEPPE RICCI: Our license Ecofining for the bio-refinery will be used also in other new plants and our license is developed together with Honeywell UOP.

FRANCESCA FERRAZZA: Next question, please.

OPERATOR: The next question is from Irene Himona of Societe Generale. Please go ahead madam.

IRENE HIMONA: Yes, thank you very much. I wanted to ask a similar question, but this time relating to cost and margins. So if you think about your new biofuels, you talked about the price premium. Can you talk a little bit about the cost, how does that compare with conventional fossil fuel products and hence the margin? And then secondly, thinking about the Ecofining Technology, I mean, can you give us a simple view on how it differs or how it compares with other major technologies in the market right now,? Thank you.

FRANCESCA FERRAZZA: Thank you. Thank you very much. Can we start from the second one and pass the question to Alberto Delbianco.

ALBERTO DEL BIANCO: Thank you for the question. Talking about the technology, the Ecofining Technology has very peculiar characteristics, because first of all, as a Pino Ricci said, it's very very flexible. So, the product slate can be altered according to the market. So, we can switch from HVO, the diesel component, to Bio-Jet. The real key point is that during the upgrading of vegetable oil, we are able to remove all of the oxygen, producing a pure hydro carbon mixture that does not contain aromatics and does not contain oxygen and so, for this reason, it's much more- let me say- stable than the classic FAME (Fatty Acid Methyl Esters) which is the bio-diesel normally utilized in the automotive sector.

IRENE HIMONA: Thank you.

FRANCESCA FERRAZZA: The second one.

GIUSEPPE RICCI: About the margin, of course, the market of raw material for bio-refineries is different from the market of crude oil, and are not directly connected, but on average basis, we could say that the cost of the raw material is in the range of the cost of gasoil.

IRENE HIMONA: Thank you very much.

FRANCESCA FERRAZZA: Thank you. Next question, please.

OPERATOR: As a reminder, please press "*" and "1" for questions. Once again, if you would like to register for a question, please press "*" and "1" on your touchtone telephone. Next question is from Jason Gammel of Jefferies. Please go ahead.

JASON GAMMEL: Yes, thank you very much for the presentation. I wanted to ask about the evolution of the business away from palm oil and the steps that are going to be necessary to get there? And particularly, I was interested about the scalability currently of the algal feedstock, and I'm sorry, there was another one, you

mentioned that I can't recall at the moment. How close are those for being scalable to the level that they could be a true replacement for palm oil?

FRANCESCA FERRAZZA: Thank you very much. I give this question to Giuseppe Tannoia.

GIUSEPPE TANNOIA: Okay, thank you. Thank you for the question. The technology is extremely flexible. So, this is one of the most important point of this technology. Just to give you an idea, we are studying now 180 different feedstocks that can be given as an input to this technology to obtain HVO. So, basically, I think that the point of the exit strategy from the palm oil is feasible very very easily, even using the existing advanced feedstock that today are present on the market.

Regarding the algal oil, we have a very large project that in a few -let me say- within the plan, we'll have a pilot plant. And, we obtained very interesting results with an oil content of the algae of more than 18%, 20%. So, the results are extremely interesting and we really think that the combination of the overall value of the algae in terms of protein content and oil content can give to this feedstock a real possibility of being a feedstock for the bio-refineries.

JASON GAMMEL: Thanks very much.

COMPANY REPRESENTATIVE: Okay. Thank you. Next question?

OPERATOR: The next question is from Lydia Rainforth of Barclays. Please go ahead, madam.

LYDIA RAINFORTH: Thanks. And thank you for the presentation. Two questions, if I could. The first one, I am just coming back to the infrastructure ad what enabled Eni to … [not comprehensible] about the technologies. How much of difference does the high-performance computer make to that, and how you think of what enables you today on technology side?

And then secondly, on the idea that you've got the single R&D team for all of the businesses. How long has that actually been in place, the single R&D

team? And can you give us an example of, kind of, where it made the most difference having all the team together? Thank you.

PETER SAHOTA: Hi, Lydia. We couldn't hear you very clearly. If I understood, was your first question how much has the HPC computers helped us in terms of our development of technologies?

LYDIA RAINFORTH: Yes, it was, yes.

PETER SAHOTA: And the second was around, how long we had the single organization around research and the investments role?

LYDIA RAINFORTH: Yes. Exactly, thanks Peter.

GIUSEPPE TANNOIA: Okay. Regarding the HPC is -let me say- very important in the development of our technologies, just to give you an idea, we are massively using it for example, for the fusion studies, for the studies also on the plasma physics. We are using it for the new projects on wave energy. And in general, you know, it's extremely important to have this computing capacity for very complex issues like the studies on -let me say - the new ways of producing energy. And, I have also to say that is very important for the simulation that is supporting our CCS projects where it is very important to have the capacity of modeling, the CO2 in the reservoirs, but also of modeling the interaction of CO2, in terms of chemical and mineralogical interaction with the cap rock for studying the- let me say- the overall confinement capacity of our reservoirs.

Regarding, the second point, I have to say that is really incredible how to have a unique organizational unit, with all the research, all the businesses inside is capable to give- how can I say? - To give an added value by continues intersection of the different competencies. So for example, we have projects that have born in the upstream area and that are now developed together with the colleagues of the renewable. On the other side, for example, in the CCS projects, we have all the businesses that are working together to give competencies from the downstream area to, obviously, the upstream area to

the renewables. So, I think that this is really one of the key points for our research and especially for the time to value that we have for our projects that is of about 3 years. So, I guess that this is really an extremely important point.

FRANCESCA FERRAZZA: Thank you. Next question?

OPERATOR: For any further questions, please press "*" and "1" on your touchtone telephone. At this time, there are no questions registered, madam.

PETER SAHOTA: Well, just wait a moment and see if any further questions arise.

OPERATOR: Okay. As a reminder, please press "*" and "1" for questions. The next question is from to Mr. Massimo Bonisoli of Equita. Please go ahead, sir.

MASSIMO BONISOLI: Good afternoon. Thank you for the presentation. One quick question regarding Algal Oil, if I remember correctly the Algal Oil - the most of the value of Algal Oil comes from the extract of Omega 3 fatty acid. So I was wondering, you know, how much are you depending on this value portion of the Algal Oil? How much are you depending on the value regarding the diesel component?

GIUSEPPE TANNOIA: The Omega 3 is obviously a very important point for the value of the product, but also as I said before, also the protein content of the algae is extremely important. In our bioreactors, we have been, we are capable to grow algae with a protein content of more than 67% and this gives a very high value to the product. So the overall slate of products that can be obtained from this algae is protein, oil for our bio-refineries and has more portion of omega 3, but omega 3 I would say is important but is not essential to the overall evaluation and to the overall value of the product.

MASSIMO BONISOLI: Thank you.

FRANCESCA FERRAZZA: Another question?

OPERATOR: Yes, madam. The next question is from Jason Kenney of Santander. Please go ahead.

JASON KENNEY: Thanks for the time. On magnetic fusion, a very interesting technology, obviously long term. Have you got any potential financial indicators or commitments through ENI on a net basis over the next four to five years? I understand this is obviously a very long-term technology. Do you have a scenario perhaps where magnetic fusion could be specific part of Italian grid contribution or growth in non-hydrocarbon power?

FRANCESCA FERRAZZA: Well, thank you. As we said, magnetic fusion is still in the development phase and as I mentioned in the presentation, we have not included it in the plan. So, we don't have financial numbers for the moment. Of course, they will be of interest in an industrial plan but for the next four to five years, we have to test the system in order to understand where to go. Any other questions?

OPERATOR: As a reminder, please press "*" and "1" on your telephone for questions. The next question is from Alastair Syme of Citi group…of Citi, I apologize. Please go ahead, sir.

ALASTAIR SYME: Hi. I just wanted to…on the Eco-Refining, can you just explain if every refining site that you are yet to convert in Italy available to you for this technology or does it require specific availability of space or product or anything?

GIUSEPPE RICCI: Thank you for the question. Of course, the conversion of traditional refinery in bio-refinery depends on the configuration of the traditional refinery. We arranged the conversion, first in the world, of Venice refinery because Venice refinery was the most suitable refinery for this conversion, having the right plants, the desulphurization plant for traditional gasoil and kerosene and at the most suitable operating conditions of the plant, and the current metallurgy. The same have been repeated in Gela where a part of the plant was converted. I think that the best size to be transformed into bio-refinery, are little mid-size

sites, with plants suitable in terms of operating conditions, mainly pressure and metallurgy, able to receive this type of process. But another interesting conversion of traditional plant in the future economy is the use of steam reformer to produce blue hydrogen starting from bio-methane. And this will be a very very interesting opportunity for a refinery when the traditional market will decrease and will be present additional spare capacity of hydrogen production that could be done by bio-methane or with CCS (carbon capture and storage) of the CO2.

ALASTAIR SYME: Okay. Thanks for explaining it.

OPERATOR: The next question. Madam is from Alessandro Pozzi of Mediobanca. Please go ahead, sir.

ALESSANDRO POZZI: Thank you. My question is on the bio-refinery. Clearly, the palm oil feedstock is going to go to zero by 2023. While the output is ramping up, I was wondering if you see any potential constraint on the supply of the new feedstock, and also whether…what will be the main feedstock components going forward for the bio-refinery? Thank you.

GIUSEPPE RICCI: The exit strategy from the palm oil is, of course, quite a challenge, in fact the European rules foresee to exit completely by 2030. Our strategy to exit from the palm oil in a so short time, within the 2023, is because we are arranging a very large supply of different feedstock, feedstock coming from first, second and third generations. So, we will feed the refineries with many types of different feedstock. From the waste oil like UCO, Tallow, and soap like SBEO, POME, TCO different and many many type of first generation and not edible feedstock.

In the meantime, with our research we will develop directly our bio-feedstock like Algae that we told before, but also with the experiment of castor oil that we tested in Tunisia last year. That is an extremely interesting feedstock because it is not edible; it is in the arid field and it needs dirty water. Considering that North Africa is in front of our main bio-refinery of Gela is

very, very easy to transport. The logistic is very, very easy, and low cost. Another technology is the microbial oil from waste that is another research field we are developing in this way taking advantage from our internal processes.

ALESSANDRO POZZI: Any indication on how much castor oil will be…the share of the castor oil as part of the feedstock for the bio-refinery?

GIUSEPPE RICCI: The first industrial, let me say, industrial application, of castor oil will be for 25 kilotons per year, of course our intention is to repeat the same experience in every arid field where enough hectares are available or fields, with arid conditions and dirty water, that it means wastewater coming from towns or salt water or whatever. And we are selecting the best genetic seeds of castor oil in order to improve the profitability of the plant that today is expected in 2, 3 tons per hectare per year, after three years of life of the plant.

ALESSANDRO POZZI: Alright. Thank you.

OPERATOR: There are no more questions registered at this time.

PETER SAHOTA: Okay. Well, thank you very much for this session. We will be posting in a few minutes the video on our GHG Emissions Methodology. And we'll restart the conference call at 2:50. Thank you.