



# Introduction of learning energy efficiency networks (LEEN)

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# History

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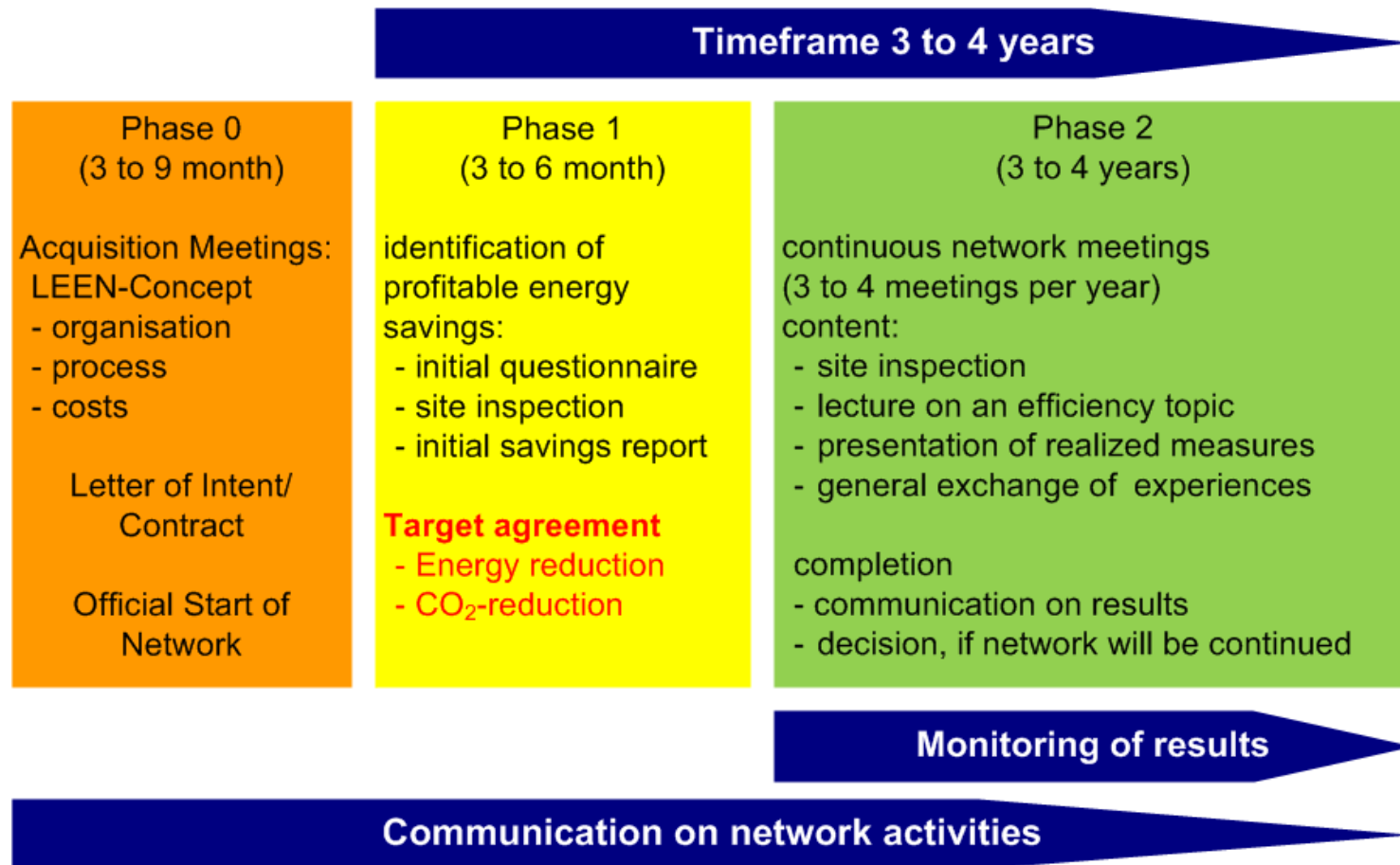
- 1987: First Network in Switzerland (Zürich)
- 2002: First Network in Germany (Hohenlohe)
- 2006 – 2009: First concept of a LEEN-Management System
- 2009 – 2014: Development of the current LEEN-Management System during the „30 Pilot Network-Project“ (funded by German Environmental Ministry/ NKI Program)
- 2010: Start of LEEN Ltd. to spread the concept world wide and to further develop the LEEN-Management System
- 2012: ISO 50001 conformity for the LEEN-Management System  
50 Networks operating in Germany  
First Networks in Austria (ILL-Werke, ENAMO)  
Pilot Project in China (together with SGCC)  
First steps into the Japanese and Brazilian market

# LEEN-Networks – What does it take?

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1. Initiator (e.g. energy agency, industrial chamber, utility)
2. Moderator and consultant engineer (LEEN-certified)
  - LEEN-certification: 3-day training for moderators and consultant engineers including test
3. 10 to 15 participating companies
  - Often from different branches
  - Located in one region
  - With minimum energy cost of 23m JPY
  - Willingness to share information and to invest
  - Participation in an active and constructive way
  - Management should be involved

# LEEN-Networks – How does it work?



# Impact: Profitability of identified measures

	No of measures	partial investment*	CO <sub>2</sub> -reduction	yearly cost reduction	NPV (i=10%, 20 yrs)	internal rate of return (20 yrs)	static amortisation	dyn. amortisation (i=10%)	energy reduction [% MWh]	CO <sub>2</sub> -reduction
		[€]	[t/a]	[€/a]	[€]	[%]	[a]	[a]	[%]	[%]
profitable measures	3.118	167.378.862	321.825	60.884.669	406.575.705	36,0%	2,7	3,4	6,4%	8,5%
all measures	5.447	307.396.773	362.988	66.735.348	345.211.582	22,0%	4,6	6,5	7,3%	9,5%

\* additional investment that leads to the energy reduction

profitability: **internal rate of return > 12%**  
summarized figures calculated via annuities

Source: LEEN ltd.

# Achieved energy savings in completed LEEN-Networks in Germany (selection)

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- Hohenlohe: -20.1% (after 5 years)
- Ravensburg: -12.7% (after 5 years)
- Franken-Oberpfalz: -8.7% (after 4 years)
- Süd-West: -7.6% (after 3 years)
- Hanse: -7.5% (after 3 years)
- Donau-Alb: -7.0% (after 3 years)
- Heilbronn-Franken: -6.9% (after 3 years)

Source: LEEN Ltd. / EnBW Sales Ltd.

# Customer Value – Profitability of LEEN Network participation (example)

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Summary of a network with 10 evaluated customers:

- Yearly savings of all 10 companies 180m JPY/a
- Total investment of all 10 companies 310m JPY
- ROI on average: 1.7 years

Source: LEEN Ltd. / EnBW Sales

# Customer Value – Undertaken measures (selection)

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- Exchange of 250 lights at a production site
  - Investment: 1.3m JPY
  - Energy Savings : 48% (= 810,000 JPY/a)
  - ROI 1.6 years
- Exchange of a compressed air system:
  - Investment 8.0m JPY
  - Energy Savings: 9% (= 6.9m JPY/a)
  - ROI 1.2 years
- Improved heat recovery from steam through a new heat exchanging device
  - Investment: 4.8m JPY
  - Energy Savings: 6.7m JPY/a
  - ROI 0.9 years
- Heat recovery at a compressed air system through a new heat exchanging device
  - Investment: 5.2m JPY
  - Energy Savings: 5.3m JPY/a
  - ROI: 1.0 years

Source: LEEN Ltd. / EnBW Sales/ Michelin



# LEEN-Networks – Who is already taking part? (selection)

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- **Barilla (Food)**
- **Bayer Health Care (Pharma)**
- **Evobus (Automotive, part of Daimler Group)**
- **Evonik (Pharma & Plastics)**
- **Hilti (Tools & Machinery)**
- **Liebherr (Engineering)**
- **L'Oréal (Cosmetics)**
- **Michelin (Automotive)**
- **Procter & Gamble (Food & Non Food)**
- **Royal Greenland (Food)**
- **Stora Enso (Pulp & Paper)**
- **Weidmüller (Engineering)**
- **Fiducia (IT-Services)**

# Concept: Cost of participation (per company or production site) – German example

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<b>general organizational cost:</b>	114,000 JPY
<b>initial consultancy</b>	<u>cost</u> (energy cost per year)
	700,000 - 900,000 JPY (< 60m JPY/a)
	900,000 - 1.4m JPY (< 250m JPY/a)
	to be negotiated (> 250m JPY/a)
	20 days (questionnaire and report)
<b>network meetings</b>	60,000 JPY per meeting
	1 day, two persons
<b>monitoring</b>	150,000 – 300,000 JPY/a
	1 day
<b>sum</b>	<b>3.0m JPY (initial consultancy: 900,000 JPY)</b>
	<b>about 60 days (non cash)</b>

# Rentability of LEEN-Network participation (1/2)

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example: customer of plastic branch  
(electricity consumption about 14 GWh/a)

- cumulated savings of costs 3 years: 18m JPY
- customer's investment: 7.0m JPY
- profit after 3 years: 11.2m JPY
- less participant fees network: 2.8m JPY
- less labour time technical leader: 850,000 JPY
- total profit after 3 years: 7.5m JPY
  
- expected profit for every year recurring 6.0m EUR/a
- ROI on an average: 15 months

calculation based on electricity price of 7,500 JPY/MWh

We can bring the LEEN-idea to you!  
Q&A

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