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Metal Bulletin

Magazine

**Gianpietro Benedetti
on technologies for
new market realities**

**Middle East steel
reacts to imports**

Outlook for 2017

**Minor metals'
lively markets**



Gianpietro Benedetti on 'the new normal'

Danieli chairman and ceo Gianpietro Benedetti thinks long-term – it is in the nature of plantmaking business. He tells Richard Barrett that the global steel industry has entered an era of 'the new normal' and explains how Danieli is responding to it

Italy-headquartered Danieli employs tens of thousands of people globally to design, manufacture, deliver, install, maintain and update metallurgical plant. If it was essential to choose just one individual who personifies the company, it would be Gianpietro Benedetti. He is widely recognised by international steelmakers and metal producers alike, having led the business for decades.

His smiling face has been at the centre of images capturing the moment at which some of the world's biggest contracts for new turnkey steel plants have been signed, new mills have been inaugurated or Danieli workshops have been opened to manufacture and assemble major plant components.

He is as at home centre-stage, conveying new metallurgical or steel business concepts or innovations to an audience of hundreds, as he is undertaking a one-to-one conversation about the long-term outlook for markets.

Sitting face-to-face across a table, he has an engineer's penchant for having a pen and pad of graph paper ready to sketch out boxes, triangles, circles and graphs in order to explain, stress and focus attention on the key points he wants to put across.

He is also often ready with a slightly controversial or surprising angle or fact in mind to enliven discussion and sometimes take it in an unexpected direction. This can also reflect his sense of humour.

Close by the large antique table at which Benedetti sits, on which a few small works of crystal, ceramic and bronze art have been placed, hangs a sizeable oil painting. He invites you to admire it. "It is very enigmatic," he says, with a smile.

Is it a valuable 'old master' portrait of a noble during the Italian renaissance, you momentarily wonder? It certainly has that quality, but as your eye moves from the face and period clothing of the person portrayed to the hands, you notice an SLR camera held in one hand and what

looks like a small printed Polaroid 'selfie' of the 'noble' himself in the other!

Benedetti delights in observing your realisation. Perhaps he enjoys being a little enigmatic himself? The picture appears to be asking a fundamental underlying question: 'Is anything what it really seems at first glance?' As you would expect from the leader of a company in the business of technological innovation, Benedetti welcomes new ideas, likes to challenge pre-conceptions, and is happy to blend the best of the past and the future.

Family business

Benedetti is a contemporary of Cecilia Danieli, daughter of Luigi Danieli – the family member credited with championing the family's steel machinery business from the 1950s. Cecilia managed the financial and administration side of the business from 1977 – the same year from which Benedetti was group sales director. They later became managing

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DANIELI

**Benedetti predicts
high-speed evolution
of digital technology**

Top three technologies

A question as to what Benedetti views as the top three technological advances for steel or metal production in his lifetime generated a very long pause for thought and evoked an initial response that it is difficult to pick so few from a long career dedicated to steel and metallurgical technology.

He started from recent years, with the concept of endless rolling in bars, developed at CMC in Arizona. With that technology and operational experience, a reheating furnace to produce commercial bars, wire rod and small sections is no longer necessary, Benedetti declared.

“So we give a contribution to the steel industry to operate without a reheating furnace. That does not only mean saving energy, but also saves on handling costs.”

He paused again before making a second choice. “As a company we have developed an EAF that is able to deliver 36-38 heats per day on average.” And, having gathered momentum, he quickly makes a third: “Recently, billet casters have been able to produce a monthly average of 6.2 metres per minute – double the rate achievable not so long ago.”

director, and director of engineering, respectively, and they took a minority shareholding of the company public in 1984. Cecilia was in her mid-50s when she sadly died in 1999.

Today, the Danieli group is nearly 70% owned by SIND, which the Danieli and Benedetti families own 50:50. The balance of Danieli's shares are listed on the Milan Stock Exchange.

The Danieli family were clearly key to the company's foundation and growth, but how influential are both the Benedetti and Danieli families in steering the business today?

“We have three of our children working in the company,” noted Benedetti. Giacomo Mareschi Danieli is an engineer. He worked in a long, four-shift, operation in ABS (Acciaierie Bertoli Safau) – the special steels producer owned by the company, which is just a couple of miles from Danieli company HQ in Buttrio, northern Italy. After that he worked for 3-4 years on-site for new plant erection and then another four years with Danieli Far East in Thailand, as a project manager, before later becoming chairman of that company.

He swiftly added that Danieli has developed many innovations for EAFs, casters and rolling mills, while making a strong contribution to building the competitiveness of mini- and micro-mills.

He concluded that, at ABS, the production of SBQ bar in mini-mills has been simplified in the past year. Continuous casting has enabled the simplification. “In the furnace you must produce clean steel through slag control – this is known – but it is the caster that can create cracks: surface, under surface or central segregation,” Benedetti explained.

The normal set-up is to have a grinding machine after the caster, but ABS has no grinding machines. The plant also has a better heel – an important factor in the production of specialty steel: “You have a 5% or 15% heel – a big difference,” noted Benedetti. “And we have heat treatment in line. We are the only mill to have heat treatment in line for bars. That means that at the end of the rolling mill, we supply a straight bar, checked inside for segregation, for surface, and heat treatment for 40-45% of ABS production. That represents a lot of money. It means [a production cost saving of] euros 35 per tonne.”

Anna Mareschi Danieli works in finance and Camilla Benedetti, Gianpietro's daughter, has a senior role in human resources. Both Camilla and Giacomo are members of the board of directors.

“This means nothing,” Benedetti declared. “I am very clear that it is better to have a good shareholder than a bad manager. If they succeed, that's fine – they have some additional motivation I would say – but they must obviously be capable.”

It is sometimes said, particularly given the inherently long-term nature of plantmaking, that having a family-owned structure is an advantage over running a business that constantly has to look to please shareholders on a short-term basis. Does Benedetti concur?

“This is very linked to the culture that people have. Our culture is to respect the company as first priority. We are very much criticised by [some analysts of] the stock exchange because 87-90% of our profit is reinvested in the company, which is unusually high,” but that has been a core principle of the company.

“To guarantee that this culture will continue is difficult, but

probable,” he observed. “Education, for example, influences the next generation,” he added. “For the time being: Number one, the company. Secondly, personal affairs,” he stressed.

New steel era

Benedetti was keen to explain the big picture faced by the global steel industry and markets today, sketching out a graph of global steel consumption over time to illustrate.

It started with the growth in demand during reconstruction after the end of the Second World War, saw the impact of the 1970s oil crisis, the fall of the Berlin Wall in 1989 and subsequent dismantling of the Soviet Union and then a plateau in consumption at the end of the last millennium.

“For ten years, we continued to consume 700 million tpy of steel. Then we had China [from 2000] and ‘boom,’” he reminded. “Now we have ‘the new normal’, but how many years will we have that? Ten years? Twenty or thirty years?”

With the Chinese boom over, he pointed out that the situation in Europe is worse. “Why? Infrastructure is in place. Ageing of population is going on and even a decrease of population is going on.” He said that he has seen some forecasts that the population of Germany could actually fall by 2030 or 2050. “If it is like that, who will consume steel?” he asked.

He added that environmentally aware citizens could be driving electric vehicles or making more use of services like Uber, going forward, which raises the question of which types of car will be needed in 20 years' time. He pointed to the growth in use of plastics and carbon-fibre, while the physical strength of steel will become ever stronger, and consequently tonnage consumed will decrease. “Now, steel is 80% of the car, but it represents 30% less of the car's weight than in the past,” he added.

“So, to conclude, this trend of ‘the new normal’ is a big question-mark and I believe that the number of tonnes will decrease. Today we have overcapacity [for steel production] of 30% and it is my

opinion that overcapacity will further increase.”

He also noted that steel intensity in relation to GDP has decreased in developing countries and is perhaps 30-40% lower than 20 years ago. “Why? Infrastructure again, where steel is used a lot,” he observed. “GDP may continuously grow, but the intensity will decrease. What will happen? In China, in 10-20 years’ time, the same will happen. Intensity in China will decrease too.”

He estimated that could happen in China in 15 years. “Today they need to cut 150 million tpy [of capacity]. In 15-20 years they will need to cut another 150 million tpy for the reasons I just explained. In China, as in the USA and as in Europe, steel intensity will decrease. Can we hope in Africa or India? Up to you to decide!”

“So we have a new normal that is worse than 1970-2000 for the reasons I have explained,” he concluded.

Benedetti consequently questions the prospects for new plant orders in these circumstances: “So, new plant? Unlikely, unless – and we hope for this – the mini-mill and the micro-mill concept will flourish again.”

He noted that there is some scepticism by today’s steel leaders in China, where BOF steelmaking currently dominates, about whether steel production via EAFs could become as significant as it has in Europe and the USA, but he is confident that – maybe 10-15 years’ time – China will produce at least 30% via electric steelmaking because the volume of scrap generated in the country will have increased by then.

“It’s not so feasible to send rebar on a 1,000 km journey from a steelworks to its point of use – or wire rod or commercial band. If you have scrap available and a market [for steel produced from it] in a certain area, you have a good opportunity and we are ready to co-operate with you!”

Strategic progress

Having originally made its name as a builder of mini-mills for long products in particular, Danieli has



DANIELI

Benedetti with an “enigmatic” painting which hangs centre-stage in his office

become the major international plantmaker it is now by acquisition in addition to internal investment. Every step of steel production and in-line processing – from raw materials to finished and coated products – is represented by its more than 20 divisions.

To what extent was that through chance opportunities arising to acquire or through design?

“Our idea is to develop concentrically,” Benedetti said, while drawing concentric circles on the notepad in front of him. That means to become stronger in our field. That is the reason that we acquired Wean, Morgardshammar, Rotelec etc – to become stronger and more knowledgeable. They were companies with a brilliant knowledge and know-how. Mixing these different cultures was a positive result for us. This is certainly one of the reasons for our modest growth. We are still looking

around, but the companies [to acquire] are not there anymore.”

Danieli’s international competitors Siemens VAI (now Primetals) and SMS group were often competing bidders, as each looked to build a full portfolio of technologies. Danieli’s most recent major acquisition, FATA Hunter, has boosted Danieli group capabilities for aluminium technologies. Copper, titanium and magnesium rolling mills are also part of Danieli’s range.

Benedetti confirms that Danieli is already a full-liner for steel and he sees no gaps left in its technology range for that industry. However, the realities of today’s markets for new plant mean that the opportunities for the hundreds of technological packages that the company offers now to be deployed in a greenfield plant will be fewer.

“Most probably our business for building new plants will decrease by 30-40%. We are realistic about that,” said Benedetti. Danieli group sales revenue was just over 2.5 billion euros for the financial year ending in June 2016. That was 9% lower than the previous year, and significantly lower than revenues that exceeded 3 billion euros for four of the five years from 2008-2012.

On finance, Benedetti said that there was only one thing over which he wanted to have control: net cash flow. He pointed out that while company profit and turnover dropped for the most recent financial year completed, “We kept our cash and have increased our net worth.”

Benedetti acknowledges that the ability to supply services for the thousands of existing plants already operating has very much become a strategic priority for plantmakers. “But to provide service, you cannot utilise the same people that make the drawings. It needs a different kind of animal. To say make service or revamping is fine, but with whom? How are you cultivating such different skill sets?” he asks.

“More service: we will try to do it, but we need different kinds of people too. We need to find and train people who understand what it means to stay under the roof of ▶

a rolling mill, a meltshop etc, rather than under the roof of an air-conditioned office.”

Since much of the installed fleet of steelworks and mills is based outside the developed economies of the USA and Europe, that also requires an understanding of the different cultures and attitudes found in developing countries.

Recalling Danieli's initial moves to become more international over 10 years ago, which has since seen the company invest in workshops in Thailand, China and India, Benedetti said: “Motivation comes from when you come from the dark and you see the light. We needed some people who are motivated because they are coming from the dark. Such people in South-east



“We need to become less mechanical and more digital. This is a transformation we need to perform as soon as possible,” said Benedetti

Asia are willing to travel and are technically well prepared at a high level. The same is true in China and India.”

This required training on both sides: “We needed to go to school to deal with this different culture. Let me say that our people are already reasonably trained on this, because if you do not succeed in creating a team, considering that the culture of countries A, B, C and D are anthropologically quite culturally different – not bad or good, just different – you cannot communicate in the same way or otherwise you lose 30% of the potential horsepower.”

Benedetti is candid that Danieli's workshop capacity exceeds demand at present, but he stresses

that they are essential to serve customers in those areas – China, India, Thailand to serve Southeast Asia, and also most recently in Russia. “They are too large, some of them, but the locations are good. So, the depreciation today is a little bit more difficult than yesterday,” he said.

Understanding steelmakers

At the simplest level, there is a straightforward supplier-customer relationship between metallurgical plantmakers and their clients.

Some customers prefer to keep it that way, but many want or need the continuing support which their technology suppliers can provide to help operate, maintain, expand or improve their plants over many years.

Such a relationship is clearly mutually beneficial when it works well, but a significant degree of trust must be built on both sides for that to happen. Plantmakers now frequently stress their ability to retrofit many of their newest technological packages to existing plants, the benefits of doing so, and a swift return on investment. Steelmakers may find those advantages attractive, but must also recognise that changes of process generate risks for both technology supplier and purchaser.

It all boils down to forming a symbiotic partnership – something that Benedetti sees as fundamental.

“In the new normal scenario, quantity will decrease. Demand will decrease. So steelmakers should offer quality, service and competitive costs.” The technological packages should be able to improve a steelmaker's capabilities in those areas in addition to optimising their own capex and opex, he stressed.

Creating connections between the right people is a key to success. “Here is a question: you have invented something in your beautiful office. You have perhaps created an algorithm to bubble gas through molten metal in a furnace... That's fine. But is the same person capable of go with a customer close to an EAF and look through a black lens with that customer and say: ‘Look, you see ▶

Building a digital future

Benedetti said that Danieli is fully embracing the latest digital concepts: “We are convinced, for sure: the use of sensors and Big Data...,” he said. “Every acceptable manager must talk about ‘Factory 4.0’, otherwise you are fired immediately!” he joked.

He pointed out that the technology is still at the early stages of development, but added: “It will be really a high-speed evolution.” He noted that Danieli has already been involved with recent ‘digitalisation’ projects at Severstal, and now at OMK, in Russia. “To rationalise the [material and process] flow etc,” he explained.

“Practically, in our opinion, digitalisation means that you start inputting your orders and you start to follow your scrap or iron ore from the site at which you are purchasing it, so that you effectively have travelling stocks: a train can be storage.”

This builds on the concept of just-in-time delivery of raw materials and products, but he says that there is space to improve. After the raw material arrives and the process is started, it then needs to be optimised to match your orders, to produce the right quality, and to reduce changes. There have to be enough sensors along the line to be able to eliminate volatility in the process.

“You need to be 99.9% sure that if you want to produce 30 tonnes of a certain product to a certain tolerance, you can do that. You will follow your finished product into the customer,” said Benedetti.

“This from our point of view is very important. We have started to make ABS ready for a fully digital era... Next year, we will start with the scrap. Scrap is big deal you know. The quality of the scrap affects its price. This is very valuable.”

He explained that the plant has already tested a system that uses an optical device to determine the

quality of different scrap batches against a database of types. The system will be able to automate the process of getting the right mixture, or blend, of scrap for any given product. “This is an example of what I mean by digitalisation – also in the process.”

He predicted that ABS will be fully digitalised in 2-3 years and said that ABS must go from raw material order to delivery and must produce with no second-quality. Digitalisation will help to reduce second-quality in the process.

“For example, you have experts looking to minimise slag. Slag quality is of top importance for the quality of steel. It is a question of getting the guy with many years of experience of focusing on the problem. Now we are trying to substitute this with a camera lens connected with a computer. This is digitalisation.”

A key point is that you must have big data and the correct data must be selected with an algorithm that will help operators with a certain task automatically, Benedetti explained. “For others, it will help operators to make [their own] decisions in a proper way,” he added.

“For this reason we need to become less mechanical and more digital. This is a transformation we need to perform as soon as possible,” he said.

Danieli is building a dedicated centre called ‘Digimet’, close to Danieli Automation at Danieli HQ. “It should be ready next year. A complete team, which we are already building up, will be dedicated to this target. So less mechanical and more process metallurgical engineers and digitalisation people,” Benedetti added. “They will mix together. We are putting them together in the same room. We close with a key and they should agree!” he laughed.

the bubbles there and they are having this effect... or you can adjust that?"

Benedetti's point is that a vital bridge between project and production departments can be missing. "In all these things, partnership with a customer is fundamental," he stressed.

When a completely new technology is to be trialled with a customer, the host will clearly choose to do that with a plantmaker they trust. "But you should [also] choose the customer because there are some places that your new innovation or technological package has 80% probability to fail," noted Benedetti. Effective liaison with the steelmaker's own experienced people is clearly crucial.

"Co-operation on technological packages should be a big part of the service to save our turnover in future," added Benedetti. "Of course, we need to set some professionalism, some skill, and to help customers to improve quality, competitiveness and customer service."

He also noted that Danieli has a particular advantage in owning and operating ABS. For example, at that plant a sequence in the caster of perhaps 230 tonnes of steel per time might be used to produce perhaps 15 or 20 different dimensions: that calls for considerable process flexibility.

"In future, flexibility will be another key factor because nobody wants to be storing products, not least because of volatility in raw material prices for scrap. So you want to buy the raw material, produce quickly, to sell and to cash. Plant flexibility is another important point in order to serve the customer with small lots of different products without extra costs," Benedetti concluded.

Prepared for the future

The company is prepared for the time when Benedetti decides to step down.

"Historically, we have had a pyramidal organisation, with a big 'super-leader' running everything," said Benedetti. But that can have drawbacks, "Because sometimes when you are running you run [so far ahead] that you suddenly stop

Expansion in aluminium

Alcoa has licensed sales of its aluminium Micro-mill technology to Danieli. "We are discussing tuning the technology and hopefully in the next months we will be ready to propose [the design to potential clients]," said Benedetti.

He said this mill will be a revolution because it can save a lot of dollars per tonne to produce automotive quality coil with a reasonably small capacity. He believes that Alcoa probably chose Danieli to make this joint venture because in aluminium they want to do the same thing that the plantmaker did in steel.

"They visited several Danieli mini-mills for steel, so they know that we know how to build it compact, simple, steady, consistent and so on," he observed.

"The idea is similar. If you are in an area with a market, and possibly the raw material needed. If I can make a plant with capex and opex that is the same as a mill producing 3, 4, 5, 6, 10 times more, it will be impossible for anyone else to beat me in this area. I have the [cost-effective] transportation, the capex plus opex and the production is low," he explained.

"CMC Arizona is the perfect example of this," he added. Benedetti said that people questioned the wisdom of a plant producing just 300-350,000 tpy of steel in the USA, "But the total cost of CMC Arizona is as competitive as a much larger mill producing perhaps 800,000-1.5 million tpy of steel."

The same thing will be applied to aluminium, he concluded.

and look behind you and find yourself long!"

A new top-level office at Danieli HQ represents all the product and service divisions of the company, including purchasing and logistics. "What we have in this office now is 'Managing Board No. 1' – the company board working in a team. We also have the different sections: flat products, long products, workshops etc. We also have financial control and administration in this office," he said.

"Each of us has responsibility for one of the 'silos' here," he added, while stressing that structure does not remove the responsibility of the top individual company managers. "They are acting like entrepreneurs: they are responsible for the economic, financial and market shape [performance] as an independent company." Each board member has one or more Danieli companies to support and evaluate, but does not control them, Benedetti stressed.

So practically the whole company is represented by the new management structure. "If a problem were to arise that became critical, the aim would be to make an agreed joint (shared) decision."

This distribution of responsibility also reduces risk.

Under this concept, each manager is given targets for market growth and share for their division and left to get on with achieving them.

Personal preferences

Benedetti has sported a beard for the last couple of years: "Yes, I changed my look, to hide because of the 'new normal!'" he jokes.

He said that his work is 95% of his time. Consequently he gets little time for activities beyond that. But like most engineers, he admits to enjoying driving.

"I like cars, yes. My colleagues here joke with me because I have a Land Rover Evoque, and they say to me: 'Hey, finally you bought an Indian car!'" he laughs (Jaguar Land Rover being a subsidiary of India's Tata Motors). "But I tell them that it is actually clear evidence that the British are back fully into designing and making cars."

He gave his Evoque a good review: "This car is perfect: mechanically nice, digitalisation is good – it's not boring you with constant warnings about tyre pressures, temperatures etc: that makes you scared and drives you mad!" he laughed again.

As the interview closed, he said just a little bit more about himself. He bought the 'enigmatic noble' picture in his office, but on an adjacent wall is a smaller picture which he painted himself in the style of Pablo Picasso. "By night, years ago, while not sleeping, I was painting," he said. It seems that, whether through engineering or art, Benedetti's creativity always needs to find an outlet.

Nearby, tucked away in a corner with a handful of other images, is an old black & white photo of a small group of people clustered around Luigi Danieli and a potential customer, studying some large printed engineering drawings of a plant. A young but clearly recognisable Benedetti stands towards the back of the team. It is a poignant reminder of how far Gianpietro, Danieli as a company, and plantmaking technology itself have progressed over the decades since the photograph was taken.

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