

**MICROTECH GEFELL**



microphones & acoustic systems - founded 1928 by Georg Neumann

# Line Array Microphones in use

Finely Crafted



*made in Germany*

# Company

**MICROTECH GEFELL**



microphones & acoustic systems - founded 1928 by Georg Neumann

## Company Configuration

### **Georg Neumann KG in Gefell**

founded as Georg Neumann & Co. in Berlin 1928,  
situated in Gefell since 1943



**Microtech Gefell GmbH**  
only daughter company



# Sales Department



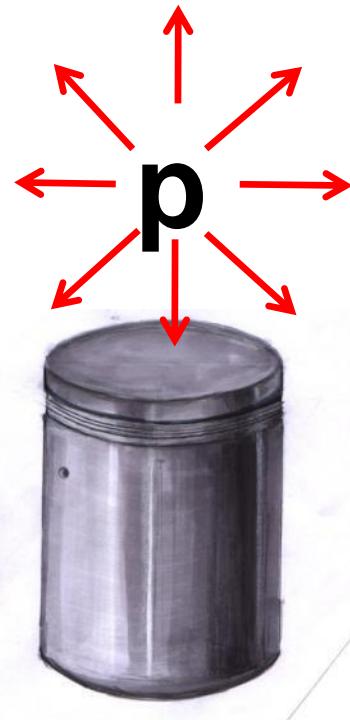
microphones & acoustic systems - founded 1928 by Georg Neumann

Michael Militzer  
Sales Engineer  
[m.militzer@microtechgefell.de](mailto:m.militzer@microtechgefell.de)



## Non Directional Microphone

**pressure**  
=  
unidirectional  
physical size  
(scalar)



**pressure sensor type (without directional sensitivity)  
measurement microphone**

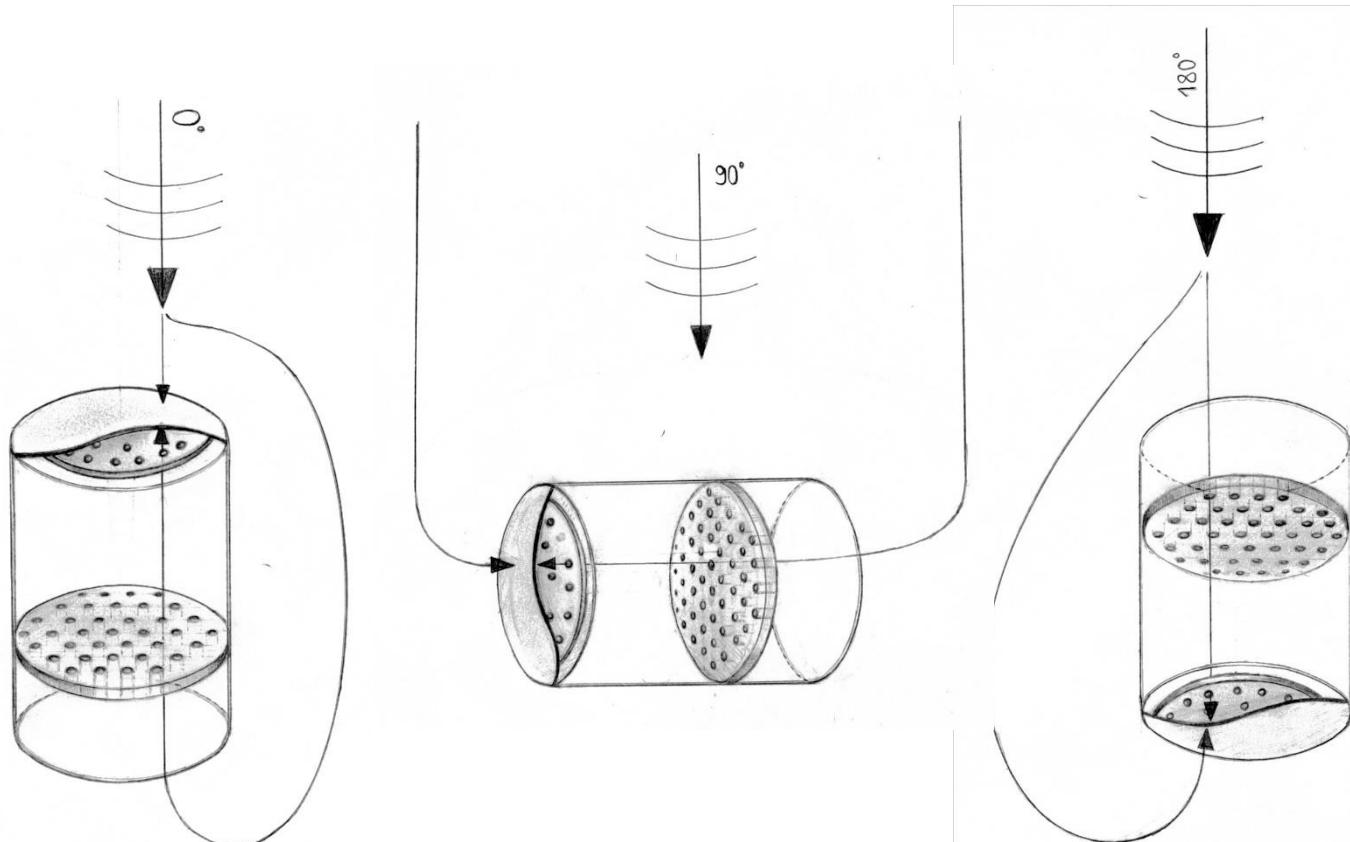
# Capsule

**MICROTECH GEFELL**



microphones & acoustic systems - founded 1928 by Georg Neumann

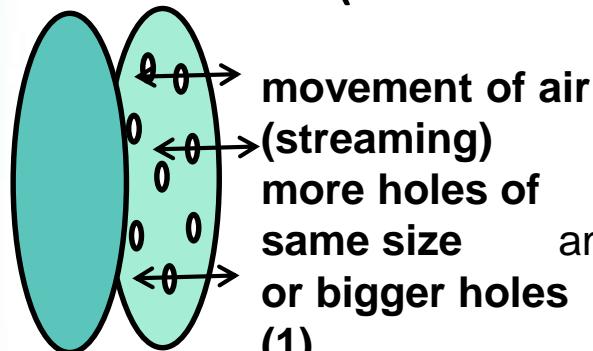
## Directional Microphone



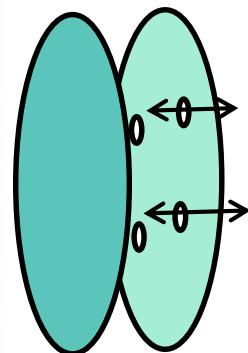
**pressure gradient sensor type (directional sensitivity)**  
**no measurement microphone**

## Capsule

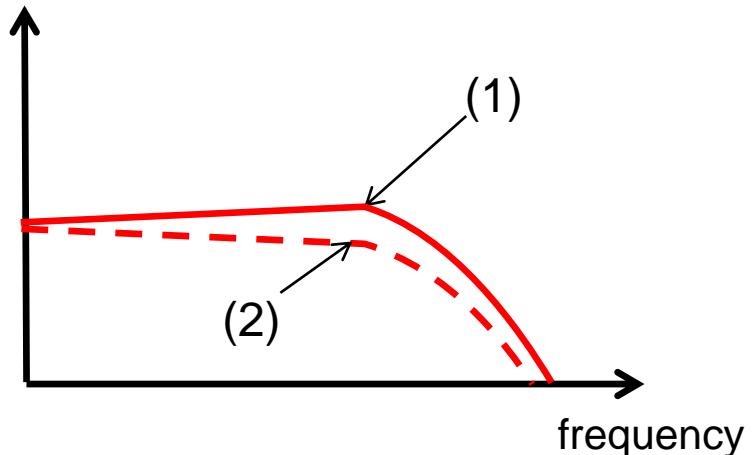
### Effects between moving Membrane and Air in the Capsule Body (Actuator Pressure Response)



movement of air  
(streaming)  
more holes of  
same size or bigger holes  
(1)



movement of air (streaming + compression)  
less holes of the same size or smaller holes  
(2)



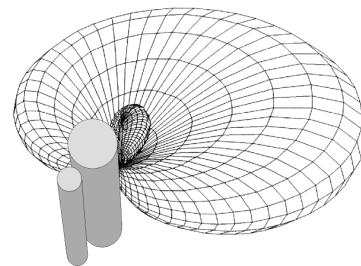
# **MICROTECH GEFELL**



microphones & acoustic systems - founded 1928 by Georg Neumann

## KEM 975

- Multi capsule condenser microphone system
- Broad cardioid pattern to cover wide or moving sound sources
- Optimum positioning using visual indicators
- Suppression of undesirable reflections on the vertical axis



KEM 975

**MICROTECH GEFELL**



microphones & acoustic systems - founded 1928 by Georg Neumann

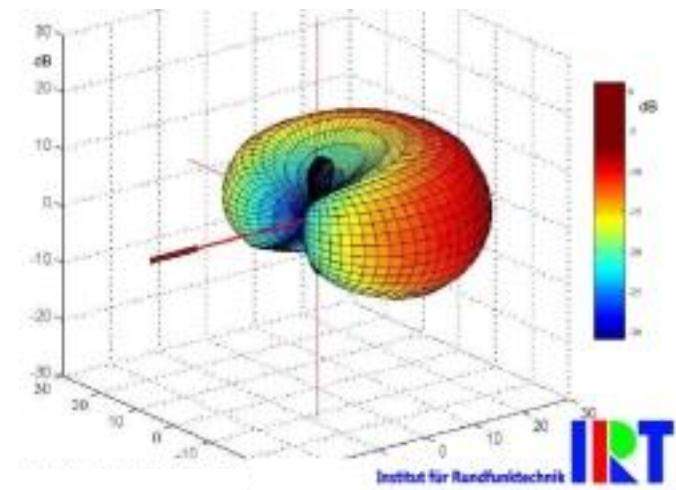
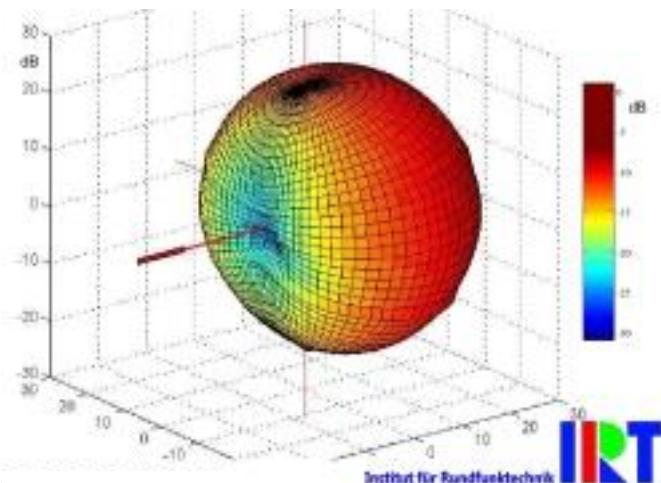
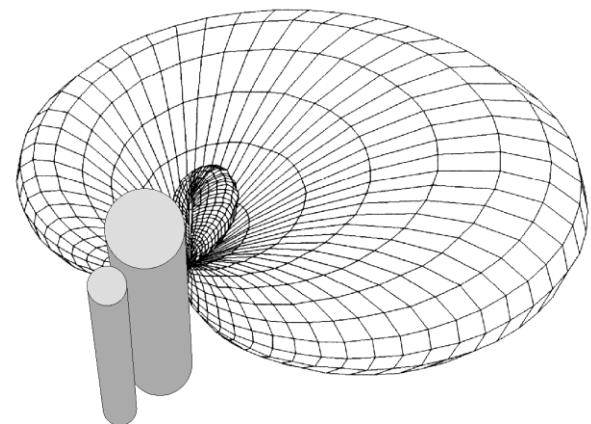
## Function

- Developed in a cooperation with the IRT
- 8 small membrane condenser capsule microphone
- separate mounting of capsules and preamp



# Function

- cardioid pattern in horizontal axis
- coverage angle horizontal 120°
- vertical pattern like a shotgun
- coverage angle vertical 30°



# Function

- Line array microphone

- Maximum dimension limits directivity at low frequencies
- Ratio: Wavelength to maximum dimension and directivity
- Example: **Required microphone length**
  - At **630Hz** the required length is **28cm**
  - At **100 Hz** the required length is **over 1.7m**  
(more than six times longer than 28cm)



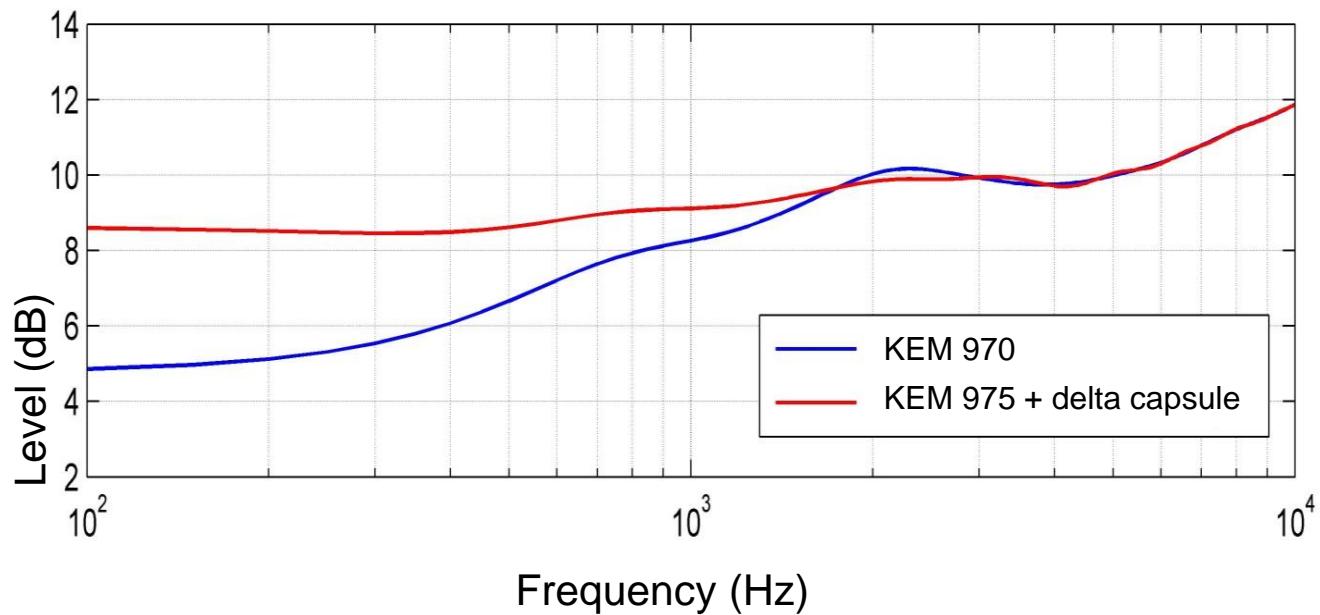
KEM 975

**MICROTECH GEFELL**



microphones & acoustic systems - founded 1928 by Georg Neumann

## Directivity



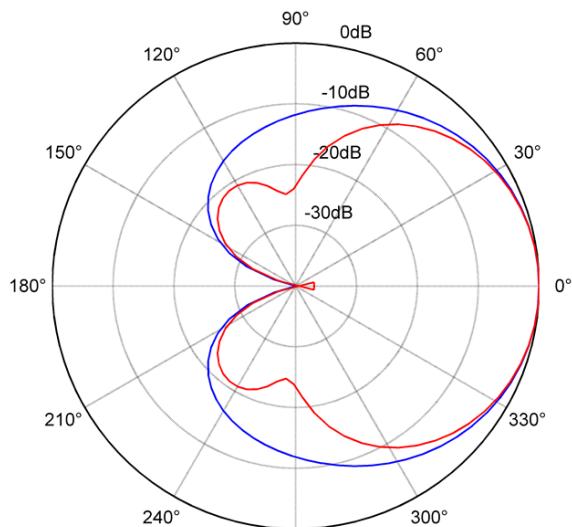
# KEM 975

**MICROTECH GEFELL**

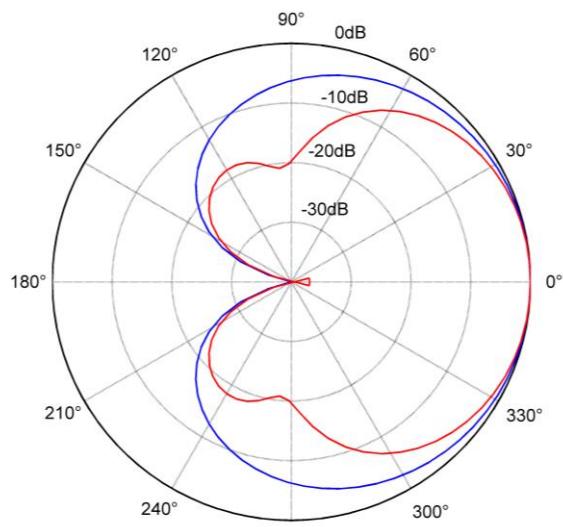


microphones & acoustic systems - founded 1928 by Georg Neumann

vertical characteristic, at 400Hz



horizontal characteristic at 400 Hz

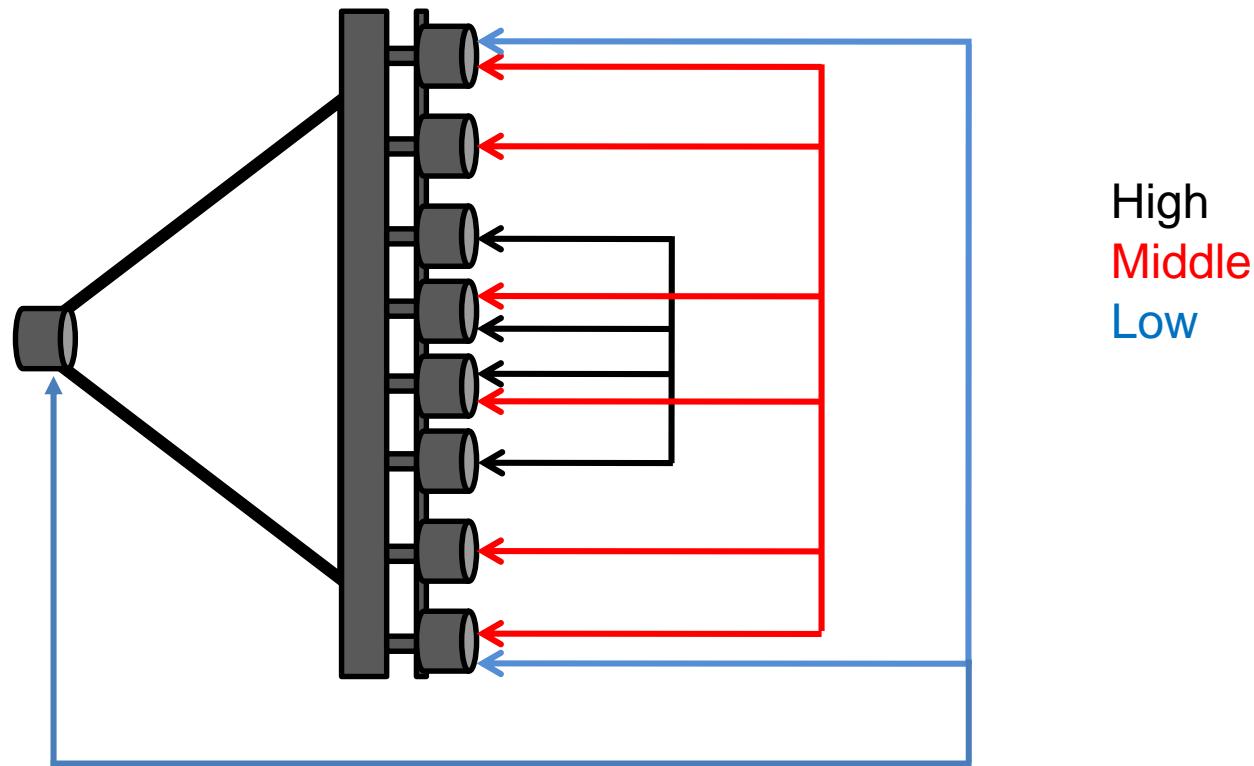


— KEM 975

— KEM 975 with Delta Capsule

# Function

- separate recording of high, middle and low frequencies



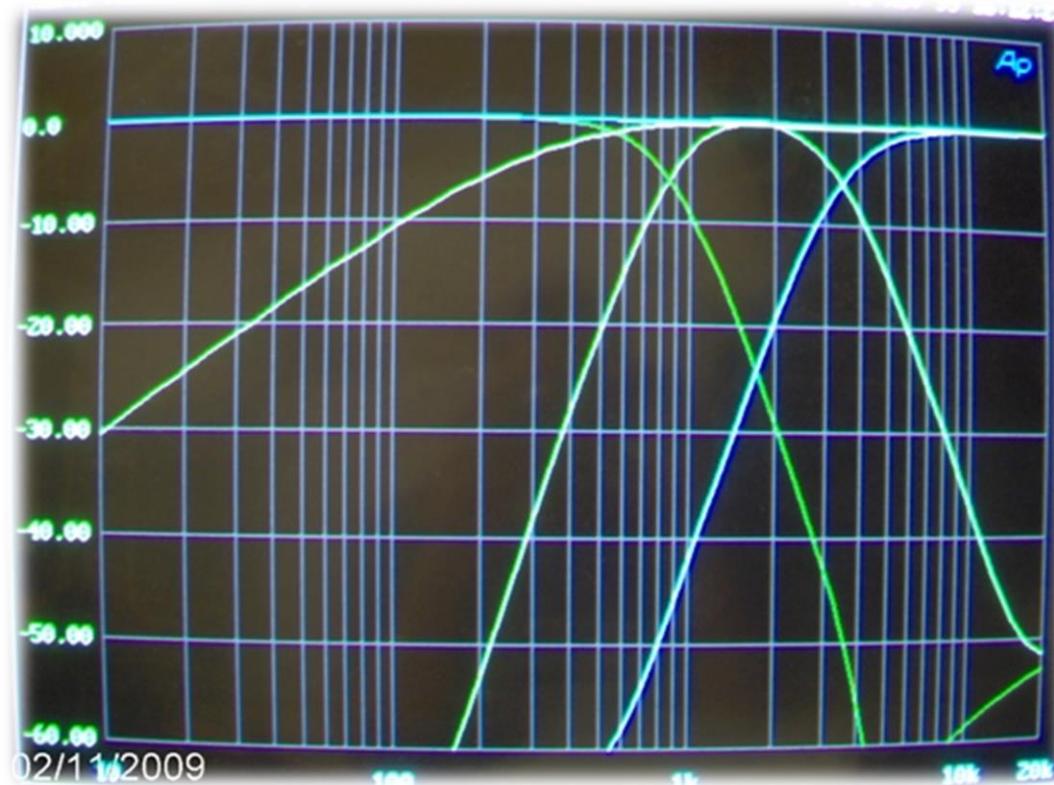
KEM 975



microphones & acoustic systems - founded 1928 by Georg Neumann

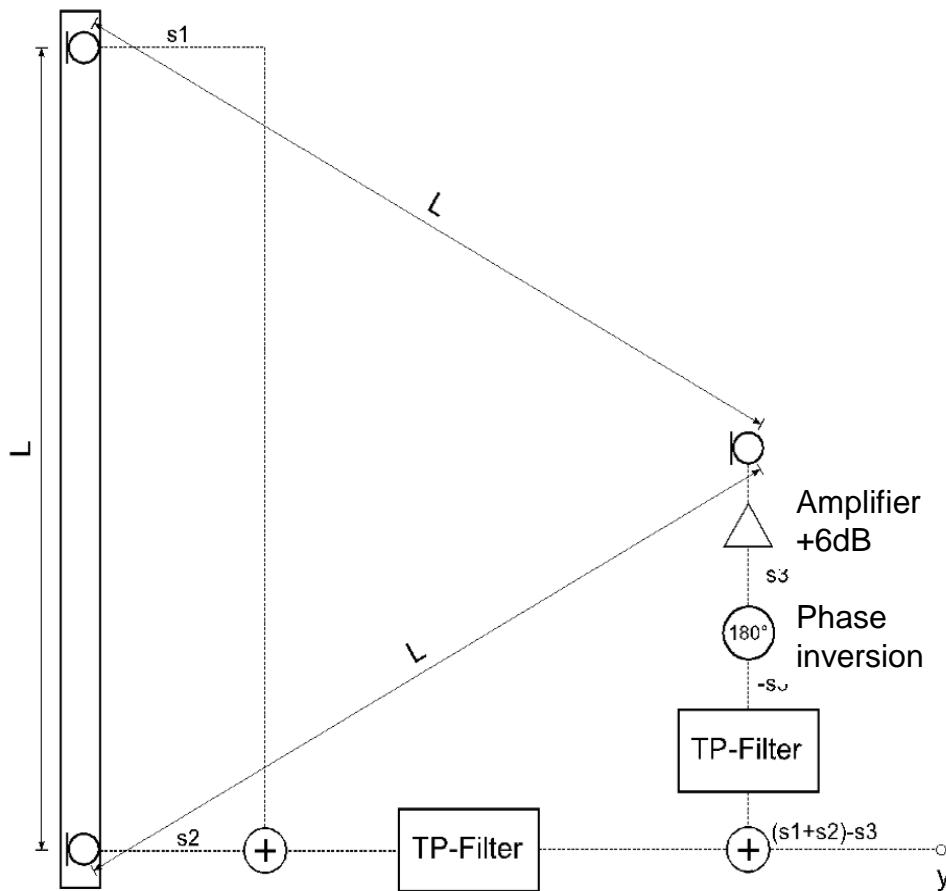
# Function

- signal mixing



# Function

- signal mixing



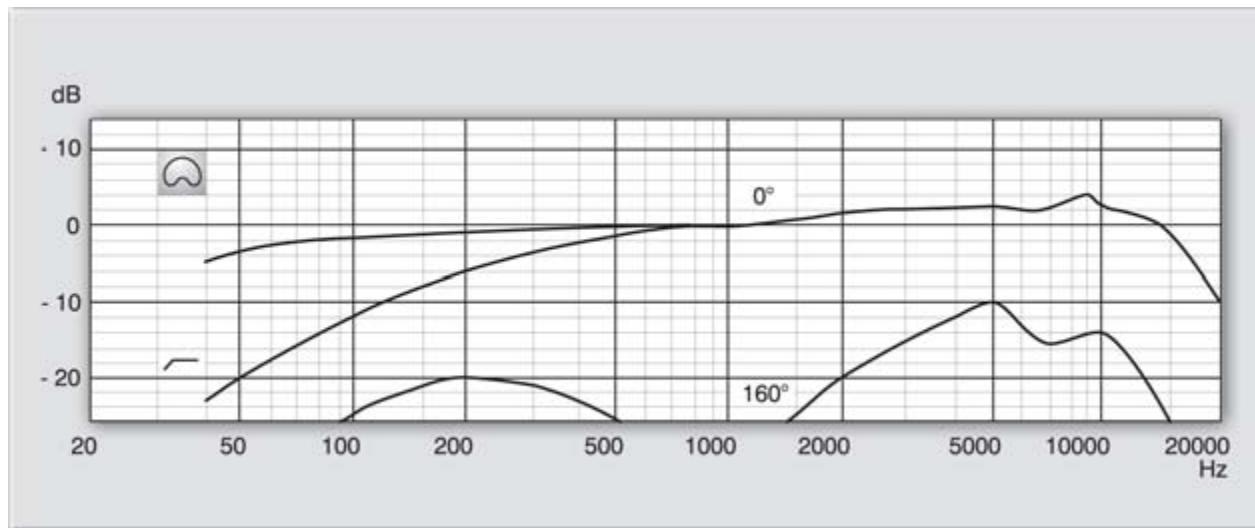
KEM 975

**MICROTECH GEFELL**



microphones & acoustic systems - founded 1928 by Georg Neumann

# Function



KEM 975

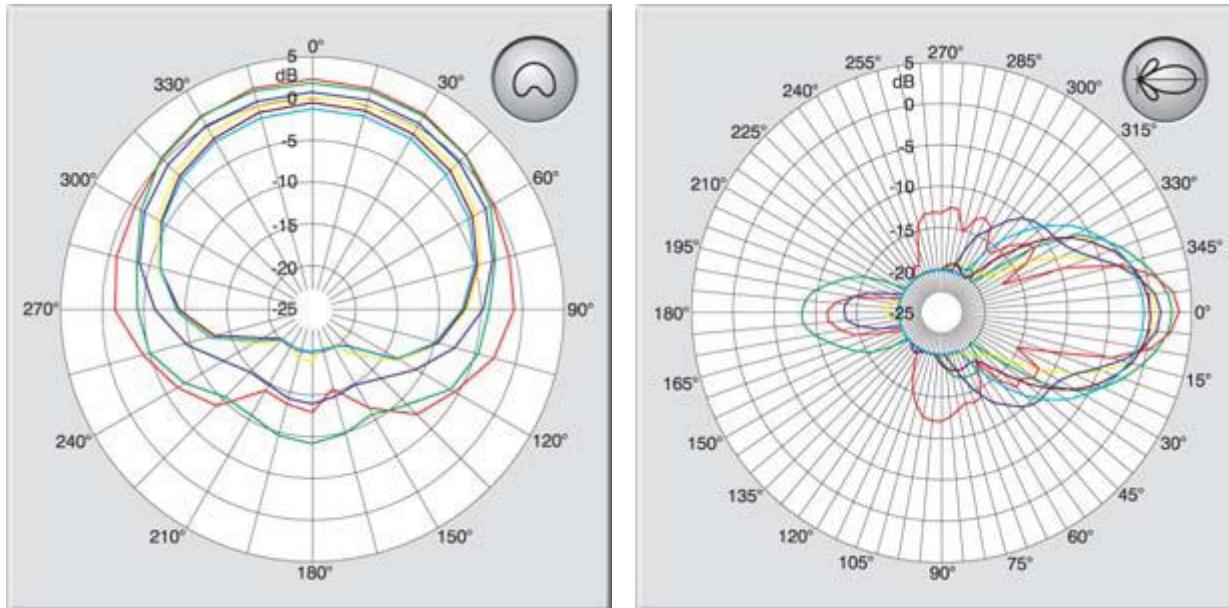
**MICROTECH GEFELL**



microphones & acoustic systems - founded 1928 by Georg Neumann

# Function

- nearly frequency independent polar pattern



8 kHz 5 kHz 3,15 kHz 2 kHz 1,25 kHz 800 Hz

KEM 975



microphones & acoustic systems - founded 1928 by Georg Neumann

# Applications

- on stages
- on presenter desks
- as table microphone
- radio an tv- production
- video conferencing

KEM 975

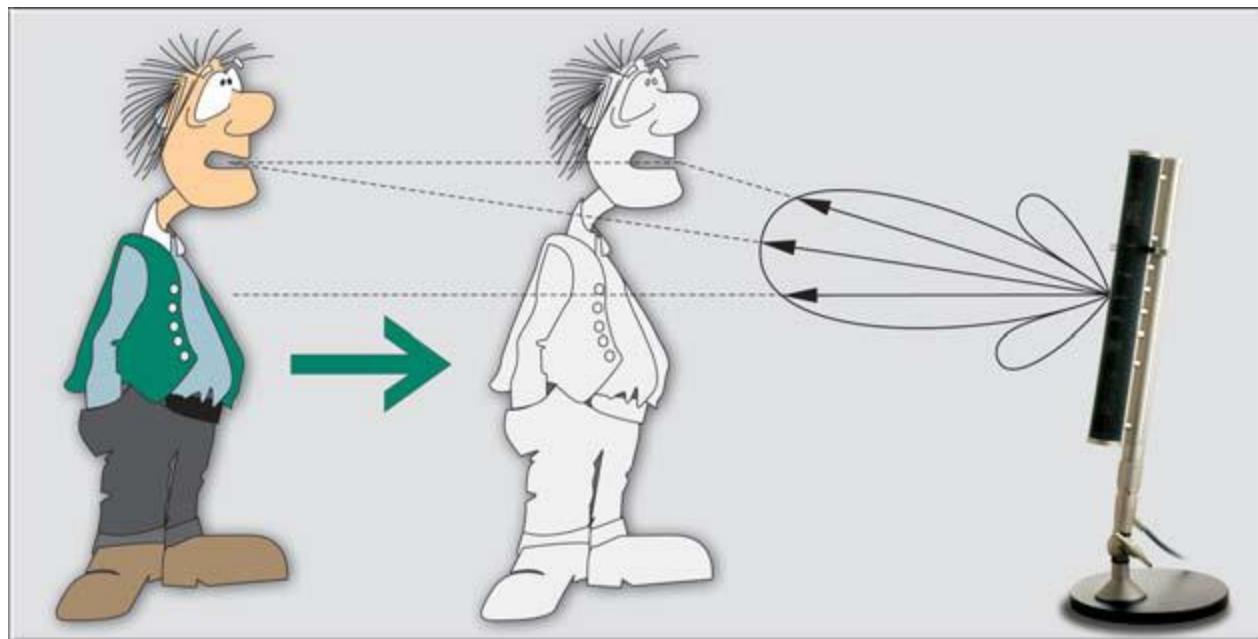
**MICROTECH GEFELL**



microphones & acoustic systems - founded 1928 by Georg Neumann

# Applications

- compensate level changing



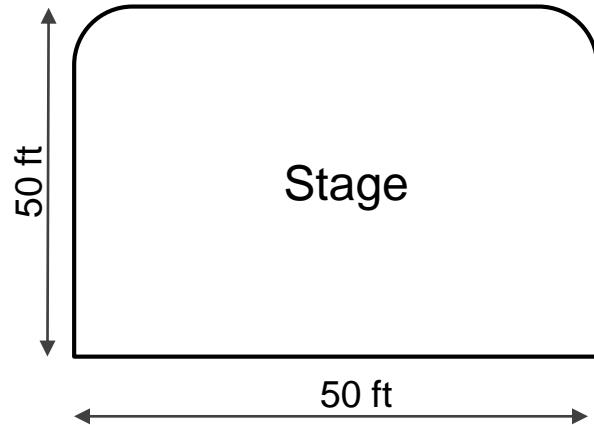
# Stage

# MICROTECH GEFELL



microphones & acoustic systems - founded 1928 by Georg Neumann

German State Opera Berlin



Deutsche Staatsoper Berlin

Stage

**MICROTECH GEFELL**



microphones & acoustic systems - founded 1928 by Georg Neumann



Festspielhaus Baden-Baden

Anna Netrebko, Elina Garanca

Stage

**MICROTECH GEFELL**



microphones & acoustic systems - founded 1928 by Georg Neumann



Stage

**MICROTECH GEFELL**



microphones & acoustic systems - founded 1928 by Georg Neumann



# MICROTECH GEFELL



microphones & acoustic systems - founded 1928 by Georg Neumann



Gewandhaus Leipzig

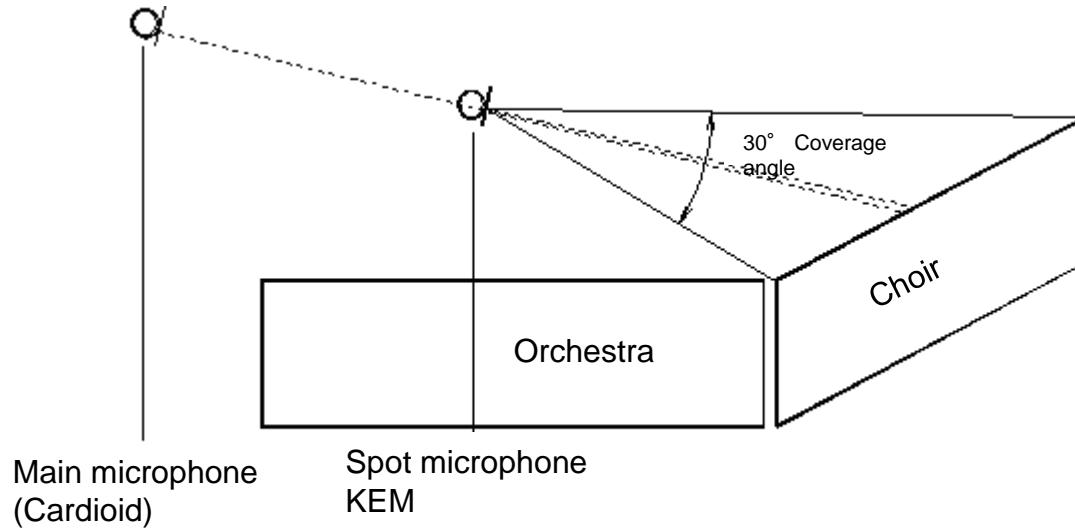


# Recording

**MICROTECH GEFELL**



microphones & acoustic systems - founded 1928 by Georg Neumann



## Spot microphone:

Wanted: Choir signal

Unwanted: Orchestra / diffuse sound



KEM 975

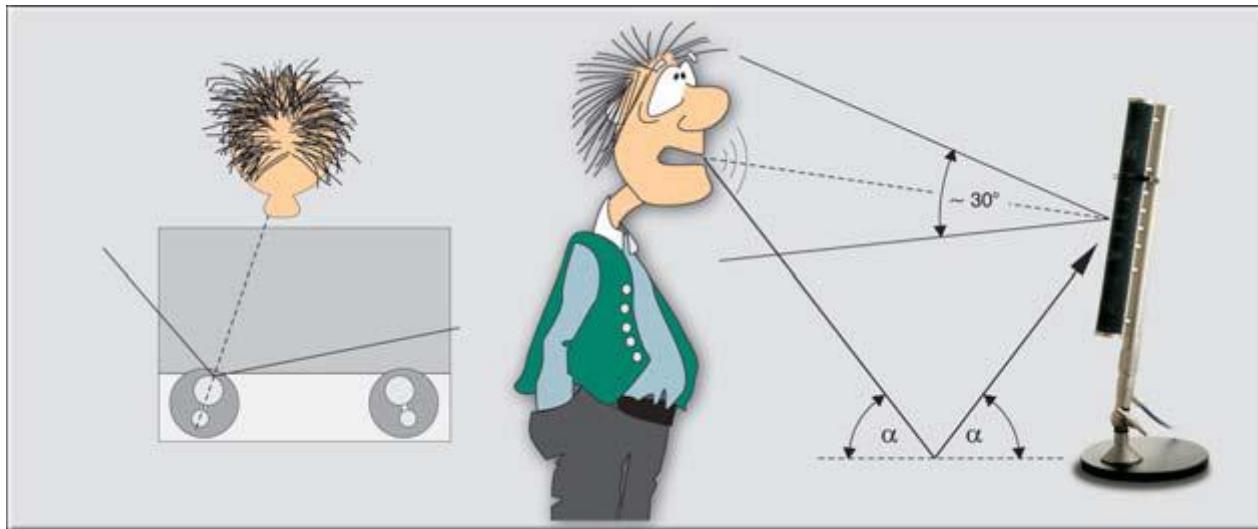
**MICROTECH GEFELL**



microphones & acoustic systems - founded 1928 by Georg Neumann

# Speakerdesk

- reject unwanted noise

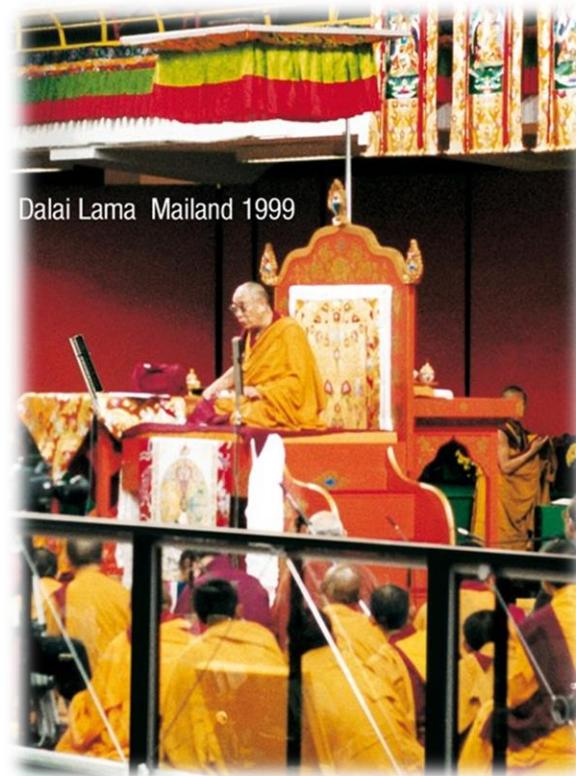


# Speakerdesk

**MICROTECH GEFELL**



microphones & acoustic systems - founded 1928 by Georg Neumann



Dalai Lama Mailand 1999

# Speakerdesk

**MICROTECH GEFELL**



microphones & acoustic systems - founded 1928 by Georg Neumann



# Speakerdesk

**MICROTECH GEFELL**



microphones & acoustic systems - founded 1928 by Georg Neumann



# MICROTECH GEFELL



microphones & acoustic systems - founded 1928 by Georg Neumann



YouTube: <https://youtu.be/BZISJxIXbaQ>

# Conference

**MICROTECH GEFELL**



microphones & acoustic systems - founded 1928 by Georg Neumann

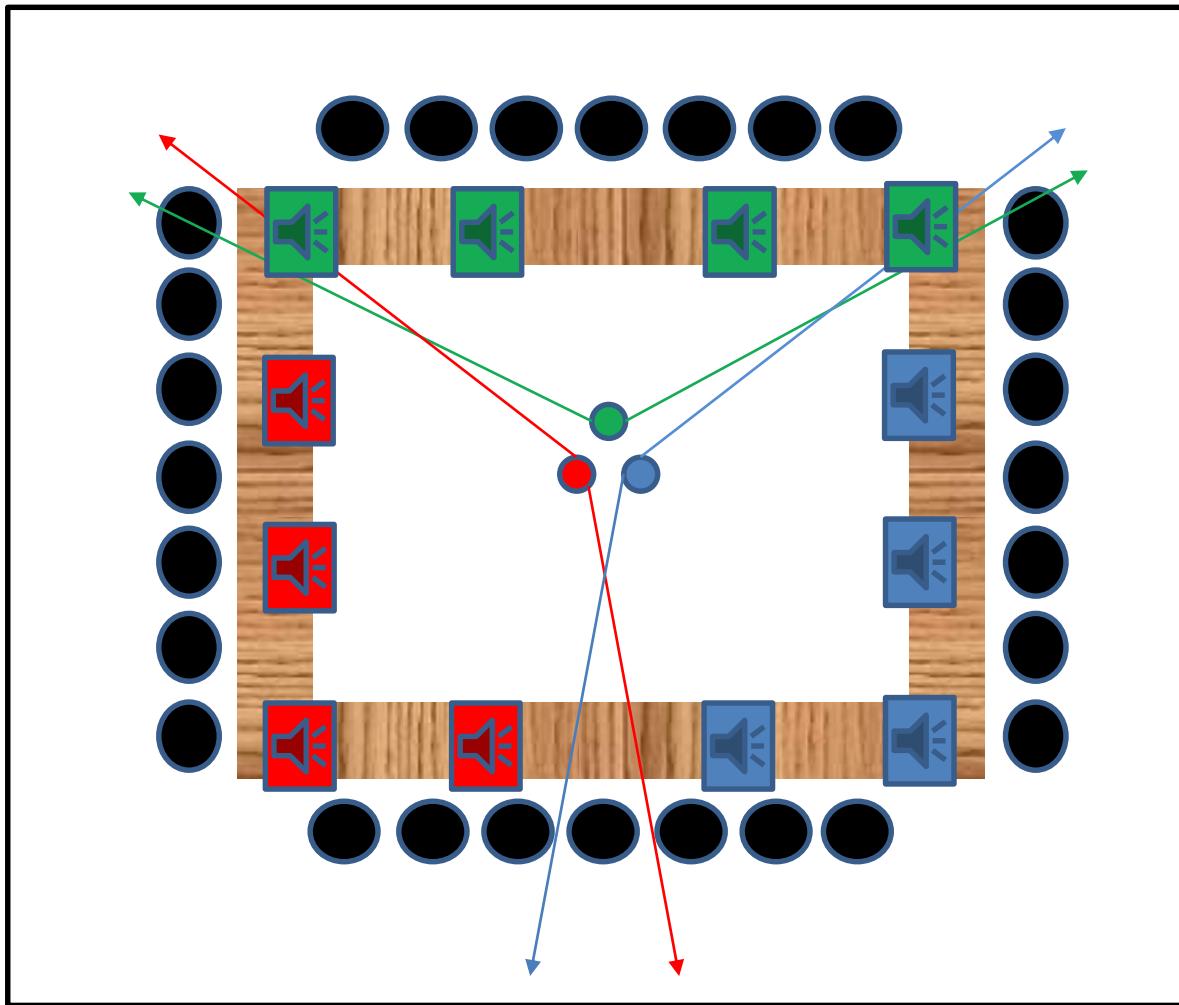


# Conference

**MICROTECH GEFELL**



microphones & acoustic systems - founded 1928 by Georg Neumann



# MICROTECH GEFELL



microphones & acoustic systems - founded 1928 by Georg Neumann



# Conference

**MICROTECH GEFELL**



microphones & acoustic systems - founded 1928 by Georg Neumann



# Useful Tools

# MICROTECH GEFELL



microphones & acoustic systems - founded 1928 by Georg Neumann



M 373 + XL 2

**M 372**  
1/4" Measurement Microphone

Frequency range 20Hz - 20kHz,  
Free-field  
Dynamic range 28dB(A)-120dB  
Supply 5V DC ... 12V DC

**Analyzer – App from DSP mobile More**  
information and download at:  
<https://itunes.apple.com/de/app/analyzer/id454225351?mt=>



The analyzer app interface shows a large graph of a sound waveform with a green spectrum analysis overlay. Below the main screen are three smaller screens showing different views of the data: a histogram, a frequency response curve, and another spectrum analysis view. The bottom of the interface includes various control buttons and settings.



Soundbook

Soundbook

# **MICROTECH GEFELL**



microphones & acoustic systems - founded 1928 by Georg Neumann

Original research:

Dipl. Ing. Sebastian Goossens  
IRT - Institut für Rundfunktechnik,  
München

Dipl. Ing. Udo Wagner  
Microtech Gefell GmbH  
Gefell

**MICROTECH GEFELL**



microphones & acoustic systems - founded 1928 by Georg Neumann

Thank  
you for your  
Attention

[www.microtechgefell.de](http://www.microtechgefell.de)  
[info@microtechgefell.de](mailto:info@microtechgefell.de)