M. SIMONETTI

DINOSAUR BREAKS THE MOULD
Fish-eating spinosaurs not restricted to land.
go.nature.com/xKFewR

M. BRICE/CERN

It took months to repair magnets that were damaged in a major accident to the LHC in September 2008.

But Jim Strait, a physicist at Fermilab in Batavia, Illinois, says that Rossi's analysis is fundamentally right. The connections between the LHC's magnets aren't robust enough, Strait says. "The design looks like one that is optimized to make installation easy," he says. "These stupid little corners [of the design] get short shrift because they are boring." Only constant project reviews and more-integrated management can catch such problems, he says.

Rossi says that he doesn't blame any one person for what happened at the LHC. "In Italian we say, '*Chi non fa, non sbaglia*': 'He who doesn't work makes no mistakes'. What we have to do is learn from our mistakes and make it better." ■

Geoff Brumfiel

which is "not enough to keep a nuclear design and engineering company going", according to the PBMR.

Runaway costs and technical problems helped to doom the project, says Thomas. "In 1998, they were saying that they would have the demo plant online in 2003" at a cost of 2 billion rands, he says. "The final estimate was that the demo plant would be online in 2018 and it would cost 30 billion rands." Furthermore, he adds, the PBMR has never been held to account for why costs rose every year, why the completion date was continually pushed back or the nature of its design problems.

In a final twist, the PBMR announced last year that it was indefinitely shelving plans to build a demonstration plant. The programme's demise will not help South Africa's goal of doubling its 35,000-megawatt power-generating capacity by 2025.

One problem was that the design became too ambitious, says John Walmsley, past president of the South African branch of the Nuclear Institute, a professional society for nuclear engineers. The PBMR hoped to push the reactor's operating temperature as high as possible to enable not just electricity generation, but also 'process heat' applications such as turning coal into liquid fuels, he says. It also aimed to boost the power output to the very limits of the design to make the reactor more economical. "They tried to build a BMW when they maybe should have started with a Morris Minor," he says.

"This was South Africa's chance to show the world what it could do."

Although many scientists had hoped that the safety system of the pebble-bed design would win over opponents of nuclear power, a 2008 report from the Jülich Research Centre cast doubt on those claims, suggesting that core temperatures could rise even higher than the safe threshold.

Tsinghua University in Beijing now hosts the only operational prototype pebble-bed reactor, although similar reactors are being developed in the United States and the Netherlands. But the PBMR's problems are not unique, says Thomas. "Every nuclear nation in the world has had a programme to commercialize this type of reactor, and they all got nowhere." ■

Linda Nordling

German paper chase to end

Sometimes less is more — at least in grant proposals. That's the hope of the DFG, Germany's main research-funding agency, which plans to drastically restrict the number of papers that researchers can list in their grant applications.

From July, someone applying for a year's funding will be able to include only two publications closely related to the proposed project and a maximum of five other papers illustrating their scientific career. The agency hopes that the new rules will help ease the burden on reviewers faced with vast publication lists, and counter the pressure on scientists to publish as many papers as possible in order to win funding or academic appointments. "It is quality, not quantity, which matters," says Matthias Kleiner, president of the DFG.

But some fear that the new rules might deprive reviewers of crucial information, particularly in fields with high publication rates, such as molecular biology. "As a reviewer I am reliant on getting all the information," says Benedikt Grothe, dean of biology at Ludwig Maximilian University in Munich. "And as an applicant I find it dissatisfying not to be able to cite all the papers that I think reviewers should be aware of."

The DFG — which controls an annual budget of more than €2 billion (US$2.7 billion) and funded about half of its 23,000 grant applications last year — is the first funding agency in Europe to cap citations in this way. In the United States, similar rules apply to grants from the National Science Foundation (NSF). But the DFG's plan goes a step further: it will not consider supporting papers that have been submitted to academic journals but not yet accepted for publication. The move aims to counter problems with seemingly impressive publication lists that were brought to light last year when members of a DFG-funded Collaborative Research Centre (SFB) at the University of Göttingen were reprimanded for including unfinished manuscripts in grant applications (see *Nature* 460, 791; 2009). ■

Quirin Schiermeier