

DIALOGUE |

Think Dynamically and Cooperatively to Address New Changes in Standardization

DKE标准之道：
**动态与合作思维
积极应对变革**

Interview of **Dr. Bernhard Thies**,
Chairman of the Board of Directors of
DKE, Secretary-General of the German
National Committee of the IEC,
President-elect of CENELEC

对话DKE董事局主席、IEC德国国家委
员会秘书长、CENELEC候任主席

博纳德·提斯



■ **Would you give a brief introduction about the business and the unique role of DKE in the standardization system? How does DKE plan its business strategically for the new situations?**

Bernhard Thies: The DKE is German Commission for Electrotechnic, Electronic & Information Technologies, which has two parts respectively operated in VDE, the Association for Electric, Electronic & Information Technologies, and DIN, the German Institute of Standardization. We are dealing with all the standards related to safety and interoperability aspects in electric, electronic and information technology.

From the financial point of view, the DKE is part of VDE. The business of DKE in the VDE has three main pillars: One part is the area of the research and development where they are working with innovative ideas and channeling new items into the standardization. And we have the testing house in Frankfurt/Offenbach where we test products according to the standards. Then we have a publishing house where our standards are published and sold. We cover all the costs by selling standards. We do not get any subsidies from the government. We charge very limited membership fees while for the experts from electro-technology industry who are working with our organization, it is free of charge.

I think everyone knows what standardization means and how important it is. We are trying to change the standardization process in DKE since ten year ago. When it came to smart grid, we saw that developing standards in such a complex area was very difficult to start. We figured that we need some kind of model to enable an integrated view and that's why we introduced the first architecture model for smart grid. It starts with the component layer going through several other layers till the business layer. Then we can map business cases through all the layers from information down to the components, so that we

■ 请您简单介绍一下DKE以及它在标准化系统中的作用? 面对新形势, DKE如何进行业务上的战略规划?

博纳德·提斯: DKE的全名是德国电工电子和信息技术委员会。DKE是德国电气电子和信息技术协会(VDE)的一部分, 同时也是德国标准化协会(DIN)的一部分。DKE的主要业务是所有与电工和信息技术安全和互用性相关的标准。

在财务方面, DKE是VDE的一部分, 涉及三大主营业务。一是研发, 把创新想法和新的项目引入标准化工作。二是检测, 我们在德国法兰克福市和奥芬巴赫市都设有检测实验室, 可以根据标准进行产品检测。三是出版和销售标准的出版社。我们经营上自负盈亏, 收入主要来源于销售标准。我们没有任何政府方面的资金支持, 会员费收入有限, 而且对参与我们工作的电工技术专家都免收费用。

我想大家对标准化的意义和重要性都了然于心。这十年以来, DKE一直在尝试标准化流程的革新。在智慧城市方面, 我们发现想要在这个复杂领域制定标准, 很难起步。我们需要某种模型来展示完整的观点, 所以我们引入了首个智能电网架构模型。该模型有很多层级, 包括信息层、部件层等, 这样我们才能发现: 哪里缺失了标准? 或者想要完成业务案例, 是否需要某项技术? 这些就是我们在智能电网领域的标准化工作。

我们还发布了全球首个智能电网标准化路线图, 这标志着DKE标准化系统方法的开始。该系统方法还可以用于其他领域, 如智慧城市和工业4.0。在这些系统中, 我们需要设计各异的架构模型来应对不同的需求。在标准化流程改革方面, DKE制定了新的规划“标准化2020”, 因为我们发现常规方法已经无法满足现今的标准化需求。我们必须找到未来制定标准的新方法, 即采用不同的技术和数字工具。有了年轻专家的帮助, 我们正在探

can find out: are there standards missing or is there technology missing to fulfill the business case? And that constitutes our standardization work in the area of smart grid.

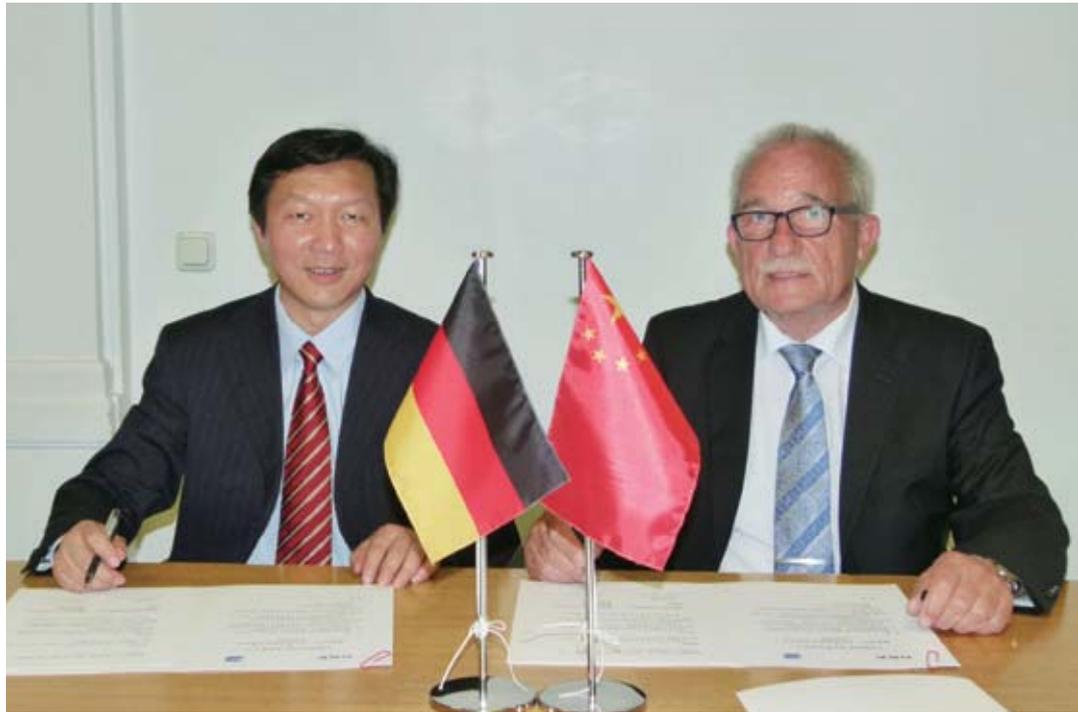
Later on, we also published the first standardization road-map worldwide on smart grid, which marks the beginning of the System Approach in standardization in the DKE. System Approach also applies to other topics like smart cities and Industry 4.0. We also need architecture models in these systems but with distinctive designs to deal with different needs.

In the light of this ongoing evolution in standardization, the DKE embarked on a new program “Standardization 2020”, as we realized conventional processes could no longer fit to today’s demands in standardization. We have to find new ways of creating standards in the future: harnessing different kinds of technologies and digital tools. With the help of younger generation experts, we are re-vamping standardization, which will also be a core theme in the next IEC General Meeting in Frankfurt 2016.

■ The German Industry 4.0 is quite a hot topic these days, and how does DKE take part into this strategy? What will be the future of the Industry 4.0?

Bernhard Thies: Roughly three years ago, a national platform for Industry 4.0 was established, encompassing 3 key domains: ICT, electro-technology (ZVEI) and machinery (VDMA). One segment of this platform is standardization, where the DKE plays a part as well as the DIN.

The DKE and DIN are also members of the working group on standardization. We focus on policies and future



SAC and DKE sign a cooperation agreement.

standardization work. 2016年IEC大会将在法兰克福市举办，这也是届时的关注重点。

■ 德国“工业4.0”是目前的热门话题，DKE如何参与到这个战略当中？您认为“工业4.0”的未来会是什么样？

博纳德·提斯：三年前，德国在国家层面构建了“工业4.0”的工作框架，主要包括三大关键领域：信息与通信技术（ICT）、电工技术（ZVEI）和机械（VDMA）。标准化是这一平台的重点工作内容，DKE和DIN都积极参与其中。

DKE和DIN还是标准化工作组的成员。我们关注政策和标准的未来需求，负责国际和区域标准化组织如ISO、IEC、欧洲标准化委员会（CEN）、欧洲电工技术标准化委员会（CENELEC）等的标准制定工作，而且还负责在“工业4.0”战略中联盟的标准制定工作。

needs for standards. We take not only care of the standards development in international and regional bodies like ISO/IEC, CEN/CENELEC but also consortia of different scales who are active in Industry 4.0.

At this moment, nobody really knows what industry 4.0 looks like at the end, however we are now going to give you a very simple example how it could be. Your feet are not standardized, but the shoes in retail very often are, and that doesn't make these shoes solely "yours". You can make your own shoes if you are the shoe maker but it's too expensive and impractical. What difference could we make in the future? For example, you can create your own shoes in the internet which has different left/right sizes, special color or any other features. Three days later, a pair of customized and sensed shoes arrives at your door. These shoes collect your data as you use them for work, sport or leisure. These data again help the developer to design better fit and individual shoes for you. This kind of cycles is the essence of Industry 4.0.

You know you can implement these things for other business in the future, for example, for car makers or for house appliances producers and so on. And a lot of totally different business will come by these things and that means also the business cases and service cases are different in the next future. That can be done through Industry 4.0.

■ SAC and DKE have just signed a cooperation agreement; can you tell us some successful stories on cooperation? What is your expectation on future cooperation between China and Germany?

Bernhard Thies: We have been working with each other for more than a decade. I remember we started with the intention to exchange new ideas and initiate new standardization projects at the international level (IEC). A few years later, our governments built up a formal platform to enhance further cooperation. The Sino-German Standardization Cooperation Commission meets every year in China or Germany, where a lot of substantive topics are discussed and implemented.

We have very good cooperation in e-mobility and smart

现在没有人能预测“工业4.0”未来会是什么样,但我可以举个简单的例子来展示一下它可能的未来。人的脚不是“标准化”的,但通常在零售店买到的鞋是标准化的,但这不能使其成为你“独一无二”的鞋。如果你是制鞋匠,就可以为自己做一双鞋,但成本会很高,而且不大实际。那未来会有什么不同呢?例如,你可以在网上制作自己的鞋子,可能左右脚尺寸不同,颜色很特别或者有其他特点。几天后,为你量身订做、具有传感作用的鞋就寄到你家了。在你穿着这双鞋工作、运动或者休闲时,它会收集你的相关数据,而这些数据又能帮助鞋研发者来设计更合脚、更适合你的鞋子。这样的循环就是“工业4.0”的核心所在。

未来我们可以在其他业务实施上述事情,例如汽车制造商或家用电器等。很多其他不同的业务也会由这些衍生而来,这意味着未来的业务和服务案例也会大不相同。这一切都将通过“工业4.0”得以实现。

■ 中国国家标准化管理委员会和DKE刚刚签署了合作协议,您能否谈一下合作方面的成功案例?您对中国和德国未来的合作有哪些期望?

博纳德·提斯:中德双方的合作始于十几年前。记得刚开始在IEC层面开展合作时,我们的初衷是彼此交流新的想法并设立新的标准化项目。几年后,德国政府为促进更一步的合作搭建了一个官方平台。中德标准化合作委员会每年都会在德国或中国召开一次会议,讨论并实施很多实质性问题。

我们在电动交通和智能电网方面一直有良好的合作。中德还可以在智慧城市方面开展合作,因为智慧城市是其他所有智能设施的综合体,智能家居、智能交通等都是智慧城市的组成部分。这些都是中德双方和ISO、IEC应该在标准化领域合作的新方向。

当然,另一个热门话题是“工业4.0”。今年我们签署了合作协议,希望根据“工业4.0”这个框架明确未来中国和欧洲合作的方向。今年12月份,

grid for example. And the other useful topic is smart cities, because smart city is something like an umbrella of all the other smartness, such as smart home, smart traffic and so on. These are the new topics we are trying to cooperate in the standardization work between Germany and China, also together with the ISO and the IEC.

And the other hot topic of course is "Industry 4.0". We have signed an agreement this year to look to the architecture of Industry 4.0 to find out what is the best thing in the future cooperation between China and Europe. And in the December this year, a news conference organized by MIIT and, with DKE experts in the programme committee, will be another opportunity to make this possible to Industry 4.0 in Shanghai.

Interesting that China has also developed a ten year plan for the next generation manufacturing, the "Made in China 2025" plan, which is comparatively pretty close with the Industry 4.0 in Germany both in its political and strategic terms. I think that there is really a good cooperation we start in Industry 4.0 in Germany and in China the manufacturing to 2025. If we are working together, we will make a real difference to the manufacturing area, and also with totally new service companies.

How has the DKE involved the multiple stakeholders effectively in the standardization work?

Bernhard Thies: We involve lots of experts in the DKE working in standardization, about 40% of them from small-and-medium enterprises, 40% from big enterprises, 10% from the universities and 10% from the non-governmental organizations like environmental or consumer groups.

And when I started in 1999 in standardization in DKE, we held a first symposium on standardization in the environmental area. And that was a very, very good starting point to take the ideas from the non-governmental organizations on board. Then we see after 15 years, we really have a good cooperation between the experts from the industry and also with the people coming from the environmental area as well as from the consumers.

中国工信部会在上海召开一个新闻发布会, DKE的专家也会作为项目委员会成员, 共同探讨“工业4.0”相关问题。

非常有趣的是, 中国也制定了未来十年的制造计划, 即“中国制造2025”。在政策和战略方面, 它与德国的“工业4.0”有异曲同工之妙。我认为中德可以在“工业4.0”和“中国制造2025”方面开展很好的合作。如果我们携手共进, 会在制造领域大有作为, 同时会有大量新型服务公司涌现。

DKE如何帮助各个利益相关方有效地参与标准化工作?

博纳德·提斯: 我们涉及大量的专家在DKE从事标准化工作, 大约40%来自中小企业, 40%来自大企业, 10%来自大学, 10%来自非政府组织, 比如环保或消费者组织。

当我在1999年开始在DKE从事标准化工作时, 我们首先召开了一个关于环保领域的标准化研讨会。这是一个非常、非常好的起点, 以便将来自非政府组织的想法纳入其中。然后我们看到, 15年后, 我们真的有了行业专家和来自环保领域以及来自消费者的良好合作。

您如何评价标准化与创新之间的关系?

博纳德·提斯: 标准化与创新之间的关系非常密切。标准化为创新提供了坚实的基础, 同时也促进了创新。通过制定统一的标准, 企业可以更容易地进行合作, 从而推动技术创新。此外, 标准化还可以降低企业的成本, 提高效率, 这些都是创新所需要的。

Then we see from the organizations and environment that energy efficiency for all the products which are using electricity is becoming more and more important to the public when more people are aware of the labeling, A+, A++ and so on.

However when we started, we only saw the simplicity to classify washing machines. For example, we said A was the best and there was nothing better than A. But people from environmental groups suggested further categories to calibrate the efficiency of washing machines, for example A+, A++ and A+++. This adds an additional aspect for modern technology and manifests the value of cooperating with other social stakeholders.

■ How would you value the relationship between standardization and innovation?

Bernhard Thies: When the electricity was discovered more than 100 years ago, and then the engineers at that time saw that this innovation can only come to the market if they follow standards. At that time, also the VDE was founded and also some other associations were designated to deal with the safety application of electricity. That shows standardization actually enables innovation .

Nothing changes today. We do it in the same way today, so that standardization can help innovation and innovative ideas to come to the market. We do not make standards on the innovation itself. We are describing the boxes. What is the box "carrying" products to the market? What are the relations to other products, what are the technical regulations, what is the safety expectation and so on. But, inside, where there is innovation, there is technology to be standardized. So that means with standardization we can help to bring innovative products to the market in a very, very efficient and reliable way.

Companies also now learn that they have to look to the standards to put innovative products into the market, and with DKE we can help them what standards are related to them. We've helped a lot of startups in this way.



Dr. Thies with CSP leadership

时至今日, 这一点仍然没有改变。我们现在还是采用同样的做法, 使标准化能促进创新事物和想法进入市场。我们不制定创新方面的标准。我们注重框架, 比如把产品投入到市场的载体是什么、与其他产品有什么关系、相关的技术法规和安全期望是什么等等。但是, 有的技术创新不能被标准化, 我们可以利用标准化将创新型产品以有效、可靠的方式投入到市场。

现在, 企业已经知道开发创新型产品时需要查找相关标准, 而DKE可以帮助他们找到适合的标准。通过这种方式, 我们帮助了很多创业公司。

■ 作为欧洲电工技术标准化委员会 (CENELEC) 的候任主席和DKE董事局主席, 您的领导理念是什么? 您认为从欧洲层面来看, 下一步的工作重点是什么?

博纳德·提斯: 首先, 如果你是DKE一个工厂的总经理, 你必须充分信任员工, 给他们分配任务, 相

■ **As a veteran leader at the DKE and also the President-elect of CENELEC, would you share with us your philosophy of leadership and your thinking over the next step work at the European level?**

Bernhard Thies: First, if you are a general manager of a factory company in DKE, you must give trust to your employees, to give them the task and give the trust to them that they are doing the right things and they can make decisions because they are able to make decisions. That is the basic philosophy to understand.

Then we are calling the DKE a learning company, which means a company is learning in a way how all the employees are working together in the future to find out new ways, especially “Standardization 2020” as I said in the beginning. Before we become a learning company, we have a program running, called “Change”, which means changing in the guide of guidance of all the employees.

And then also we look to the CENELEC side as the President-elect, now still in the learning phase, but next year I’m the President of CENELEC. And we saw that we also need some changes in standardization in the future.

First of all, these things are guiding “Standardization 2020” in the relation with IEC. 80% of our standards are based on IEC standards and 20% of our standards are European standards. And we are the only region in the world which really adopts IEC standards by the ratification process to our national standards. That means in the electrotechnical area, 80% of the standards in the whole Europe are IEC standards.

I always think 20% of European standards is too much. We are trying to find out a way to shift all the technical work to the IEC level. It was the idea that also the modification we have for example in Europe coming from work or some other allegations and so on. These modifications are written in IEC standards as a formal part and when the standards are verified in the European level, this informal part will become a normative part. And we’d like to encourage all the members of the IEC to do it in the same way, so that means we have the international standards and all the modifications coming from the US,



Dr. Thies visits China Standardization Press.

信他们可以做得很好并给予他们做决策的权利。这是我的领导理念。

我们把DKE称为学习型公司,就是学习未来所有员工如何通过协作找到新的发展方式,这点我在“标准化2020”初期就提过。在成为学习型公司之前,我们有个致力于“改变”的项目,就是所有员工在指南的指导下做出改变。

在CENELEC,我正处在在学习阶段,我明年将正式担任CENELEC主席。我认为我们应该在未来的标准化工作上做一些改变。

首先,是“标准化2020”与IEC的关系。我们80%的标准是IEC标准,20%是欧洲标准。我们是世界上唯一一个真正将IEC标准采标落实到认证环节的地区。也就是说,在电工领域,80%的欧洲标准都是IEC标准。

我认为20%的欧洲标准还是太多了。我们正尝试将所有的技术工作都转移到IEC层面。例如,在欧洲方面有一些修改意见,这些修改可以正式写入IEC标准,当欧洲层面的标准进行修改时,非正式的内容将变为正式内容。我们也鼓励所有的IEC成员采用同样的做法,这就意味着我们有来自美国、韩国、日本、中国、俄罗斯等国家的修改意见。这意味着中小企业,尤其是出口公司如果购买了国际标准,就能知道所需的信息。

Korea, Japan, China, Russia and so on. That means if the small and medium-sized enterprises buy the international standards, it shows them necessary information they want, especially for export products.

Because a lot of standards are coming to Europe from the European Commission, from the active of the mandates. We should have a very close cooperation with the European Commission, and also the IEC. If there is a mandate coming from the European Commission, we take it over in CENELEC. That is a technical work to be done at the IEC level. We do it already in some cases. We also have something done at the international level without any technical committee in CENELEC, which would be much broader than this.

And also the European Commission, on board are new things and technologies backed by standardization in the future, because at the moment we are working on the cooperation between the European Commission, European Industry associations, CEN and CENELEC. It is a very new way in communicating and working with each other and finding out the performance, market needs for the European market.

Some of the general directors from the DG Enterprise or DG Digital Agenda, they feel the same way that if they make standards in this areas, these standards should be international standards, because the companies in Europe, especially the small and medium-sized enterprises, intend to sell their products not only in the European market, but also in the international market. Therefore, there is a real need for international standards. And I think 20% of European standards is too much.

Of course, there are some areas or sectors, for example, railway sector and installation, there might be changes in a very fast way. For example, if we are looking into the things of lighting, we have a committee in CENELEC on lighting. And lighting is a system which is all broad and the same, because physics is the same. So that means it makes sense to have a technical committee in CENELEC in the area of lighting, so we should only have one at the international level. So that is an urgent thing in the future of DKE as well as CENELEC.

许多标准通过欧盟委员会的批准进入欧洲。我们应该与欧盟委员和IEC开展紧密合作。如果欧盟委员会制定了一个主要参数，CENELEC会在技术层面上采用它，因为这个主要参数已经在IEC层面上做过了。在很多情况下，我们已经采用了这样的做法。虽然没有在CENELEC建立技术委员会，但我们已经在国际层面做了大量的工作，将来涉及的范围可能更广。

在未来的欧盟委员会，新事物和新技术都将以标准化工作为支撑。目前我们正在与欧盟委员会、欧洲工业协会、CEN和CENELEC进行合作。这是沟通合作的新方式，也是为欧洲市场寻求业绩和市场需求的新方式。

欧盟委员会企业总署的领导也认为，如果制定某个领域的标准，这些标准应成为国际标准。因为欧洲的企业，尤其是中小企业，不仅想将产品销售到欧洲市场，还希望销售到国际市场，国际标准的需求。所以我认为20%的欧洲标准太多了。

当然，在一些领域如铁路、机械设备等，技术更新非常迅速。例如，CENELEC有照明技术委员会，而照明系统都是相同的，覆盖面非常广，因为物理原理是相同的。所以在CENELEC设立照明技术委员会很合理，在国际层面上也应该有一个技术委员会。这是未来DKE和CENELEC亟需做的事情。

■ 您如何看待中国市场？对未来与中国的合作有什么期待？

博纳德·提斯：我认为德国、欧洲和中国产业可以在很多方面开展合作，进行产品交换。标准化交流意味着各国的产品将会产生竞争关系，但我认为这种竞合关系也许是未来非常重要的一种趋势。在未来合作方面，目前ISO和IEC在至少五个方面还没有开展合作，合作涉及很多程序。我们必须关注企业感兴趣的领域。

例如，家庭自动化能控制家里的能源及其消耗。市场上有很多产品，如洗衣机、洗碗机和其他媒体系统，彼此之间有相互联系的通讯协议。在这

How do you see the Chinese market and what is your expectation on the future cooperation with China?

Bernhard Thies: The presses in Germany always see what happen in China in a negative way, commenting that the Chinese market is growing fast with potential risks. But I see that in the Chinese market, there are a lot of cooperation opportunities for the German industry, European industry and also the industry in China to work together. Exchange in standardization means that products are going to have “coopetition” to each other. I think coopetition is almost one of the best things which we have in the future.

In the future cooperation, I normally do not look on processes of cooperation. Now for some cooperation at the international level, there are a lot of procedures which I do not really care about. We have to look to items: what items are the industries interested?

For example, if you look into the home automation. Home automation controls the energy, the consumption in your home. There are a lot of products available on the market, such as washing machine, dish washers and other media systems, all having protocols to communicate to each other. We find out in Germany that it is impossible to come from one protocol, because we have a lot of protocols. We cannot find the only “the protocol” for the future, because that would not happen.

Therefore, we look at the cooperation in that area of smart home. We invented the EEBus Initiative in Germany and I am the Vice-President of this initiative. It must be possible to build up the intermediate layer, so that all the protocols can talk to each other. That means what the customer wants is that a product which uses the CANIS protocol can talk to another product for example using the CDP protocol. There could be also a very simple system to cooperate in the future on smart home. Smart

些方面,我们发现只有一个协议是行不通的,在未来的合作方面,需要很多协议。

因此,在智能家居方面开展合作时,我们在德国开展了EEBus行动,我是任此行动的副主席。在这些协议中间必须设有一个中间层,这样才能使所有协议互联互通。也就是说,如果你购买了使用CANIS协议的产品,那么再购买使用CDP协议的其他产品,这些产品就能够实现互联。这是未来智能家居合作的一个非常简单的系统。智慧城市在德国、中国甚至欧洲都有很大的市场。

德国有一个系统叫MBASYSTEMIC,因为很多人会越来越年老,将来他们会待在家里,非常需要技术系统如机器人等的帮助。在智能家居方面也有类似的情况。

另外,我们可以在人工智能或者机器人方面开展研究和开发合作。未来的机器人可以自学,这就意味着未来我们必须用新的方式来制定标准,确保机器人的所做所为合理恰当。我们正在制定IEC指



Dr. Thies accepts the interview from Liu Zhiyang, Editor-in-Chief of China Standardization.

home is in German market, European market and in China.

Some other things could be so-called in Germany the MBASYSTEMIC, meaning that a lot of people are becoming older and older. They will stay at home and they would need technical systems in the future. Technical systems are for example robots and other things. There are also the same situation as we have in smart home.

The other cooperation is possibly to address the research and development of artificial intelligence, or robots. Robots at factories in the future will be self-learning things. So that means in standardization, we must deploy a new way of creating standards to make sure robots are helping us for the right things. For example, we have the electrical safety in the ISO-IEC Guide 51 that is written in order to make standards for safe electricity applications.

Like Isaac Asimov in his book I, Robot set laws on robots to never attach and kill human being, we have to find out a new way of standardization that we can work together with Chinese experts for robots which are working dynamically.

■ **Do you often read *China Standardization*? How do you think about it?**

Bernhard Thies: Thank you very much for the invitation to come here. I am really surprised how much things you are doing in the press for the standardization and I've never seen that before. Therefore, I think it's a very good idea to make press resources, brochures and magazines explaining what standardization is. I am really surprised so many things are done here in China.

If I look into the magazine, it's very easy to find out what is interesting to read and also the combination between these pictures on one side and text on the other side, it really attracts me to read it. And I also send this magazine to my staff, they can read it and find out that this is a very good magazine which is describing things in standardization and what's going on in China. Therefore, I like it. 



南51, 就是为了制定安全用电标准。

就像艾萨克·阿西莫夫的小说《我, 机器人》中为机器人制定“不得伤害人类”的规则一样, 我们可以同中国的专家合作, 定义新的更有效的标准化模式, 适应机器人未来的动态工作。

■ **您平常阅读我们的杂志吗? 对此有什么评价?**

博纳德·提斯: 非常感谢你们的邀请, 我很高兴接受贵刊的采访。我之前不知道, 中国标准化杂志社在标准化领域做了大量的工作, 亲眼所见之后感觉很惊讶。我觉得, 通过出版资料、手册和杂志来宣传标准化工作是非常好的想法。令我惊讶的是, 中国在这方面已经做了大量的工作。

你们的杂志, 读起来让人觉得很有趣, 而且在版面设计上图文并茂, 非常吸引人。我还把杂志给其他员工传阅, 让他们了解这本很棒的杂志, 它不仅介绍了很多标准化领域的事情, 还展示了中国目前正在做的工作。我非常喜欢这本杂志。 