DEFINING OF NORMALIZED LOAD PROFILE CURVES FOR DOMESTIC CUSTOMER GROUPS TO ESTIMATE FEEDER POWER LOSS

H.A.C.H.Jayawardhana

(139505 D)

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Department of Electrical Engineering

University of Moratuwa
Sri Lanka

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DECLARATION OF THE CANDIDATE AND SUPERVISOR

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(H.A.C.H. Jayawardhana)

The above candidate has carried out research for the Masters Dissertation under my supervision.

UOM Verified Signature 08/05/2018

Signature of the supervisor **Date:**

(Dr. K.T.M. Udayanga Hemapala)

UOM Verified Signature 08/05/2018.

Signature of the supervisor **Date:**

(Dr. P.S. Narendra De Silva)

Abstract

'Estimation of load profiles for domestic customers' is a multi-purpose activity and 'Estimation of daily feeder power loss' is only a one use of customer load profiles. In a country, domestic electricity customer percentage is higher in number wise, but energy usage of one customer is lower compared to other categories. Therefore installation of load profile recording meters for each domestic customer to obtain customer load profile is impractical and not economical.

In this research, set of domestic customers are grouped by clustering their daily load profiles with respect to differences of patterns. Representative normalized load profile is obtained for each group. Same customers were interviewed for collecting family member composition and electric equipment usage information. Relationships between load profile pattern and customer information were investigated. Then a methodology was developed to estimate load profile of a new customer by only using customer information and monthly total energy consumption. These load profiles were used to calculate low voltage feeder power loss.

As outcome of this research, MATLAB GUI software interface was developed to input customer information and selection of best-matched representative load profile of a new customer. An algorithm is proposed to estimate time dependant LV feeder power loss by using estimated customer load profiles.

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List of Abbreviations

LV	Low Voltage
LECO	Lanka Electricity Company (Pvt.) Ltd.
CEB	Ceylon Electricity Board
GUI	Graphical User Interface
SSE	Sum of Square Error
P	Active Power
I	Current
V	Voltage
R	Resistance
S	Apparent Power
kVA	Kilo Volt Ampere
kW	kilo Watt
W	Watt

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