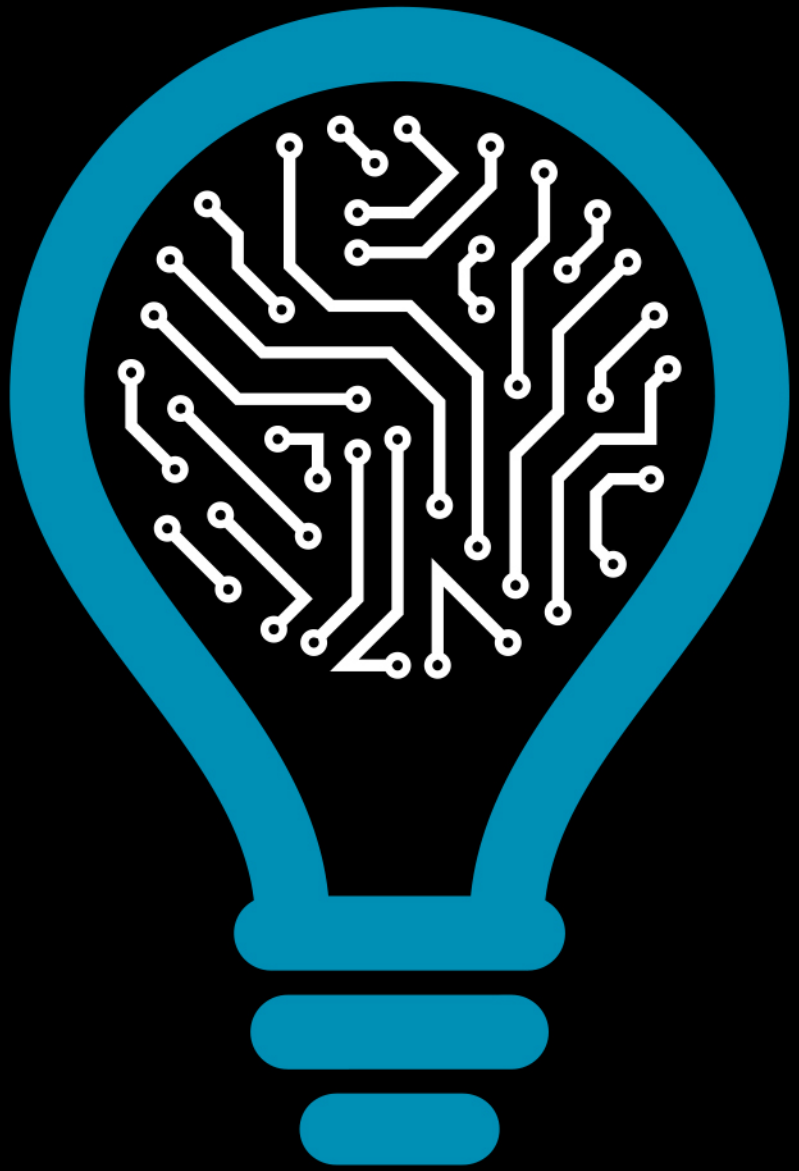
INTEGRID

EDP Distribuição and ELLEVIO



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INSTITUTO DE ENGENHARIA
DE SISTEMAS E COMPUTADORES,
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Data fields utilized in the HEAD project for the MV/LV power transformers (PT)

Manufacturing year	Manufacturing Year of a given MV/LV PT
Data-freeze year	Year of decommission for a given MV/LV PT, which can be due to failure or a management decision
District	Local of installation for a given MV/LV PT at the district level

Data fields utilized in the HEAD project for the MV/LV power transformers (PT)

Manufacturer	Manufacturing brand for a given MV/LV PT (i.e. SIEMENS, EFACEC, etc.)
Installation type	Installation type used when the PT was operationalized (i.e. PT installed inside a booth or PT installed without a booth)
Failure mode	Failure mode occurred for a given MV/LV PT

Data fields utilized in the HEAD project for the MV/LV power transformers (PT)

Age	Measures the time, in years, between the MV/LV PT year of installation and the decommission year
Technology	Differentiates HM/LV PT built with reliable components from ones using economic components, which in turn are less reliable
Failure	Indicates which MV/LV PT have failed with a binary classification (i.e. value ”1” for failure and value “0” for no failure)

Example with 5 data points

Manufacturing year	Data-freeze year	District	Manufacturer	Installation type	Failure mode	Age	Technology	Failure
2012	2019	AVEIRO	EFACEC	WITHOUT BOOTH	NONE	7	ECONOMICAL	NO FAILURE
1994	2019	BRAGA	SIEMENS	WITH BOOTH	NONE	25	ROBUST	NO FAILURE
1980	2010	COIMBRA	EFACEC	WITH BOOTH	ENVIRONMENTAL	30	ROBUST	FAILURE
1970	2005	GUARDA	SIEMENS	WITHOUT BOOTH	NONE	35	ROBUST	NO FAILURE
2010	2017	PORTO	SIEMENS	WITHOUT BOOTH	OPERATIONAL	7	ECONOMICAL	FAILURE

The set of records used in the algorithm developed by INESC TEC and EDP Distribuição team describe the MV/LV most relevant characteristics that help explain why the PT has failed.

Example with 5 data points

Manufacturing year	Data-freeze year	District	Manufacturer	Installation type	Failure mode	Age	Technology	Failure
2012	2019	AVEIRO	EFACEC	WITHOUT BOOTH	NONE	7	ECONOMICAL	NO FAILURE
1994	2019	BRAGA	SIEMENS	WITH BOOTH	NONE	25	ROBUST	NO FAILURE
1980	2010	COIMBRA	EFACEC	WITH BOOTH	ENVIRONMENTAL	30	ROBUST	FAILURE
1970	2005	GUARDA	SIEMENS	WITHOUT BOOTH	NONE	35	ROBUST	NO FAILURE
2010	2017	PORTO	SIEMENS	WITHOUT BOOTH	OPERATIONAL	7	ECONOMICAL	FAILURE

The highlighted record is an example of a MV/LV PT which is still operational. This record is dynamically updated in the ”Age” and “Data-freeze year” data field.

Example with 5 data points

Manufacturing year	Data-freeze year	District	Manufacturer	Installation type	Failure mode	Age	Technology	Failure
2012	2019	AVEIRO	EFACEC	WITHOUT BOOTH	NONE	7	ECONOMICAL	NO FAILURE
1994	2019	BRAGA	SIEMENS	WITH BOOTH	NONE	25	ROBUST	NO FAILURE
1980	2010	COIMBRA	EFACEC	WITH BOOTH	ENVIRONMENTAL	30	ROBUST	FAILURE
1970	2005	GUARDA	SIEMENS	WITHOUT BOOTH	NONE	35	ROBUST	NO FAILURE
2010	2017	PORTO	SIEMENS	WITHOUT BOOTH	OPERATIONAL	7	ECONOMICAL	FAILURE

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Example with 5 data points

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1970	2005	GUARDA	SIEMENS	WITHOUT BOOTH	NONE	35	ROBUST	NO FAILURE
2010	2017	PORTO	SIEMENS	WITHOUT BOOTH	OPERATIONAL	7	ECONOMICAL	FAILURE

The highlighted record is an example of a MV/LV PT which has failed due to an "ENVIRONMENTAL" factor. This record was last updated in "2010".

Example with 5 data points

Manufacturing year	Data-freeze year	District	Manufacturer	Installation type	Failure mode	Age	Technology	Failure
2012	2019	AVEIRO	EFACEC	WITHOUT BOOTH	NONE	7	ECONOMICAL	NO FAILURE
1994	2019	BRAGA	SIEMENS	WITH BOOTH	NONE	25	ROBUST	NO FAILURE
1980	2010	COIMBRA	EFACEC	WITH BOOTH	ENVIRONMENTAL	30	ROBUST	FAILURE
1970	2005	GUARDA	SIEMENS	WITHOUT BOOTH	NONE	35	ROBUST	NO FAILURE
2010	2017	PORTO	SIEMENS	WITHOUT BOOTH	OPERATIONAL	7	ECONOMICAL	FAILURE

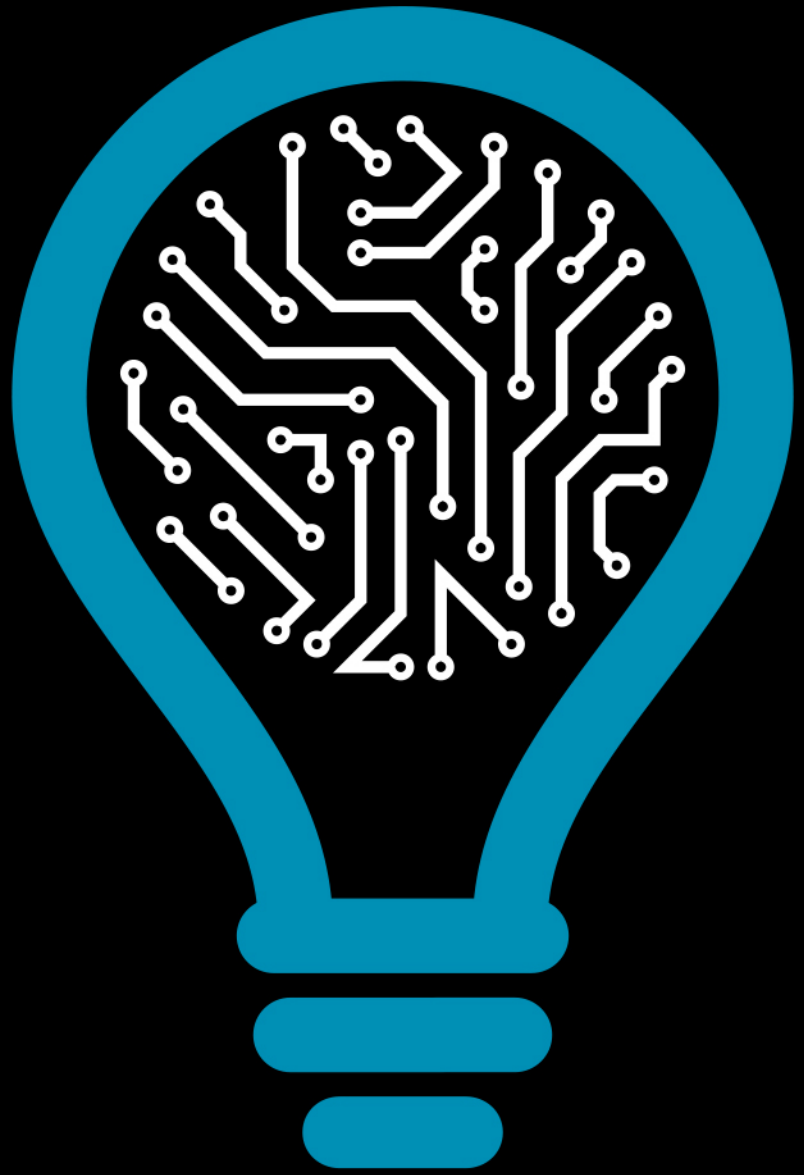
The highlighted record is an example of a MV/LV PT which was decommissioned but has not failed. This record was last updated in “2005”.

Example with 5 data points

Manufacturing year	Data-freeze year	District	Manufacturer	Installation type	Failure mode	Age	Technology	Failure
2012	2019	AVEIRO	EFACEC	WITHOUT BOOTH	NONE	7	ECONOMICAL	NO FAILURE
1994	2019	BRAGA	SIEMENS	WITH BOOTH	NONE	25	ROBUST	NO FAILURE
1980	2010	COIMBRA	EFACEC	WITH BOOTH	ENVIRONMENTAL	30	ROBUST	FAILURE
1970	2005	GUARDA	SIEMENS	WITHOUT BOOTH	NONE	35	ROBUST	NO FAILURE
2010	2017	PORTO	SIEMENS	WITHOUT BOOTH	OPERATIONAL	7	ECONOMICAL	FAILURE

The highlighted record is an example of a MV/LV PT which has failed due to an “OPERATIONAL” factor. This record was last updated in “2017”.

Da produção
de conhecimento
à inovação de
base científica



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