

# TV-Service – Seeing is believing

## BASF in motion

[tvservice.basf.com](http://tvservice.basf.com)

### Annual Shareholders' Meeting 2019

Mannheim, May 3, 2019

We work on finding solutions for future challenges in the areas of urban life, nutrition and energy. We show you our top innovations, the latest products, and provide you with an overview of our worldwide Verbund sites.

#### Footage material

As the world's leading chemical company, we believe strongly in the emotional appeal of film as a way of making innovations and solutions come alive before the viewer's eyes. Of course, as a journalist you can't be everywhere, but we can help bring you a little closer to our world.

**00'04**

#### (01) BASF Verbund site Nanjing

Activities in the plant / Naphtha tank farm



BASF-YPC is a good example of BASF's Verbund concept. Production plants are intelligently linked together via a network of pipelines. This saves logistics costs for transporting chemicals, raw materials and energy. One example: excess heat from one production plant is used for production in a neighboring plant.

#### Naphtha tank farm

Naphtha is the basis for a large number of important basic chemical compounds, especially ethylene and propylene. Ethylene and propylene are the most important molecules in the chemical industry.

#### For further information:

BASF SE, Multimedia and Publications, Photo, TV and Film  
Silke Buschulte-Ding  
Tel. 0049 621 60 48 387  
E-Mail: [silke.buschulte-ding@basf.com](mailto:silke.buschulte-ding@basf.com)



They are precursors for plastics, detergents and solvents, waxes, crop protection products, paints, and more. Almost every product produced by BASF is based on naphtha.

**02'34**

## **(02) Carbon Management**

Synthesis gas direct conversion - Evaluation of a test catalyst



Climate protection is firmly embedded in BASF's new corporate strategy. A central goal of this strategy is to achieve CO<sub>2</sub>-neutral growth until 2030. To accomplish this, BASF is continuously optimizing existing processes, gradually replacing fossil fuels with renewable energy sources and developing radically new low-emission production processes. The company is bundling all of this work in an ambitious Carbon Management program.

### **New Catalysts for Clean Olefins**

Olefins are intermediate substances for the production of cleaning materials, aroma chemicals or superabsorbents. New process technologies and catalysts can reduce the carbon footprint of olefin production by up to 50 percent.

**05'04**

## **(03) Alliance to End Plastic Waste**

Dr. Martin Brudermüller



#### **For further information:**

BASF SE, Multimedia and Publications, Photo, TV and Film  
Silke Buschulte-Ding  
Tel. 0049 621 60 48 387  
E-Mail: [silke.buschulte-ding@basf.com](mailto:silke.buschulte-ding@basf.com)



### **What are the goals of the Alliance to End Plastic Waste?**

Well, there is one very clear straightforward target: end plastic waste. The alliance, which we just have started, contributes 1 billion US\$ to achieve this goal. And we even have the ambition to bring together 1.5 billion US\$ over the next five years to find the solutions. I think this is a unique alliance, because for the first time we bring companies along the value chain shoulder to shoulder together to tackle the same problems. And this is great, because right at the start we have already around 30 companies, global companies, around different regions that come together in this alliance.

### **Why does BASF join the Alliance to End Plastic Waste?**

Well, as large producer of plastic materials we are convinced how great these materials are. They contribute so much value to mankind in terms of convenience, safety and health and it would simply be very sad, if the material, the quality of the material is discredited by not taking care until the end of the lifetime of the product. This is why we want to contribute as a member, and we are cofounding the alliance with our abilities and with innovation to find the right solutions to take care and to tackle the problem of waste and to find new solutions to dispose and reuse and recycle these materials.

### **Why is the Alliance important to you?**

Well, the alliance is important, because I think this is a real unique opportunity to go with the heart and with the minds to this problem of plastic waste. I think it is everywhere in the society and there is a huge awareness that we have to do something. BASF is a responsible company with a long tradition in sustainability. And this is why we want to be part of that unique global initiative.

### **How/What will BASF contribute to the Alliance to End Plastic Waste?**

Well, BASF is a global company with a lot of innovation, and I think we have a lot of opportunities to bring parties together and to really work on new perspectives, on how to deal with plastic materials. It is very much about innovation. We cannot only develop new technologies to take care of the longer lifetime of products, but we can also work with our partners to more and more drive innovation in terms of circular economy. One aspect that BASF is following here is the so-called “ChemCycling” project. This is converting plastic waste by smart methods into new chemicals again, and I think this is a unique opportunity where the innovation and the dedication of BASF can bring full value to the initiative.

#### **For further information:**

BASF SE, Multimedia and Publications, Photo, TV and Film  
Silke Buschulte-Ding  
Tel. 0049 621 60 48 387  
E-Mail: [silke.buschulte-ding@basf.com](mailto:silke.buschulte-ding@basf.com)



07'37

## (04) ChemCycling

Chemical recycling of plastic waste



Plastics do have proven benefits during their use phase – for example preservation of food loss, lightweight construction of vehicles and building insulation. Plastic waste, however, in particular plastic waste in the context of marine littering, is perceived as a major global challenge.

### From plastic waste to new chemical products

Since mechanical recycling is limited because of an increase of residues in the material in each cycle, a team across BASF has taken up this challenge and developed the ChemCycling project. With chemical recycling, fossil resources for chemical production can be replaced with recycled material from plastic waste.

### Comment

*“Plastics are omnipresent. But so far, only some of them have been recycled sensibly after use.”*

### Stefan Gräter

Project ChemCycling, BASF SE

*“Classic recycling processes are coming up against technical limits. There are plastic fractions, such as mixed plastics or contaminated plastic fraction, which cannot be recycled efficiently in this form. Exactly these mixed plastics are important for us as a raw material for the thermochemical processes that we use in ChemCycling.”*

*“With ChemCycling, we are describing a process along the entire value chain. It starts with plastic waste, which is otherwise very difficult to recycle. We make chemicals out of this and at the end of the value chain, products can be manufactured from these, which are 1000% made out of recycled materials.”*

### Comment

*“For ChemCycling, BASF is working with companies along the value chain. Plastic waste for testing is provided by Remondis. Plastic Energy, which operates plants in Spain, as well as Recenso GmbH,*

### For further information:

BASF SE, Multimedia and Publications, Photo, TV and Film  
Silke Buschulte-Ding  
Tel. 0049 621 60 48 387  
E-Mail: [silke.buschulte-ding@basf.com](mailto:silke.buschulte-ding@basf.com)



*from Remscheid, Germany, work with processes, such as direct oiling or pyrolysis. They have specialized in turning plastic waste back into oil."*

**Christian Haupts**

Recenso GmbH

*"We take plastic waste and turn it back into an oil – plastic waste from recycling, "yellow sack" or also from processed household waste. And the product that we manufacture is an oil that can be used again in exactly the same way as oil in the processing industry."*

**Comment**

*"The steamcracker in Ludwigshafen. Chemical base products are being produced here. So far made of naphtha. These chemical base products serve as raw material for the entire Verbund site. With ChemCycling however, a new source of raw material will be added to this:"*

**Andreas Kicherer**

Sustainability Strategy, BASF SE

*"With pyrolysis, the long-chain plastic molecules, which are interwoven very tightly with one another, are divided into smaller pieces. This turns a solid plastic into a liquid oil. This oil can be converted into base chemicals in a steamcracker. In turn, these base chemicals can be processed further into pure plastic granulate."*

**Comment**

*"The customer can determine how large the share of recycled plastic is within the context of the mass-balance process. The first applications range from food packaging right up to refrigerator drawers."*

**Stefan Gräter**

Project ChemCycling, BASF SE

*"We are still in the pilot phase of the ChemCycling process. There are obstacles that we need to overcome, technical obstacles, such as the purity of the pyrolysis oil or regulatory frameworks, which need to be created, so that BASF has the opportunity to develop a sustainable business model."*

*"We are convinced that with these processes, we can make a significant contribution, in order to get to grips with the global waste problem."*

**For further information:**

BASF SE, Multimedia and Publications, Photo, TV and Film  
Silke Buschulte-Ding  
Tel. 0049 621 60 48 387  
E-Mail: [silke.buschulte-ding@basf.com](mailto:silke.buschulte-ding@basf.com)



10'56

**(05) trinamiX**

Optics laboratory



The Ludwigshafen-based start-up trinamiX, a spin-off of BASF, is developing new methods for distance measurement and object recognition. These technologies are used, for example, in industrial automation.

**Infrared sensing: Chemical expertise for better microchips**

In the optics laboratory two employees test a prototype distance measurement device. They measure objects at different distances to determine its performance.

13'00

**(06) Shaping the future of electromobility:**

**Research on high-performance battery materials**

Production of a mini test battery (pouch cell): Cathode material, assembly & Test



Electromobility is an important contribution towards addressing global mobility needs – especially in combination with renewable energy. Lithium-ion batteries are used in the majority of today's electric vehicles. BASF is conducting global research on innovative cathode materials, one of the most important components of these batteries.

**For further information:**

BASF SE, Multimedia and Publications, Photo, TV and Film  
Silke Buschulte-Ding  
Tel. 0049 621 60 48 387  
E-Mail: [silke.buschulte-ding@basf.com](mailto:silke.buschulte-ding@basf.com)





## Materials for both lithium-ion and all-solid-state batteries

Cathode materials essentially determine efficiency, reliability, costs, durability and the size of the battery. Their properties enable speed, acceleration and power – from compact cars to SUVs, from trucks to buses. BASF's research includes the synthesis of cathode materials (including precursors), characterization of material properties and performance testing. At the same time, experts are working on components for next-generation batteries, such as all-solid-state batteries.

**15'08**

### (07) Digitalization in logistics

The fully automated tank container depot



**A new integrated storage and logistics concept will help BASF significantly reduce logistics costs. The transport volume at the Ludwigshafen site is around 20 million metric tons per year. Since the transport links at the Ludwigshafen site account for a considerable share of costs, this is the focus of the concept.**

#### Automated guided vehicles (AGV)

Ludwigshafen site. It includes an automated tank container terminal, the world's largest patented tank containers as well as an autonomous and teleoperated vehicle. Together they will supply production plants faster and at lower costs. It will soon only take one hour from order to delivery instead of 24 hours.

BASF starts operating the new tank container storage facility in October 2018 at its Ludwigshafen site. This warehouse is part of an integrated storage and transport concept that BASF is using to improve customer service and significantly reduce logistics costs at the same time.

#### For further information:

BASF SE, Multimedia and Publications, Photo, TV and Film  
Silke Buschulte-Ding  
Tel. 0049 621 60 48 387  
E-Mail: [silke.buschulte-ding@basf.com](mailto:silke.buschulte-ding@basf.com)



**17'30**

## **(08) Smart Manufacturing**

Daily inspection rounds are supported by „Augmented Reality“



**We are increasing the effectiveness of our plants and the efficiency of our production processes through the use of digital technologies and data. With mobile devices, we have access to relevant information for our daily work. The tight integration of production and business processes allows us to make better and faster decisions.**

### **Augmented Reality**

The “Augmented Reality” application supports employees at our plants in their daily tasks. Through the application, they have direct and quick access to necessary information via especially equipped mobile devices, such as tablets or smartphones. This enables us to increase the efficiency of our processes and ensure a more sustainable knowledge transfer.

For the "Smart Manufacturing" project, employees of the butadiene plant have created and tested various applications and will standardize these in the near future.

#### **For further information:**

BASF SE, Multimedia and Publications, Photo, TV and Film  
Silke Buschulte-Ding  
Tel. 0049 621 60 48 387  
E-Mail: [silke.buschulte-ding@basf.com](mailto:silke.buschulte-ding@basf.com)

