

## Media Backgrounder

January 9, 2014

### Philips Research - 100 years of key innovations

#### 1915 – Philips Argon lamp

Philips introduced light bulbs filled with argon, which resulted in a longer lifetime for the filament: the Philips Argon lamp, “as bright as the sun!”



#### 1923 – Philips Miniwatt radio tube

With this radio tube, the energy efficiency was improved considerably, enabling greater output power at lower energy use. The ‘Miniwatt’ radio tube made it possible to use loudspeakers instead of earphones to listen to the radio – now, families could listen together.



#### 1925 – Metalix X-ray tube

Philips developed the Metalix apparatus for medical and industrial X-ray analysis applications, focusing on simplicity and safety. Simplicity of operation enabled radiologists to concentrate on their case and to deal with medical questions only, while effective radiation shielding and electrical insulation improved safety for both patient and operator.



#### 1926 – Pentode radio tube

The invention of the pentode radio tube – which had five electrodes – is considered to be a breakthrough innovation in vacuum electron tube technology that enabled the fast growth of radio set sales for Philips.



#### 1931 – Philora sodium gas discharge lamp

Philips introduced the Philora sodium gas discharge lamp with its characteristic yellow-orange light. It was a perfect lamp for street lighting – the first street in the world to be lit with the Philora in 1932 was between Beek and Geleen, in the south of the Netherlands.



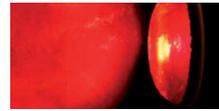
#### 1939 – Philishave rotary shaver

Alexandre Horowitz, inventor from Philips, developed the world’s first shaver with a rotary shaving head, which was named ‘Staalbaard’ (steel beard).



### 1945 – Infraphil infrared lamp

Philips registered the Infraphil product family in September 1945. From 1946 onwards, Philips worldwide released several dozens of infrared incandescent light bulbs and armatures that provided muscle pain relief through deep heat penetration.



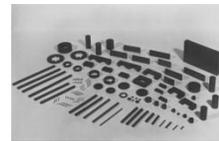
### 1948 – First live television broadcast in the Netherlands

On 18 March, 1948, the first Dutch experimental television broadcast (in black and white) took place in Eindhoven, the Netherlands, kicking off a series of experimental television transmissions between 1948 and 1951 that could be received by a small number of TV sets in and around Eindhoven, mainly owned by Philips employees.



### 1950 – Ferroxdure/Ferroxcube

Work on magnetic materials for a broad spectrum of applications resulted in the invention of Ferroxdure and Ferroxcube materials. This grew into activities in magnetic recording leading to the video cassette recorder and audio compact cassette.



### 1957 – First X-ray image on TV monitor

In February 1957, Philips' first X-ray television image was shown on a closed-circuit television (CCTV) system coupled to an image intensifier. The possibility to show an X-ray image on a TV monitor gave the radiologist much more freedom of movement, and several people could look at the X-ray image at the same time.

### 1958 – Poème Électronique (World Fair Brussels)

This world's first multimedia spectacle of film, light, and electronic music took place in the Philips Pavilion at the 1958 World Fair in Brussels. The project was conceived by architect Le Corbusier and Philips director Louis Kalff, the electronic music was composed by Edgard Varèse, and the pavilion was designed primarily by Iannis Xenakis.



### 1961 – Plumbicon TV camera tube

Philips developed a new camera tube using lead monoxide as the sensitive layer, which enabled generating high-resolution television images even at low light levels. This tube, known as the Plumbicon, was presented to the broadcast industry in 1961, and soon became the standard camera tube in television systems.



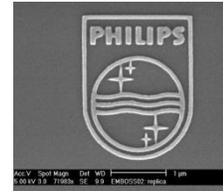
### 1963 – Audio compact cassette

Philips launched the Compact Cassette at the Internationale Funkausstellung (International Consumer Electronics Fair) in Berlin. It enabled people to compile their own personal music collection – not just for themselves, but also for their loved ones.



**1966 – LOCOS (Local Oxidation of Silicon)**

Invented by Dr. Else Kooi and his team, this semiconductor technology enabled designers to make new integrated circuit device structures and generally improve their performance and packing density.



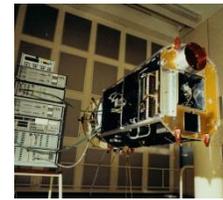
**1971 – Video cassette recorder**

Philips introduced its first video cassette recorder (VCR) for domestic use.



**1974 – ANS Dutch satellite**

Philips Research contributed to the development of the first Dutch satellite, ANS ('Astronomische Nederlandse Satelliet', Dutch Astronomical Satellite), which was designed for the research of radiation sources – particularly X-ray – in space.



**1979 – Compact Disc**

On 8 March, 1979, Philips and Sony demonstrated the Compact Disc (CD) and player – the world's first digital optical storage format – to the international press, showing that it was possible to reproduce audio signals with superb stereo quality by using digital optical recording and playback. This invention – the first-ever digital consumer product to find its way into almost every consumer's home – resulted in numerous other optical storage formats, from Digital Versatile Disc (DVD) up to Blu-ray Disc (BD) for audio, video, games, and other data. The first commercially available CD was introduced in 1982.



**1980 – Compact fluorescent lamp**

Philips became the first manufacturer to mass-produce a compact fluorescent energy-saving lamp with a screw-in base.



**1995 – Ultra-High-Performance (UHP) lamp**

The UHP lamp – a projection lamp with a lifetime of more than 10,000 hours – was introduced for use in commercial projection systems, home theatre projectors, and video walls.



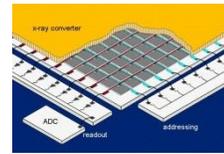
**1998 – 3D rotational X-ray**

It was discovered that with a series of projections, combined with a C-arm that moves 180 degrees around the patient, 3D X-ray images could be generated. This marked the start of research into the possibilities for three-dimensional X-ray imaging – Philips introduced 3D rotational angiography in 1998.



**1999 – Flat-panel X-ray detector**

Philips introduced the first flat-panel static X-ray detector. It had a higher dynamic range, which made it possible to differentiate a larger range of grayscale values to provide clearer X-ray images with better contrast.



**2004 – Ambilight TV**

Philips introduced the first Ambilight TV, which creates light effects around the television that correspond to the on-screen video content.



**2010 – [Lifeline GoSafe](#) – fall detection for seniors**

Lifeline GoSafe features a pendant-style help button that can automatically call for help if a fall is detected and a senior is unable to push his or her help button.



**2011 – [HeartNavigator](#)**

Philips introduced HeartNavigator, 3D planning and navigation software that helps doctors plan and perform minimally-invasive cardiac procedures using catheter-based devices. Philips was the first supplier to receive FDA approval for this type of solution in this application.



**2011 – [AirFloss](#)**

Originally launched in 2011, the Sonicare AirFloss makes flossing easier and more enjoyable. Using micro-droplet technology, it delivers a rapid burst of air and water droplets that gently removes plaque between the teeth and helps to improve gum health.



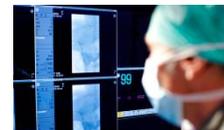
**2012 – [Philips hue](#)**

Philips unveiled hue, a personal wireless LED home lighting system, which allows people to create and control the light using their smartphone or tablet.



**2013 – [AlluraClarity](#)**

The AlluraClarity family of interventional X-ray systems with ClarityIQ technology introduces a comprehensive set of system-wide improvements that enables doctors to perform minimally-invasive operations with high-quality images at low X-ray doses.



**2013 – [200 lumens per watt LED lamp prototype](#)**

Philips demonstrates a TLED prototype, designed to replace fluorescent tube lighting, that produces a record 200 lumens per watt (200 lm/W).



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